

รายการอ้างอิง

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ภาคผนวก ก

ผลการวิเคราะห์ผลการทดลองด้วยวิธี Duncan's multiple range test

ภาคผนวกนี้เป็นการแสดงผลการวิเคราะห์ผลการทดลองด้วยวิธี Duncan's multiple range test สำหรับส่วนผสม (Combination) ของปัจจัยด้าน กฎการจัดลำดับ (Dispatching rules) กฎการรับงาน (Pick-up rules) และ กฎการส่งงาน (Drop-off rules) เมื่อกำหนดให้ปัจจัยด้านจำนวน AGV Queue และ Entity คงที่ ที่ระดับความเชื่อมั่น 95 เปอร์เซ็นต์ ผลที่ได้แสดงดังตารางที่ ก1 ถึง ก18

จากตารางส่วนผสมของกฎทั้งสามเมื่อรวมกันจะเรียกว่ากฎ (Rule) ซึ่งประกอบด้วยตัวเลขสามตัว (3 หลัก) แต่ละตัวมีความหมายดังนี้

เลข 1 หมายถึง กฎ First Serve Next Station (FSNS)

เลข 2 หมายถึง กฎ Maximum Outgoing Queue Size (MOQS)

เลข 3 หมายถึง กฎ Serve Same Destination (SSD)

เลข 4 หมายถึง กฎ First Come First Serve (FCFS)

เลข 5 หมายถึง กฎ Maximum Outgoing Queue Size (MOQS)

เลข 6 หมายถึง กฎ Shortest Distance (SD)

เลข 7 หมายถึง กฎ First In First Out (FIFO)

เลข 8 หมายถึง กฎ Minimum Operation Remaining (MOR)

เลข 9 หมายถึง กฎ Nearest Destination (ND)

อักษร a b c d e f g h i j k l m n และ o ในตารางทั้งหมดแสดง homogeneous group

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ตารางที่ ก1 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=1 Queue=1 Entity=40

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	308.791 f	-392.10 e	5.41 b,c,d	777.00 d	6.44 b	78.16 e
148	316.287 g	-384.79 e,f	4.79 a,b	758.60 c	6.72 b	76.41 c
149	278.241 b	-424.24 b	8.61 g,h	862.30 h	4.34 a	80.95 h,i
157	308.785 f	-392.18 e	5.14 a,b,c	776.80 d	6.53 b	77.96 d,e
158	316.214 g	-384.64 e,f	4.69 a	759.30 c	6.77 b	76.67 c
159	277.42 b	-424.96 b	8.77 g,h	865.00 h	4.55 a	81.40 i
167	311.816 f	-388.72 e,f	5.06 a,b,c	769.70 d	6.50 b	73.59 b
168	317.732 g	-382.76 f,g	4.69 a	755.10 c	6.73 b	72.44 a
169	280.116 b,c	-422.18 b	8.16 g	857.10 g,h	4.32 a	77.14 c,d
247	300.452 e	-401.98 d	6.20 e,f	798.70 e	6.48 b	99.31 n
248	309.767 f	-391.64 e	5.07 a,b,c	774.50 d	6.63 b	99.51 n
249	268.649 a	-434.23 a	10.36 l	893.40 l	4.29 a	95.96 m
257	300.452 e	-401.98 d	6.20 e,f	798.70 e	6.48 b	99.31 n
258	311.105 f	-389.61 e,f	4.92 a,b,c	771.10 d	7.20 b,c	99.84 n
259	268.536 a	-434.31 a	10.36 i	893.30 l	4.29 a	96.04 m
267	300.452 e	-401.98 d	6.20 e,f	798.70 e	6.48 b	99.31 n
268	309.932 f	-391.33 e	4.96 a,b,c	774.30 d	7.14 b,c	99.20 n
269	269.075 a	-433.77 a	10.63 l	892.00 l	4.20 a	95.12 l
347	315.724 g	-385.23 e,f	6.17 e,f	760.70 c	8.09 d	87.56 j
348	324.501 h	-375.90 g,h	5.59 c,d,e	739.30 b	8.59 d,e	90.45 k
349	282.372 c	-419.98 b	9.08 h	850.40 g	4.72 a	87.69 j
357	316.43 g	-384.68 e,f	6.12 e,f	758.30 c	8.00 c,d	87.96 j
358	325.748 h	-374.45 h	5.52 c,d,e	736.50 b	9.30 e	90.48 k
359	282.197 c	-420.23 b	9.12 h	850.30 g	5.10 a	88.22 j
367	325.715 h	-374.23 h	6.46 f	736.40 b	12.75 f	79.71 f,g
368	331.366 l	-369.06 h	5.98 d,e,f	723.70 a	13.49 f	80.22 g,h
369	292.038 d	-410.62 c	8.92 h	822.40 f	6.83 b	79.16 f

ตารางที่ ก2 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=1 Queue=1 Entity=60

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	462.33 f	-238.85 f	5.32 a,b	778.00 d	30.16 c,d	78.01 d
148	473.71 g	-227.11 g,h	4.78 a	759.70 c	32.19 d	76.32 c
149	415.67 b	-286.80 b,c	9.07 f	866.40 h	20.41 a	82.41 e
157	462.33 f	-238.85 f	5.32 a,b	778.00 d	30.16 c,d	78.01 d
158	473.71 g	-227.11 g,h	4.78 a	759.70 c	32.19 d	76.32 c
159	415.67 b	-286.80 b,c	9.07 f	866.40 h	20.41 a	82.41 e
167	467.51 f	-232.91 f,g	5.13 a	769.60 d	30.97 c,d	73.55 b
168	476.57 g	-223.94 h	4.69 a	755.10 c	33.24 d	72.44 a
169	421.77 c	-280.63 c,d	8.23 e	853.90 g	21.06 a	76.89 c
247	450.63 e	-251.64 e	6.06 b,c	798.50 e	28.54 c	100.00 l
248	464.19 f	-237.02 f	5.12 a	775.70 d	31.69 d	100.00 l
249	398.87 a	-304.98 a	11.07 g	901.90 l	18.69 a	99.98 l
257	450.63 e	-251.64 e	6.06 b,c	798.50 e	28.54 c	100.00 l
258	464.19 f	-237.02 f	5.12 a	775.70 d	31.69 d	100.00 l
259	398.87 a	-304.98 a	11.07 g	901.90 l	18.69 a	99.98 l
267	450.63 e	-251.64 e	6.06 b,c	798.50 e	28.54 c	100.00 l
268	464.96 f	-236.21 f	5.14 a	773.90 d	31.94 d	99.48 k,l
269	399.66 a	-304.11 a	11.30 g,h	901.90 l	19.47 a	98.91 k
347	477.02 g	-223.17 h	7.61 d,e	754.80 c	46.07 f	90.74 h
348	487.75 h	-212.35 i	6.48 c	737.90 b	49.22 g	94.31 j
349	411.99 b	-289.69 b	11.83 h,i	873.60 h	24.40 b	92.46 l
357	477.02 g	-223.17 h	7.61 d,e	754.80 c	46.07 f	90.74 h
358	487.75 h	-212.35 i	6.48 c	737.90 b	49.22 g	94.31 j
359	412.19 b	-289.63 b	12.08 l	873.60 h	24.32 b	92.48 l
367	484.53 h	-215.54 i	7.62 d,e	744.00 b	70.11 h	86.23 g
368	497.95 l	-202.62 j	7.21 d	723.40 a	76.73 l	85.78 g
369	426.53 d	-275.81 d	11.25 g,h	845.00 f	40.65 e	84.36 f

ตารางที่ ก3 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=1 Queue=1 Entity=80

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	616.43 e	-84.77 f	5.32 a,b	778.00 d	82.91 d,e	78.01 d
148	631.44 f	-69.38 g,h	4.78 a	759.70 c	89.48 f	76.32 c
149	554.20 b	-148.26 b,c	9.07 e	866.40 g	57.95 a,b	82.41 e
157	616.43 e	-84.77 f	5.32 a,b	778.00 d	82.91 d,e	78.01 d
158	631.44 f	-69.38 g,h	4.78 a	759.70 c	89.48 f	76.32 c
159	554.20 b	-148.26 b,c	9.07 e	866.40 g	57.95 a,b	82.41 e
167	623.24 e	-77.18 f,g	5.13 a	769.60 d	86.13 e,f	73.55 b
168	635.31 f	-65.18 h,i	4.69 a	755.10 c	91.49 f	72.44 a
169	562.38 c	-140.03 c,d	8.23 d	853.90 f	60.56 b	76.89 c
247	600.83 d	-101.45 e	6.06 b	798.50 e	77.31 d	100.00 m
248	618.84 e	-82.36 f	5.12 a	775.70 d	85.42 e,f	100.00 m
249	532.68 a	-170.84 a	11.49 f,g	901.00 i	52.34 a	100.00 m
257	600.83 d	-101.45 e	6.06 b	798.50 e	77.31 d	100.00 m
258	618.84 e	-82.36 f	5.12 a	775.70 d	85.42 e,f	100.00 m
259	532.68 a	-170.84 a	11.49 f,g	901.00 i	52.34 a	100.00 m
267	600.83 d	-101.45 e	6.06 b	798.50 e	77.31 d	100.00 m
268	619.89 e	-81.28 f	5.14 a	773.90 d	85.96 e,f	99.48 l,m
269	532.81 a	-170.94 a	11.30 f	901.00 i	52.43 a	98.91 l
347	636.33 f	-63.59 h,i	8.40 d,e	754.70 c	125.43 h	92.22i
348	651.77 h	-48.59 j	7.04 c	736.30 b	125.71 h	95.17 k
349	547.69 b	-153.90 b	12.19 g,h	876.60 h	67.22 c	93.77 j
357	636.33 f	-63.59 h,i	8.40 d,e	754.70 c	125.43 h	92.22i
358	651.77 h	-48.59 j	7.04 c	736.30 b	125.71 h	95.17 k
359	547.69 b	-153.90 b	12.19 g,h	876.60 h	67.22 c	93.77 j
367	644.02 g	-56.82 i,j	7.96 d	743.90 b	183.43 j	87.15 g
368	663.62i	-36.86 k	7.88 d	723.60 a	176.56i	87.83 h
369	565.43 c	-137.01 d	12.40 h	848.70 f	117.94 g	85.79 f

ตารางที่ ก4 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=1 Queue=3 Entity=40

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	268.03 c	-435.18 b,c	4.08 d,e,f	895.80 h	3.49 b,c,d	71.73 g,h
148	272.61 d,e	-429.52 c,d	3.61 c,d	880.80 f,g	3.79 c,d,e	71.30 g
149	252.31 a	-449.69 a	6.18 h	950.60 j	2.76 a	73.97 k
157	269.19 c	-433.78 b,c	4.04 d,e,f	891.60 h	3.70 c,d,e	73.35 j,k
158	274.47 e	-427.33 c,d	3.62 c,d	874.80 f	4.26 e,f,g	72.83i,j
159	251.28 a	-450.86 a	6.67 h	954.80 j	2.93 a,b	74.68 l
167	270.63 c,d	-433.22 b,c	4.19 e,f	887.50 g,h	3.65 c,d,e	73.23 j,k
168	274.09 e	-427.62 c,d	3.69 c,d,e,f	875.30 f	3.95 d,e,f	72.21 h,i
169	251.37 a	-450.53 a	6.60 h	954.80 j	2.79 a	75.24 l
247	280.18 f	-421.90 d,e	2.95 a,b	857.00 e	4.11 d,e,f,g	65.73 e
248	290.36 g	-412.16 f	2.55 a	826.80 d	4.66 g	63.75 b,c
249	263.66 b	-439.60 b	4.84 g	910.70i	3.16 a,b,c	69.62 f
257	280.18 f	-421.90 d,e	2.95 a,b	857.00 e	4.11 d,e,f,g	65.73 e
258	289.48 g	-412.87 f	2.45 a	828.90 d	4.66 g	63.89 b,c
259	262.48 b	-440.60 b	4.78 g	915.30i	3.12 a,b,c	69.90 f
267	280.18 f	-421.90 d,e	2.95 a,b	857.00 e	4.11 d,e,f,g	65.73 e
268	290.13 g	-412.17 f	2.50 a	826.80 d	4.59 f,g	63.82 b,c
269	263.43 b	-440.14 b	4.84 g	911.10i	3.20 a,b,c	69.67 f
347	308.03 j	-393.28 h	3.19 b,c	779.20 a	5.49i	63.26 a,b
348	307.68 j	-393.92 h	3.31 b,c	779.90 a	5.33 h,i	63.36 a,b
349	297.38 h	-405.16 f,g	3.65 c,d,e	807.20 c	4.68 g	64.83 d
357	306.09 j	-395.40 h	3.66 c,d,e	784.10 a	5.64i	62.60 a
358	306.79 j	-394.66 h	3.57 c,d	782.50 a	5.84i	62.65 a
359	294.21 h	-408.62 f,g	4.10 d,e,f	815.40 c	4.78 g,h	64.46 c,d
367	301.30i	-401.01 g,h	4.07 d,e,f	796.30 b	5.60i	63.75 b,c
368	301.43i	-400.95 g,h	4.22 f	796.00 b	5.36 h,i	63.55 b
369	288.91 g	-413.70 e,f	4.77 g	830.80 d	4.78 g,h	65.59 e

ตารางที่ ก5 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=1 Queue=3 Entity=60

Rule	Flow time	Lateness	Number of jobs In central buffer	Jobs done	Tardiness	M/C utilization
147	421.41 e	-280.80 c,d,e	4.44 c,d	854.60i,j	22.23 b,c,d	79.78 g,h,i
148	428.42 f	-274.63 e,f,g	3.70 a,b	841.00 h	23.82 c,d,e,f	79.24 f,g
149	386.47 a,b	-315.79 a,b	7.24 l	932.60 m	16.49 a	82.61 k
157	422.84 e	-279.56 d,e,f	4.53 c,d,e	851.20i	23.53 c,d,e,f	80.15 h,i,j
158	434.70 g,h	-267.73 g,h	3.83 a,b	828.50 f,g	25.46 f,g,h	79.51 f,g,h
159	387.69 b	-314.61 a,b	7.71 m	928.20 m	16.81 a	83.54 l
167	413.88 d	-288.20 c	4.08 b,c	871.00 k	20.78 b	75.02 b
168	417.79 d,e	-284.81 c,d	4.03 b,c	862.30 j,k	21.78 b,c	73.28 a
169	382.16 a	-319.72 a	7.39 l,m	942.20 n	15.23 a	78.69 e,f
247	430.32 f,g	-272.41 e,f,g,h	4.13 b,c	836.60 g,h	22.57 b,c,d	82.25 k
248	449.65 i	-252.81i	3.39 a	800.80 e	27.45 h	82.74 k,l
249	393.98 c	-309.13 b	6.65 k	914.60 l	16.19 a	80.54i,j
257	430.32 f,g	-272.41 e,f,g,h	4.13 b,c	836.60 g,h	22.57 b,c,d	82.25 k
258	448.60 i	-254.15 i	3.46 a	802.50 e	26.88 g,h	82.79 k,l
259	393.33 c	-309.55 b	6.64 k	915.70 l	15.95 a	80.36i,j
267	430.32 f,g	-272.41 e,f,g,h	4.13 b,c	836.60 g,h	22.57 b,c,d	82.25 k
268	448.10 i	-254.53i	3.46 a	803.20 e	26.53 g,h	82.85 k,l
269	392.94 c	-310.09 b	6.76 k	916.90 l	15.92 a	80.62 j
347	475.12 k,l	-225.49 j,k,l	5.17 f,g,h	757.80 b,c	33.52i	76.43 c
348	486.82 n	-213.77 m	4.81 d,e,f	739.70 a	37.96 j	76.62 c
349	436.97 h	-265.71 h	6.16 j	824.20 f	24.17 d,e,f	77.48 d
357	470.38 j,k	-229.81 j,k	5.35 g,h	766.20 c,d	33.58i	78.28 e
358	480.89 m	-219.60 l,m	4.95 e,f,g	749.20 b	36.72 j	79.39 f,g,h
359	429.38 f,g	-272.99 e,f,g,h	6.64 k	838.40 g,h	23.00 b,c,d,e	79.11 f,g
367	468.47 j	-232.11 j	5.83i,j	768.50 d	35.89 j	73.86 a
368	478.10 l,m	-222.07 k,l	5.51 h,i	752.70 b	37.72 j	73.89 a
369	430.41 f,g	-272.10 f,g,h	7.11 k,l	836.50 g,h	25.07 e,f,g	75.04 b

ตารางที่ 6 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=1 Queue=3 Entity=80

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	562.45 e,f	-139.75 e,f	4.34 a	852.90 g,h	62.29 d,e	80.49 e
148	576.43 g	-126.03 g	3.86 a	832.70 f	67.88 f	79.62 d
149	520.60 b	-181.99 b	7.68 f,g	923.40 k	47.53 a,b	84.30 g
157	562.45 e,f	-139.75 e,f	4.34 a	852.90 g,h	62.29 d,e	80.49 e
158	576.43 g	-126.03 g	3.86 a	832.70 f	67.88 f	79.62 d
159	521.76 b	-181.37 b	7.97 g	920.00 k	47.98 b	84.24 g
167	551.88 d	-150.19 d	4.08 a	871.00 i	57.75 c	75.02 b
168	556.56 d,e	-146.03 d,e	4.30 a	862.70 h,i	59.37 c,d	73.58 a
169	509.67 a	-192.33 a	7.51 e,f,g	942.20 l	43.72 a	78.55 c
247	605.88 h	-96.40 h	5.80 c	792.40 e	78.55 g	99.39 o
248	622.65 i	-77.56 i	4.97 b	771.40 d	87.97 h	99.59 o
249	536.74 c	-166.39 c	9.71 h,i	894.20 j	51.12 b	97.57 n
257	605.88 h	-96.40 h	5.80 c	792.40 e	78.55 g	99.39 o
258	624.89 i,j	-75.79 i	5.00 b	768.00 d	88.36 h	99.67 o
259	536.23 c	-167.03 c	9.74 i	895.20 j	50.98 b	97.34 n
267	605.88 h	-96.40 h	5.80 c	792.40 e	78.55 g	99.39 o
268	622.96 i	-77.51 i	5.05 b	770.50 d	87.18 h	99.54 o
269	535.23 c	-167.88 c	10.01 i	896.80 j	50.13 b	97.21 n
347	634.21 k	-66.04 j	6.94 d,e	757.00 c	96.58 i	90.34 i
348	670.41 m	-29.69 l	5.93 c	715.80 a	114.13 j,k	93.63 l
349	565.29 f	-137.05 f	9.49 h,i	850.00 g	64.62 e,f	91.15 j
357	630.01 j,k	-70.65 i,j	6.98 d,e	761.70 c,d	93.70 i	90.61 i,j
358	669.14 m	-31.59 l	5.85 c	717.20 a	112.73 j	94.69 m
359	559.22 e,f	-142.99 d,e,f	9.53 h,i	858.10 g,h	60.62 c,d,e	92.26 k
367	635.07 k	-65.31 j	7.34 d,e,f	756.60 c	114.21 j,k	82.57 f
368	659.19 l	-41.25 k	6.90 d	729.00 b	117.06 k	85.52 h
369	565.27 f	-137.02 f	9.12 h	849.40 g	76.15 g	83.75 g

ตารางที่ ก7 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=1 Queue=5 Entity=40

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	249.36 b,c,d,e	-452.62 b	3.18 g,h,i,j	962.30 i,j	2.74 a,b,c,d,e	73.23 i,j
148	253.17 e	-448.67 b,c	2.73 e,f,g	947.50 h	2.91 a,b,c,d,e	72.21 h
149	240.35 a	-461.91 a	4.62 l	999.00 k	2.38 a	75.92 k
157	247.55 b,c,d	-454.28 b	3.36 i,j,k	970.10 j	2.73 a,b,c,d	73.74 j
158	251.53 d,e	-450.77 b	2.83 f,g	953.90 h,i	2.69 a,b,c,d	72.63 h,i
159	239.37 a	-462.57 a	4.77 l	1003.60 k	2.59 a,b,c	76.20 k
167	248.06 b,c,d	-453.78 b	3.30 h,i,j,k	967.30 i,j	2.72 a,b,c,d	73.96 j
168	251.25 c,d,e	-450.90 b	3.03 f,g,h,i	955.10 h,i	2.89 a,b,c,d,e	73.03 h,i,j
169	239.72 a	-462.45 a	4.75 l	1001.90 k	2.37 a	76.19 k
247	259.60 f	-442.77 c,d	2.16 b,c,d	924.50 g	2.83 a,b,c,d,e	70.28 g
248	269.52 i,j	-433.16 e,f,g	1.50 a	890.80 c,d	3.08 b,c,d,e,f	67.72 d
249	247.15 b	-454.48 b	3.64 j,k	971.60 j	2.60 a,b,c	73.78 j
257	259.60 f	-442.77 c,d	2.16 b,c,d	924.50 g	2.83 a,b,c,d,e	70.28 g
258	268.37 h,i,j	-438.81 e,f,g	1.58 a	894.20 c,d,e	3.23 d,e,f,g	68.04 d,e
259	246.71 b	-454.73 b	3.71 k	973.50 j	2.49 a,b	73.91 j
267	259.60 f	-442.77 c,d	2.16 b,c,d	924.50 g	2.83 a,b,c,d,e	70.28 g
268	268.44 h,i,j	-434.55 e,f,g	1.64 a	894.00 c,d,e	3.23 d,e,f,g	68.02 d,e
269	247.30 b,c	-454.36 b	3.75 k	970.80 j	2.60 a,b,c	73.73 j
347	278.31 m	-424.30 h	1.85 a,b	862.70 a	3.70 g,h	65.68 a
348	276.97 l,m	-425.13 h	1.92 a,b,c	867.50 a	3.58 f,g,h	66.00 a,b
349	274.09 k,l	-427.71 g,h	1.96 a,b,c	875.40 a,b	3.32 d,e,f,g,h	66.67 b,c
357	276.53 l,m	-425.44 h	2.21 b,c,d	868.60 a	3.84 h	65.96 a,b
358	276.49 l,m	-425.58 h	2.25 b,c,d	868.30 a	3.66 f,g,h	65.96 a,b
359	271.82 j,k	-430.51 f,g,h	2.35 c,d,e	882.90 b,c	3.36 e,f,g,h	67.17 c,d
367	266.28 g,h,i	-437.05 d,e,f	2.63 d,e,f	901.60 d,e,f	3.29 d,e,f,g,h	68.66 e,f
368	264.94 g,h	-438.54 d,e	2.64 d,e,f	906.10 e,f	3.22 c,d,e,f,g	69.04 f
369	262.84 f,g	-440.22 d,e	2.87 f,g,h	913.70 f,g	3.12 c,d,e,f,g	69.53 f,g

ตารางที่ ๓8 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=1 Queue=5 Entity=60

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	367.88 b	-333.92 b,c	3.86 d,e,f,g	978.90 g	13.42 b,c	77.45 i
148	376.83 c	-325.38 d	3.39 c,d	955.60 f	14.58 c,d	76.41 h
149	348.90 a	-353.22 a	7.32 k	1031.80 h	11.17 a	79.66 k
157	374.76 c	-327.03 c,d	4.01 e,f,g,h	960.90 f	15.38 d,e	78.57 j
158	383.08 d	-319.01 d,e	3.09 c	940.20 e	16.43 e,f	78.08 i,j
159	349.54 a	-352.59 a	7.45 k	1030.00 h	11.66 a	80.43 k,l
167	382.24 d	-319.67 d,e	3.94 d,e,f,g,h	941.50 e	17.23 f	77.82 i,j
168	382.76 d	-319.34 d,e	3.62 c,d,e,f	941.70 e	16.58 e,f	76.16 h
169	349.87 a	-352.25 a	7.56 k	1028.10 h	11.69 a	81.04 l
247	387.28 d	-314.97 e	2.35 b	930.40 e	14.22 c,d	70.74 f
248	403.40 e	-299.53 f	1.65 a	892.80 d	17.03 f	68.04 e
249	367.99 b	-333.84 b,c	4.18 f,g,h,i	978.10 g	11.95 a,b	74.36 g
257	387.28 d	-314.97 e	2.35 b	930.40 e	14.22 c,d	70.74 f
258	404.75 e	-298.12 f	1.74 a	889.90 d	17.15 f	67.79 d,e
259	366.50 b	-335.36 b	4.16 f,g,h,i	982.40 g	12.02 a,b	74.68 g
267	387.28 d	-314.97 e	2.35 b	930.40 e	14.22 c,d	70.74 f
268	403.61 e	-299.36 f	1.64 a	892.50 d	17.10 f	67.97 d,e
269	366.14 b	-335.57 b	4.26 g,h,i	983.10 g	11.90 a,b	74.74 g
347	435.14 h,i	-267.51 i	3.39 c,d	826.70 a	22.83 i,j	65.37 b
348	432.97 h,i	-269.44 i	3.57 c,d,e	831.00 a	22.96 j,k	65.51 b
349	419.66 f,g	-282.40 g	3.86 d,e,f,g	857.90 c	19.73 g,h	67.11 c,d
357	437.67 i	-265.10 i	3.75 d,e,f,g	822.60 a	24.45 k	64.30 a
358	431.20 h	-271.21 h,l	3.85 d,e,f,g	834.90 a,b	22.71 i,j	65.11 a,b
359	418.56 f	-283.87 g	4.24 g,h,i	859.60 c	20.19 g,h	66.60 c
367	424.23 g	-278.56 g,h	4.60 i,j	847.80 b,c	23.15 j,k	66.46 c
368	421.10 f,g	-281.40 g	4.47 h,i,j	855.10 c	21.29 h,i	66.83 c
369	406.82 e	-295.95 f	4.83 j	884.80 d	19.32 g	68.71 e

ตารางที่ 9 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=1 Queue=5 Entity=80

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	519.36 c	-183.41 c,d	3.91 c,d	924.40 j	49.27 c	81.42 j
148	537.01 e	-165.98 e	3.44 c	894.20 h	55.72 d	80.84 i,j
149	477.39 a	-224.18 a	7.35 l,m	1005.80 l	36.48 a	84.50 k
157	538.50 e	-164.23 e	4.21 d,e	891.70 h	57.45 d	81.11 i,j
158	554.93 f,g	-147.96 f,g	3.41 c	864.60 f,g	63.55 e	80.39 i
159	493.53 b	-207.99 b	7.36 l,m	972.70 k	41.80 b	84.66 k
167	517.11 c	-185.16 c	4.28 d,e,f	928.90 j	48.90 c	77.71 h
168	514.30 c	-187.98 c	3.85 c,d	933.10 j	46.88 c	76.30 g
169	476.83 a	-224.83 a	7.85 m	1005.80 l	36.60 a	81.57 j
247	528.18 d	-175.37 d	2.81 b	909.60 i	47.22 c	75.33 f
248	548.30 f	-153.34 f	2.08 a	875.70 g	55.38 d	75.27 f
249	491.66 b	-209.95 b	4.93 g,h,i	976.10 k	36.76 a	76.77 g
257	528.18 d	-175.37 d	2.81 b	909.60 i	47.22 c	75.33 f
258	548.52 f	-153.36 f	2.02 a	875.80 g	55.05 d	75.16 f
259	490.76 b	-211.04 b	4.74 e,f,g	978.40 k	36.32 a	76.72 g
267	528.18 d	-175.37 d	2.81 b	909.60 i	47.22 c	75.33 f
268	550.26 f	-151.60 f	2.04 a	873.20 g	56.08 d	74.94 f
269	492.23 b	-209.48 b	4.79 f,g	974.90 k	36.67 a	76.62 g
347	620.86 l	-80.38 k,l	5.38 h,i,j	774.50 a,b	87.50 g,h	69.57 a
348	624.83 l	-75.97 l	4.97 g,h,i	768.60 a	88.64 h	69.55 a
349	575.58 i	-127.02 i	5.61 j,k	834.50 d	66.16 e	71.96 c,d
357	609.22 j,k	-92.76 j	5.47 i,j	788.40 c	83.31 f	70.81 b
358	613.02 k	-88.22 j,k	4.90 g,h	783.30 b,c	84.90 f,g	71.21 b,c
359	564.66 h	-137.70 h	6.13 k	851.00 e	63.48 e	72.93 e
367	605.67 j	-96.46 j	6.16 k	792.70 c	83.99 f,g	69.63 a
368	605.18 j	-97.11 j	6.07 k	793.40 c	82.71 f	69.61 a
369	559.63 g,h	-142.75 g,h	6.88 l	858.10 e,f	64.79 e	72.35 d,e

ตารางที่ 10 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=2 Queue=1 Entity=40

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	240.86 c,d	-461.16 a	19.17 d,e	995.60 a,b	3.13 a,b,c	78.70 a,b,c
148	240.78 c,d	-461.18 a	18.46 a,b	995.80 a,b	3.51 b,c	79.13 a,b,c,d,e
149	235.71 a	-466.16 a	20.58 f,g,h	1018.00 c	3.09 a,b,c	78.63 a,b,c
157	240.28 b,c,d	-462.04 a	18.92 c,d,e	998.60 a,b	3.31 a,b,c	79.45 b,c,d,e,f
158	241.83 c,d	-459.92 a	18.84 b,c,d	992.50 a,b	3.25 a,b,c	78.87 a,b,c,d
159	235.91 a	-465.93 a	20.66 g,h	1016.90 c	2.93 a,b,c	78.60 a,b,c
167	240.63 c,d	-461.56 a	19.08 d,e	997.50 a,b	3.35 a,b,c	78.69 a,b,c
168	242.04 c,d	-459.90 a	18.84 b,c,d	991.30 a,b	3.57 b,c	78.49 a,b
169	235.94 a	-465.83 a	20.56 f,g,h	1016.50 c	2.68 a	78.57 a,b,c
247	238.99 a,b,c	-462.63 a	19.27 e	1004.00 b,c	3.22 a,b,c	79.81 e,f
248	242.57 c,d	-459.11 a	18.80 b,c,d	990.10 a,b	3.54 b,c	79.82 e,f
249	236.71 a,b	-464.75 a	20.84 h	1014.50 c	3.15 a,b,c	78.21 a
257	238.99 a,b,c	-462.63 a	19.27 e	1004.00 b,c	3.22 a,b,c	79.81 e,f
258	243.09 d	-458.96 a	18.83 b,c,d	987.20 a	3.52 b,c	79.66 d,e,f
259	236.42 a	-464.90 a	20.84 h	1014.80 c	3.02 a,b,c	78.32 a
267	238.99 a,b,c	-462.63 a	19.27 e	1004.00 b,c	3.22 a,b,c	79.81 e,f
268	242.01 c,d	-459.95 a	18.84 b,c,d	991.90 a,b	3.66 c	79.91 e,f
269	236.19 a	-465.70 a	20.83 h	1015.90 c	2.98 a,b,c	78.39 a
347	241.65 c,d	-460.08 a	18.87 b,c,d,e	993.20 a,b	3.34 a,b,c	79.16 a,b,c,d,e
348	241.84 c,d	-459.89 a	18.28 a	992.90 a,b	3.14 a,b,c	79.86 e,f
349	236.63 a,b	-465.12 a	20.25 f	1014.30 c	2.93 a,b,c	78.74 a,b,c,d
357	241.27 c,d	-460.52 a	18.91 c,d,e	995.00 a,b	3.39 a,b,c	79.51 c,d,e,f
358	241.74 c, d	-460.05 a	18.51 a,b,c	992.70 a,b	3.24 a,b,c	80.13 f
359	236.94 a,b	-464.49 a	20.32 f,g	1013.40 c	2.86 a,b	78.79 a,b,c,d
367	241.61 c,d	-460.15 a	18.88 c,d,e	993.30 a,b	3.36 a,b,c	78.60 a,b,c
368	242.76 c,d	-458.86 a	18.55 a,b,c	989.00 a,b	3.20 a,b,c	78.69 a,b,c
369	236.92 a,b	-464.55 a	20.33 f,g	1013.60 c	2.84 a,b	78.41 a

ตารางที่ ก11 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=2 Queue=1 Entity=60

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	341.51 b,c	-360.75 b	30.22 b,c	1054.30 a,b	13.75 a,b	87.15 e,f
148	346.32 d	-356.47 b	28.86 a	1039.70 a	15.25 a,b,c	86.80 d,e,f
149	330.87 a	-370.47 a	36.53 g	1088.40 c	13.69 a,b	85.34 a,b
157	342.15 b,c,d	-360.03 b	30.44 b,c,d,e	1051.70 a,b	13.95 a,b	87.32 f
158	345.52 c,d	-356.93 b	29.11 a	1041.40 a	15.04 a,b,c	87.12 e,f
159	331.16 a	-370.17 a	36.77 g,h	1087.50 c	13.55 a,b	85.20 a,b
167	342.14 b,c,d	-359.91 b	29.98 b	1052.00 a,b	13.70 a,b	86.36 c,d,e
168	346.64 d	-355.80 b	28.47 a	1038.80 a	14.08 a,b	85.90 a,b,c
169	331.25 a	-370.14 a	36.57 g	1088.00 c	13.64 a,b	85.10 a,b
247	340.23 b	-361.78 b	32.92 f	1059.20 b	14.97 a,b,c	90.06 h
248	343.92 b,c,d	-358.21 b	31.12 c,d,e	1046.50 a,b	15.48 b,c	91.38 i
249	331.40 a	-369.99 a	37.72 i	1086.90 c	14.84 a,b,c	84.99 a
257	340.23 b	-361.78 b	32.92 f	1059.20 b	14.97 a,b,c	90.06 h
258	343.70 b,c,d	-358.74 b	30.68 b,c,d,e	1046.50 a,b	15.24 a,b,c	91.80 i
259	331.19 a	-369.93 a	37.74 i	1086.70 c	14.96 a,b,c	85.14 a,b
267	340.23 b	-361.78 b	32.92 f	1059.20 b	14.97 a,b,c	90.06 h
268	343.66 b,c,d	-358.61 b	30.82 b,c,d,e	1046.70 a,b	16.43 c	91.36 i
269	330.05 a	-370.83 a	37.54 h,i	1091.30 c	15.13 a,b,c	85.35 a,b
347	341.64 b,c	-360.79 b	31.37 e	1053.90 a,b	14.19 a,b,c	89.05 g
348	344.20 b,c,d	-357.86 b	30.13 b,c	1046.10 a,b	14.97 a,b,c	89.92 h
349	332.02 a	-369.56 a	36.60 g	1085.80 c	13.34 a,b	85.69 a,b,c
357	340.21 b	-361.83 b	31.25 d,e	1058.70 b	14.01 a,b	89.46 g,h
358	344.27 b,c,d	-357.97 b	30.35 b,c,d	1046.10 a,b	15.59 b,c	90.22 h
359	331.80 a	-369.56 a	36.56 g	1085.40 c	13.81 a,b	85.97 b,c,d
367	343.72 b,c,d	-358.36 b	30.91 b,c,d,e	1047.60 a,b	15.09 a,b,c	87.26 e,f
368	345.37 c,d	-357.11 b	30.26 b,c,d	1042.50 a	15.09 a,b,c	87.46 f
369	331.50 a	-370.08 a	36.18 g	1086.50 c	13.02 a	85.38 a,b

ตารางที่ ก12 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=2 Queue=1 Entity=80

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	447.30 b,c,d	-254.43 b,c,d	37.92 d,e	1072.70 b,c,d,e	35.42 a,b	90.55 e,f
148	453.46 d,e,f	-248.60 d,e,f,g	33.83 a,b	1058.50 a,b,c	36.13 a,b,c	90.24 d,e,f
149	425.93 a	-274.71 a	52.73 h	1126.70 f	37.42 a,b,c,d,e,f	89.18 a,b,c,d
157	447.42 b,c,d	-254.22 b,c,d	37.87 d,e	1072.20 b,c,d,e	35.22 a	90.83 f,g
158	455.38 f	-246.88 f,g	35.30 b,c	1054.70 a,b	38.52 a,b,c,d,e,f,g	89.84 c,d,e,f
159	426.61 a	-274.13 a	52.89 h	1125.00 f	37.67 a,b,c,d,e,f,g	89.21 a,b,c,d
167	448.82 b,c,d,e	-252.53 b,c,d,e,f	36.68 c,d	1069.30 a,b,c,d,e	36.27 a,b,c,d	89.41 a,b,c,d
168	455.76 f	-246.48 g	32.99 a	1052.80 a	35.56 a,b	88.43 a
169	427.09 a	-274.06 a	52.18 h	1124.00 f	36.37 a,b,c,d,e	88.62 a,b
247	443.00 b	-258.72 b	44.08 g	1084.10 e	40.51 c,d,e,f,g	95.96 <
248	448.62 b,c,d,e	-253.16 b,c,d,e	39.66 e	1069.50 a,b,c,d,e	41.58 f,g	97.34
249	426.21 a	-274.26 a	55.62 i	1126.40 f	41.60 f,g	88.90 a,c,c
257	443.00 b	-258.72 b	44.08 g	1084.10 e	40.51 c,d,e,f,g	95.96 <
258	448.20 b,c,d,e	-253.45 b,c,d,e	39.57 e	1071.10 a,b,c,d,e	40.88 d,e,f,g	97.56
259	425.85 a	-275.05 a	55.28 i	1126.00 f	40.41 c,d,e,f,g	89.25 a,c,c,d
267	443.00 b	-258.72 b	44.08 g	1084.10 e	40.51 c,d,e,f,g	95.96 <
268	449.98 c,d,e,f	-251.97 c,d,e,f,g	39.21 e	1067.20 a,b,c,d,e	40.52 c,d,e,f,g	96.85 k,l
269	427.08 a	-273.73 a	55.42 i	1124.00 f	40.00 b,c,d,e,f,g	88.96 a,c,c
347	446.97 b,c,d	-254.72 b,c,d	42.30 f,g	1073.90 c,d,e	39.05 a,b,c,d,e,f,g	93.81
348	452.03 d,e,f	-249.69 d,e,f,g	39.13 e	1061.20 a,b,c,d	40.91 d,e,f,g	94.85
349	426.62 a	-274.20 a	54.05 h,i	1124.80 f	38.40 a,b,c,d,e,f,g	89.71 b,c,c,e
357	445.37 b,c	-256.51 b,c	42.72 f,g	1079.30 d,e	41.01 e,f,g	93.95 i,j
358	453.26 d,e,f	-249.09 d,e,f,g	39.47 e	1058.60 a,b,c	39.89 b,c,d,e,f,g	94.89 j
359	427.40 a	-273.60 a	54.20 h,i	1123.40 f	37.26 a,b,c,d,e,f	89.64 b,c,c,e
367	448.03 b,c,d,e	-253.45 b,c,d,e	41.84 f	1071.20 a,b,c,d,e	39.89 b,c,d,e,f,g	92.00 h
368	454.19 e,f	-247.84 e,f,g	39.48 e	1056.10 a,b,c	42.18 g	91.78 g,h
369	426.34 a	-274.53 a	53.52 h,i	1125.10 f	35.69 a,b	88.92 a,b,c

ตารางที่ ก13 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=2 Queue=3 Entity=40

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	233.39 a,b,c,d	-469.06 a	11.74 d,e,f,g,h	1028.90 a,b,c,d	2.46 a	78.21 b,c,d,e,f,g
148	232.91 a,b,c,d	-469.45 a	11.49 c,d,e,f	1030.40 a,b,c,d	2.62 a	78.36 c,d,e,f,g
149	231.61 a,b	-470.67 a	12.02 g,h,i	1036.30 d	2.49 a	78.81 g
157	232.97 a,b,c,d	-469.24 a	11.79 f,g,h,i	1030.00 a,b,c,d	2.48 a	78.32 c,d,e,f,g
158	233.12 a,b,c,d	-469.05 a	11.67 c,d,e,f,g	1030.20 a,b,c,d	2.50 a	78.27 c,d,e,f,g
159	231.76 a,b	-470.53 a	12.17 h,i	1035.50 d	2.22 a	78.73 f,g
167	232.88 a,b,c,d	-469.31 a	11.80 f,g,h,i	1030.80 a,b,c,d	2.48 a	78.37 c,d,e,f,g
168	232.76 a,b,c,d	-469.45 a	11.48 c,d,e,f	1031.20 a,b,c,d	2.19 a	78.43 d,e,f,g
169	231.94 a,b,c	-470.49 a	12.22 i	1034.20 b,c,d	2.35 a	78.66 e,f,g
247	233.22 a,b,c,d	-468.96 a	11.76 e,f,g,h,i	1029.10 a,b,c,d	2.77 a	78.22 b,c,d,e,f,g
248	234.01 a,b,c,d	-468.53 a	11.43 c,d,e,f	1024.70 a,b,c,d	2.52 a	77.91 a,b,c,d
249	231.97 a,b,c	-470.27 a	12.10 g,h,i	1034.90 c,d	2.50 a	78.66 e,f,g
257	233.22 a,b,c,d	-468.96 a	11.76 e,f,g,h,i	1029.10 a,b,c,d	2.77 a	78.22 b,c,d,e,f,g
258	233.79 a,b,c,d	-468.35 a	11.36 c,d,e,f	1025.90 a,b,c,d	2.36 a	78.00 a,b,c,d,e
259	232.49 a,b,c,d	-469.79 a	12.11 g,h,i	1032.20 a,b,c,d	2.50 a	78.46 d,e,f,g
267	233.22 a,b,c,d	-468.96 a	11.76 e,f,g,h,i	1029.10 a,b,c,d	2.77 a	78.22 b,c,d,e,f,g
268	234.04 a,b,c,d	-468.42 a	11.42 c,d,e,f	1025.20 a,b,c,d	2.50 a	77.95 a,b,c,d
269	231.51 a	-470.91 a	12.08 g,h,i	1036.30 d	2.41 a	78.82 g
347	235.51 d	-466.57 a	10.84 a	1018.50 a	2.41 a	77.45 a
348	235.61 d	-466.54 a	10.86 a,b	1018.50 a	2.61 a	77.42 a
349	234.15 a,b,c,d	-468.25 a	11.45 c,d,e,f	1024.00 a,b,c,d	2.45 a	77.92 a,b,c,d
357	235.10 b,c,d	-466.98 a	11.29 b,c,d,e	1020.30 a,b,c	2.66 a	77.58 a,b
358	235.41 c,d	-466.81 a	11.27 a,b,c,d	1019.30 a,b	2.62 a	77.46 a
359	234.13 a,b,c,d	-468.05 a	11.72 d,e,f,g,h	1023.93 a,b,c,d	2.71 a	77.86 a,b,c,d
367	234.60 a,b,c,d	-467.56 a	11.35 c,d,e,f	1021.80 a,b,c,d	2.55 a	77.72 a,b,c
368	234.00 a,b,c,d	-468.39 a	11.24 a,b,c	1024.50 a,b,c,d	2.40 a	77.95 a,b,c,d
369	233.72 a,b,c,d	-468.76 a	11.79 f,g,h,i	1026.30 a,b,c,d	2.34 a	78.06 a,b,c,d,e,f

ตารางที่ ก14 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=2 Queue=3 Entity=60

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	326.55 a,b,c	-374.44 a,b,c	23.54 f,g	1102.50 c,d,e	10.94 b	84.11 e,f,g
148	327.77 a,b,c,d	-373.36 a,b,c	22.93 e,f	1098.50 b,c,d,e	11.12 b	84.01 e,f,g
149	324.14 a	-376.84 a	25.65 h	1111.20 e	10.70 b	84.38 g
157	326.87 a,b,c	-374.23 a,b,c	23.61 f,g	1102.40 c,d,e	11.06 b	84.19 f,g
158	327.98 a,b,c,d	-373.10 a,b,c	23.39 e,f,g	1097.90 b,c,d,e	11.29 b	84.02 e,f,g
159	323.91 a	-377.24 a	25.67 h	1112.30 e	11.11 b	84.47 g
167	327.24 a,b,c	-373.74 a,b,c	23.63 f,g	1100.00 b,c,d,e	11.08 b	84.23 f,g
168	328.34 a,b,c,d	-372.83 a,b,c	23.23 e,f	1096.90 b,c,d,e	10.97 b	84.12 e,f,g
169	323.58 a	-377.20 a	25.83 h	1112.50 e	10.89 b	84.54 g
247	327.92 a,b,c,d	-373.22 a,b,c	22.93 e,f	1097.90 b,c,d,e	11.43 b	83.38 c,d,e
248	329.93 c,d,e,f	-371.12 a,b,c	21.24 a,b	1091.60 a,b,c	11.09 b	82.93 a,b,c,d
249	324.54 a,b	-376.43 a,b	25.31 h	1109.80 d,e	10.42 b	84.17 f,g
257	327.92 a,b,c,d	-373.22 a,b,c	22.93 e,f	1097.90 b,c,d,e	11.43 b	83.38 c,d,e
258	330.18 c,d,e,f	-371.04 a,b,c	21.19 a,b	1090.40 a,b,c	11.00 b	82.88 a,b,c,d
259	323.61 a	-377.49 a	25.13 h	1112.50 e	10.82 b	84.42 g
267	327.92 a,b,c,d	-373.22 a,b,c	22.93 e,f	1097.90 b,c,d,e	11.43 b	83.38 c,d,e
268	330.00 c,d,e,f	-370.96 a,b,c	21.28 a,b	1090.80 a,b,c	11.17 b	83.00 b,c,d
269	323.99 a	-376.87 a	25.16 h	1111.40 e	10.39 b	84.29 f,g
347	334.49 f	-367.48 c	20.76 a	1076.10 a	11.47 b	82.42 a,b
348	334.15 f	-367.57 c	20.91 a	1077.50 a	11.21 b	82.50 a,b
349	329.24 b,c,d,e	-371.87 a,b,c	22.62 d,e	1093.10 a,b,c,d	10.41 b	83.25 c,d
357	333.65 e,f	-368.05 c	21.19 a,b	1079.40 a	10.93 b	82.38 a,b
358	333.73 e,f	-367.76 c	21.68 b,c	1078.80 a	11.04 b	82.24 a
359	327.50 a,b,c	-373.79 a,b,c	23.20 e,f	1099.20 b,c,d,e	9.53 a	83.59 d,e,f
367	332.62 d,e,f	-369.07 b,c	21.92 b,c	1083.00 a,b	10.80 b	82.66 a,b,c
368	332.55 d,e,f	-369.23 b,c	22.13 c,d	1084.20 a,b	11.23 b	82.67 a,b,c
369	327.55 a,b,c	-373.55 a,b,c	24.09 g	1100.20 b,c,d,e	10.69 b	83.58 d,e,f

ตารางที่ ก15 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=2 Queue=3 Entity=80

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	424.89 b,c	-275.77 c	34.16 h,i,j	1129.90 f,g,h	29.54 a,b	87.93 g,h,i,j
148	429.99 c,d,e,f	-270.92 c,d,e	32.56 e,f,g,h	1116.70 c,d,e,f,g	31.40 b	87.56 f,g,h,i,j
149	417.43 a	-283.48 a	40.01 l	1150.40 i	29.99 a,b	87.75 g,h,i,j
157	426.14 b,c	-274.60 c	33.96 g,h,i	1125.40 f,g	29.63 a,b	88.24 i,j
158	430.18 c,d,e,f	-270.62 c,d,e,f	31.83 c,d,e,f,g	1115.10 b,c,d,e,f	31.36 b	88.39 j
159	417.33 a	-283.09 a	40.34 l	1150.10 i	29.15 a,b	87.80 g,h,i,j
167	425.89 b,c	-274.82 c	33.14 f,g,h	1126.60 f,g	30.53 a,b	88.10 h,i,j
168	429.47 b,c,d,e	-271.30 c,d,e	32.00 d,e,f,g	1118.00 d,e,f,g	30.58 a,b	87.48 e,f,g,h,i
169	417.65 a	-282.88 a	40.16 l	1150.40 i	30.19 a,b	87.94 g,h,i,j
247	428.25 b,c,d	-272.69 c,d	31.84 c,d,e,f,g	1120.80 e,f,g	30.25 a,b	86.47 a,b,c
248	435.35 e,f,g	-265.69 e,f,g	28.63 a	1103.00 a,b,c,d,e	29.74 a,b	86.43 a,b,c
249	417.59 a	-282.84 a	38.94 l	1149.50 i	29.38 a,b	87.30 c,d,e,f,g,h
257	428.25 b,c,d	-272.69 c,d	31.84 c,d,e,f,g	1120.80 e,f,g	30.25 a,b	86.47 a,b,c
258	435.53 f,g	-265.52 e,f,g	28.15 a	1102.50 a,b,c,d	30.12 a,b	86.61 a,b,c,d,e
259	417.48 a	-283.06 a	39.00 l	1150.80 i	29.63 a,b	87.40 d,e,f,g,h,i
267	428.25 b,c,d	-272.69 c,d	31.84 c,d,e,f,g	1120.80 e,f,g	30.25 a,b	86.47 a,b,c
268	434.19 d,e,f,g	-266.67 d,e,f,g	29.12 a,b	1105.50 a,b,c,d,e	30.83 a,b	86.55 a,b,c,d
269	435.89 f,g	-282.12 a,b	39.22 l	1146.90 h,i	30.07 a,b	87.15 b,c,d,e,f,g
347	418.57 a	-262.87 g	29.67 a,b,c	1095.70 a	30.07 a,b	86.19 a
348	438.20 g	-263.00 g	30.06 a,b,c,d	1095.50 a	30.82 a,b	86.23 a,b
349	438.27 g	-276.16 b,c	35.23 i,j,k	1130.70 f,g,h	28.28 a,b	86.68 a,b,c,d,e
357	424.38 b,c	-264.97 e,f,g	30.14 a,b,c,d	1100.20 a,b,c,d	29.47 a,b	86.36 a,b
358	436.27 g	-263.37 g	29.85 a,b,c,d	1097.50 a,b	30.61 a,b	86.45 a,b,c
359	437.71 g	-276.20 b,c	35.98 j,k	1132.40 f,g,h	28.75 a,b	86.60 a,b,c,d,e
367	424.20 b,c	-264.38 f,g	30.79 b,c,d,e	1099.30 a,b,c	30.49 a,b	85.80 a
368	436.70 g	-265.20 e,f,g	31.19 b,c,d,e,f	1101.00 a,b,c,d	30.33 a,b	86.02 a
369	423.24 a,b	-277.18 a,b,c	36.46 k	1133.70 g,h,i	27.53 a	86.70 a,b,c,d,e,f

ตารางที่ ก16 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=2 Queue=5 Entity=40

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	231.88 a	-470.32 a	6.94 a,b,c	1035.00 a	2.29 a	78.70 a,b,c,d,e
148	232.16 a	-470.13 a	6.80 a,b,c	1033.50 a	2.09 a	78.56 a,b,c,d,e
149	230.71 a	-471.74 a	6.94 a,b,c	1040.10 a	2.14 a	79.09 e
157	231.76 a	-470.56 a	6.99 a,b,c	1035.30 a	2.32 a	78.71 b,c,d,e
158	231.83 a	-470.32 a	6.68 a,b,c	1035.00 a	2.02 a	78.67 a,b,c,d,e
159	231.12 a	-471.43 a	6.92 a,b,c	1038.10 a	2.24 a	78.94 d,e
167	232.12 a	-470.19 a	6.79 a,b,c	1033.70 a	2.23 a	78.56 a,b,c,d,e
168	231.63 a	-470.75 a	6.79 a,b,c	1036.10 a	2.22 a	78.76 b,c,d,e
169	231.64 a	-470.65 a	7.08 b,c	1035.60 a	2.17 a	78.75 b,c,d,e
247	232.87 a	-469.36 a	6.90 a,b,c	1030.60 a	2.55 a	78.34 a,b,c,d
248	232.58 a	-469.60 a	6.76 a,b,c	1031.90 a	2.37 a	78.42 a,b,c,d
249	230.73 a	-471.65 a	6.87 a,b,c	1040.30 a	2.23 a	79.09 e
257	232.87 a	-469.36 a	6.90 a,b,c	1035.60 a	2.55 a	78.34 a,b,c,d
258	232.13 a	-470.21 a	6.84 a,b,c	1033.20 a	2.29 a	78.56 a,b,c,d,e
259	231.40 a	-470.88 a	7.11 c	1036.40 a	2.37 a	78.82 b,c,d,e
267	232.87 a	-469.36 a	6.90 a,b,c	1030.60 a	2.55 a	78.34 a,b,c,d
268	232.13 a	-470.21 a	6.84 a,b,c	1033.20 a	2.29 a	78.56 a,b,c,d,e
269	231.33 a	-471.19 a	7.10 c	1037.60 a	2.32 a	78.88 c,d,e
347	233.05 a	-469.02 a	6.64 a,b,c	1030.00 a	2.42 a	78.26 a,b,c
348	233.70 a	-468.94 a	6.60 a,b	1026.50 a	2.34 a	78.07 a
349	232.02 a	-470.28 a	6.70 a,b,c	1034.40 a	2.12 a	78.62 a,b,c,d,e
357	231.95 a	-470.29 a	6.56 a	1034.60 a	2.32 a	78.61 a,b,c,d,e
358	233.27 a	-469.01 a	6.73 a,b,c	1026.90 a	2.40 a	78.21 a,b
359	232.30 a	-469.96 a	6.86 a,b,c	1033.10 a	2.23 a	78.52 a,b,c,d,e
367	232.32 a	-469.94 a	6.71 a,b,c	1033.00 a	2.31 a	78.48 a,b,c,d,e
368	232.25 a	-470.04 a	6.60 a,b	1033.10 a	2.30 a	78.53 a,b,c,d,e
369	231.30 a	-471.18 a	6.85 a,b,c	1038.00 a	2.30 a	78.89 c,d,e

ตารางที่ ก17 ผลของ Duncan's multiple range test เลือกกำหนด AGV=2 Queue=5 Entity=60

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	323.25 a	-377.77 a	17.09 d,e,f,g	1114.60 a	10.07 a	84.53 b,c,d,e
148	324.53 a	-376.52 a	17.21 d,e,f,g,h	1109.70 a	10.10 a	84.15 a,b,c,d,e
149	322.40 a	-378.37 a	18.28 i,j	1117.00 a	9.50 a	84.72 c,d,e
157	323.64 a	-377.29 a	17.48 e,f,g,h,i,j	1113.50 a	10.06 a	84.39 a,b,c,d,e
158	323.21 a	-377.66 a	17.42 e,f,g,h,i	1113.90 a	10.39 a	84.51 b,c,d,e
159	321.79 a	-379.18 a	18.16 i,j	1119.10 a	9.98 a	84.87 e
167	323.51 a	-377.38 a	17.51 f,g,h,i,j	1113.30 a	10.04 a	84.43 b,c,d,e
168	323.76 a	-377.15 a	17.20 d,e,f,g,h	1112.30 a	10.25 a	84.38 a,b,c,d,e
169	322.52 a	-378.33 a	18.33 j	1116.80 a	10.20 a	84.69 c,d,e
247	323.52 a	-377.32 a	17.15 d,e,f,g,h	1113.20 a	9.87 a	84.41 a,b,c,d,e
248	324.04 a	-376.87 a	16.68 b,c,d,e,f	1111.00 a	10.29 a	84.22 a,b,c,d,e
249	323.27 a	-377.79 a	17.94 g,h,i,j	1113.50 a	10.44 a	84.47 b,c,d,e
257	323.52 a	-377.32 a	17.15 d,e,f,g,h	1113.20 a	9.87 a	84.41 a,b,c,d,e
258	324.12 a	-376.47 a	16.57 b,c,d,e	1110.80 a	10.35 a	84.22 a,b,c,d,e
259	322.20 a	-378.70 a	18.01 h,i,j	1113.70 a	9.69 a	84.80 d,e
267	323.52 a	-377.32 a	17.15 d,e,f,g,h	1113.20 a	9.87 a	84.41 a,b,c,d,e
268	324.77 a	-375.95 a	16.56 b,c,d,e	1103.60 a	9.98 a	84.06 a,b,c,d,e
269	323.21 a	-377.86 a	18.16 i,j	1113.90 a	9.79 a	84.51 b,c,d,e
347	326.94 a	-374.07 a	15.63 a	1102.70 a	10.13 a	83.61 a,b
348	326.76 a	-374.32 a	15.85 a,b	1103.10 a	10.18 a	83.63 a,b
349	324.63 a	-376.30 a	16.70 b,c,d,e,f	1109.50 a	9.98 a	84.11 a,b,c,d,e
357	326.79 a	-374.32 a	16.15 a,b,c	1102.40 a	10.34 a	83.62 a,b
358	327.22 a	-373.90 a	16.33 a,b,c,d	1101.00 a	10.14 a	83.48 a
359	324.46 a	-376.27 a	16.88 c,d,e,f	1109.60 a	9.62 a	84.12 a,b,c,d,e
367	325.44 a	-375.29 a	16.63 b,c,d,e,f	1106.40 a	10.29 a	83.87 a,b,c,d
368	325.90 a	-375.10 a	16.64 b,c,d,e,f	1105.30 a	10.10 a	83.81 a,b,c
369	323.60 a	-377.56 a	16.98 c,d,e,f	1112.50 a	9.78 a	84.39 a,b,c,d,e

ตารางที่ ก18 ผลของ Duncan's multiple range test เมื่อกำหนด AGV=2 Queue=5 Entity=80

Rule	Flow time	Lateness	Number of jobs in central buffer	Jobs done	Tardiness	M/C utilization
147	417.24 a,b,c,d	-283.13 a,b,c,d	30.06 h,i,j,k	1150.40 b,c,d,e,f	29.34 a	87.32 e,f,g,h,i,j
148	416.71 a,b,c	-283.81 a,b,c	28.88 e,f,g,h	1152.50 d,e,f	28.90 a	87.50 f,g,h,i,j
149	414.33 a	-286.35 a,b	31.77 j,k	1159.90 e,f	27.63 a	87.94 i,j
157	416.99 a,b,c	-283.50 a,b,c	29.73 g,h,i,j	1152.00 c,d,e,f	28.07 a	87.44 f,g,h,i,j
158	418.89 a,b,c,d	-282.06 a,b,c,d	29.67 g,h,i,j	1146.80 a,b,c,d,e,f	30.66 a	87.09 d,e,f,g,h,i
159	413.65 a	-287.12 a	32.04 k	1161.00 f	27.88 a	88.01 j
167	417.12 a,b,c	-283.75 a,b,c	29.16 f,g,h,i	1151.60 c,d,e,f	28.61 a	87.62 f,g,h,i,j
168	417.01 a,b,c	-283.67 a,b,c	28.98 e,f,g,h	1152.50 d,e,f	28.26 a	87.59 f,g,h,i,j
169	414.31 a	-286.47 a,b	32.00 k	1159.60 e,f	28.41 a	87.93 i,j
247	417.80 a,b,c,d	-282.58 a,b,c,d	28.61 d,e,f,g,h	1149.10 a,b,c,d,e,f	28.97 a	87.13 d,e,f,g,h,i,j
248	421.89 b,c,d	-278.42 c,d	26.87 a,b,c,d,e	1136.70 a,b,c,d	29.52 a	86.12 a,b,c
249	414.82 a,b	-285.88 a,b	31.38 i,j,k	1156.90 e,f	28.66 a	87.78 h,i,j
257	417.80 a,b,c,d	-282.58 a,b,c,d	28.61 d,e,f,g,h	1149.10 a,b,c,d,e,f	28.97 a	87.13 d,e,f,g,h,i,j
258	420.48 a,b,c,d	-280.06 b,c,d	26.70 a,b,c,d,e	1140.80 a,b,c,d,e	27.82 a	86.48 a,b,c,d,e
259	414.70 a,b	-286.28 a,b	31.35 i,j,k	1158.90 e,f	27.63 a	87.83 h,i,j
267	417.80 a,b,c,d	-282.58 a,b,c,d	28.61 d,e,f,g,h	1149.10 a,b,c,d,e,f	28.97 a	87.13 d,e,f,g,h,i,j
268	420.83 a,b,c,d	-279.71 b,c,d	26.46 a,b,c,d	1140.30 a,b,c,d,e	28.88 a	86.40 a,b,c,d
269	415.08 a,b	-285.57 a,b	31.39 i,j,k	1157.30 e,f	28.17 a	87.75 g,h,i,j
347	424.48 d	-276.32 d	25.47 a	1130.20 a	27.90 a	85.81 a
348	423.77 c,d	-276.46 d	26.15 a,b	1133.50 a,b,c,d	29.78 a	85.91 a,b
349	419.58 a,b,c,d	-281.17 a,b,c,d	28.45 c,d,e,f,g,h	1144.00 a,b,c,d,e,f	27.42 a	86.74 b,c,d,e,f
357	423.71 c,d	-276.85 c,d	26.32 a,b,c	1132.00 a,b,c	28.12 a	85.88 a,b
358	424.49 d	-276.17 d	27.30 a,b,c,d,e,f	1131.20 a,b	28.95 a	85.79 a
359	418.92 a,b,c,d	-281.65 a,b,c,d	29.18 f,g,h,i	1146.20 a,b,c,d,e,f	27.92 a	86.87 c,d,e,f,g
367	423.61 c,d	-277.19 c,d	27.67 a,b,c,d,e,f,g	1133.50 a,b,c,d	28.75 a	85.98 a,b
368	422.61 c,d	-277.98 c,d	28.03 b,c,d,e,f,g,h	1134.40 a,b,c,d	28.64 a	86.05 a,b,c
369	418.43 a,b,c,d	-281.99 a,b,c,d	29.77 g,h,i,j	1147.10 a,b,c,d,e,f	27.51 a	87.00 d,e,f,g,h

ภาคผนวก ข ผลการจัดลำดับของกฎต่างๆ

ภาคผนวกนี้เป็นการแสดงผลการจัดลำดับของกฎต่างๆเมื่อพิจารณาดัชนีวัดประสิทธิภาพของระบบในแต่ละด้าน สำหรับส่วนผสม (Combination) ของปัจจัยด้าน กฎการจัดลำดับ (Dispatching rules) กฎการรับงาน (Pick-up rules) และ กฎการส่งงาน (Drop-off rules) เมื่อกำหนดให้ปัจจัยด้านจำนวน AGV Queue และ Entity คงที่ ผลที่ได้แสดงดังตารางที่ ข1 ถึง ข18 และตารางที่ ข19 เป็นตารางสรุปผลการจัดลำดับของกฎต่างๆเมื่อพิจารณารวมทุกๆกรณี โดยการนำค่าเฉลี่ยของตารางที่ ข1 ถึง ข18 มาหาค่าเฉลี่ยอีกครั้งหนึ่งแล้วพิจารณาว่ากฎใดให้ค่าเฉลี่ยน้อยที่สุดจะถือว่ากฎนั้นเป็นกฎที่ดีที่สุด

จากตารางส่วนผสมของกฎทั้งสามเมื่อรวมกันจะเรียกว่ากฎ (Rule) ซึ่งประกอบด้วยตัวเลขสามตัว (3 หลัก) แต่ละตัวมีความหมายดังนี้

เลข 1 หมายถึง กฎ First Serve Next Station (FSNS)

เลข 2 หมายถึง กฎ Maximum Outgoing Queue Size (MOQS)

เลข 3 หมายถึง กฎ Serve Same Destination (SSD)

เลข 4 หมายถึง กฎ First Come First Serve (FCFS)

เลข 5 หมายถึง กฎ Maximum Outgoing Queue Size (MOQS)

เลข 6 หมายถึง กฎ Shortest Distance (SD)

เลข 7 หมายถึง กฎ First In First Out (FIFO)

เลข 8 หมายถึง กฎ Minimum Operation Remaining (MOR)

เลข 9 หมายถึง กฎ Nearest Destination (ND)

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

ตารางที่ ข1 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 1 Queue = 1 Entity = 40

Rule	การจัดลำดับของดัชนีวัดประสิทธิภาพของระบบด้านต่างๆ						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	14	14	21	9	13	9	13.33
148	21	20	25	3	21	16	17.67
149	5	5	17	20	5	5	9.50
157	13	13	22	8	14	14	14.00
158	20	22	24	1	20	18	17.50
159	4	4	16	21	4	6	9.17
167	18	18	26	6	18	13	16.50
168	23	23	27	2	23	17	19.17
169	6	6	23	19	6	4	10.67
247	10	10	3	15	10	10	9.67
248	15	15	2	7	15	15	11.50
249	2	2	8	25	1	2	6.67
257	10	10	3	15	10	10	9.67
258	17	17	1	4	17	21	12.83
259	1	1	7	26	2	3	6.67
267	10	10	3	15	10	10	9.67
268	16	16	6	5	16	20	13.17
269	3	3	9	27	3	1	7.67
347	19	19	15	14	19	23	18.17
348	24	24	11	11	24	24	19.67
349	8	8	14	23	7	7	11.17
357	22	21	13	13	22	22	18.83
358	26	25	10	10	25	25	20.17
359	7	7	12	24	8	8	11.00
367	25	26	19	18	26	26	23.33
368	27	27	18	12	27	27	23.00
369	9	9	20	22	9	19	14.67

ตารางที่ ข2 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 1 Queue = 1 Entity = 60

Rule	ลำดับของกฎต่างๆเมื่อพิจารณาดัชนีวัดประสิทธิภาพของระบบแต่ละด้าน						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	13	13	21	8	13	12	13.33
148	19	19	24	2	19	18	16.83
149	6	6	19	20	6	4	10.17
157	13	13	21	8	13	12	13.33
158	19	19	24	2	19	18	16.83
159	6	6	19	20	6	4	10.17
167	18	18	26	6	18	14	16.67
168	21	21	27	1	21	20	18.50
169	8	8	23	19	8	6	12.00
247	10	10	1	10	10	9	8.33
248	15	15	1	4	15	15	10.83
249	1	1	6	22	1	1	5.33
257	10	10	1	10	10	9	8.33
258	15	15	1	4	15	15	10.83
259	1	1	6	22	1	1	5.33
267	10	10	1	10	10	9	8.33
268	17	17	8	7	17	17	13.83
269	3	3	9	25	1	3	7.33
347	22	22	14	16	22	22	19.67
348	25	25	10	13	25	24	20.33
349	4	4	13	26	4	8	9.83
357	22	22	14	16	22	22	19.67
358	25	25	10	13	25	24	20.33
359	5	5	12	27	4	7	10.00
367	24	24	16	18	24	26	22.00
368	27	27	17	15	27	27	23.33
369	9	9	18	24	9	21	15.00

ตารางที่ ข3 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 1 Queue = 1 Entity = 80

Rule	ลำดับของกฎต่างๆเมื่อพิจารณาดัชนีวัดประสิทธิภาพของระบบแต่ละด้าน						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	13	13	21	8	13	12	13.33
148	19	19	24	2	19	18	16.83
149	6	6	19	20	6	4	10.17
157	13	13	21	8	13	12	13.33
158	19	19	24	2	19	18	16.83
159	6	6	19	20	6	4	10.17
167	18	18	26	6	18	17	17.17
168	21	21	27	1	21	20	18.50
169	8	8	23	17	8	6	11.67
247	10	10	1	10	10	9	8.33
248	15	15	1	4	15	14	10.67
249	1	2	1	23	2	1	5.00
257	10	10	1	10	10	9	8.33
258	15	16	1	4	15	14	10.83
259	1	2	1	23	2	1	5.00
267	10	10	1	10	10	9	8.33
268	17	17	8	7	17	16	13.67
269	3	1	9	22	1	3	6.50
347	22	22	14	18	22	22	20.00
348	25	25	10	13	25	24	20.33
349	4	4	12	25	4	7	9.33
357	22	22	14	18	22	22	20.00
358	25	25	10	13	25	24	20.33
359	4	4	12	25	4	7	9.33
367	24	24	17	16	24	27	22.00
368	27	27	16	15	27	26	23.00
369	9	9	18	27	9	21	15.50

ตารางที่ ข4 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 1 Queue = 3 Entity = 40

Rule	ลำดับของกฎต่างๆเมื่อพิจารณาดัชนีวัดประสิทธิภาพของระบบแต่ละด้าน						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	7	7	8	17	7	7	8.83
148	10	10	9	10	10	10	9.83
149	3	3	3	25	3	1	6.33
157	8	8	4	15	8	9	8.67
158	12	12	6	11	12	15	11.33
159	1	1	2	27	1	3	5.83
167	9	9	5	19	9	8	9.83
168	11	11	7	14	11	11	10.83
169	2	2	1	26	1	2	5.67
247	13	13	13	4	13	12	11.33
248	19	19	21	3	18	17	16.17
249	6	6	12	23	6	5	9.67
257	13	13	13	4	13	12	11.33
258	17	17	19	1	17	18	14.83
259	4	4	10	22	4	4	8.00
267	13	13	13	4	13	12	11.33
268	18	18	20	2	18	16	15.33
269	5	5	11	24	5	6	9.33
347	27	27	25	7	27	24	22.83
348	26	26	24	8	26	22	22.00
349	21	21	17	12	21	19	18.50
357	24	24	27	13	24	26	23.00
358	25	25	26	9	25	27	22.83
359	20	20	18	18	20	21	19.50
367	22	22	22	16	22	25	21.50
368	23	23	23	20	23	23	22.50
369	16	16	16	21	16	20	17.50

ตารางที่ ข5 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 1 Queue = 3 Entity = 60

Rule	ลำดับของกฎต่างๆเมื่อพิจารณาดัชนีวัดประสิทธิภาพของระบบแต่ละด้าน						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	9	9	13	11	9	9	10.00
148	11	11	16	4	11	15	11.33
149	2	2	5	25	2	5	6.83
157	10	10	12	12	10	14	11.33
158	17	17	14	5	17	18	14.67
159	3	3	1	27	3	6	7.17
167	7	7	24	7	7	7	9.83
168	8	8	27	6	8	8	10.83
169	1	1	18	26	1	1	8.00
247	13	13	6	8	13	10	10.50
248	21	21	4	1	21	21	14.83
249	6	6	10	22	6	4	9.00
257	13	13	6	8	13	10	10.50
258	20	20	3	3	20	20	14.33
259	5	5	11	20	5	3	8.17
267	13	13	6	8	13	10	10.50
268	19	19	2	2	19	19	13.33
269	4	4	9	23	4	2	7.67
347	24	24	22	15	24	22	21.83
348	27	27	21	13	27	27	23.67
349	18	18	20	19	18	16	18.17
357	23	23	19	16	23	23	21.17
358	26	26	15	14	26	25	22.00
359	12	12	17	21	12	13	14.50
367	22	22	26	18	22	24	22.33
368	25	25	25	17	25	26	23.83
369	16	16	23	24	16	17	18.67

ตารางที่ ข6 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 1 Queue = 3 Entity = 80

Rule	ลำดับของกฎต่างๆเมื่อพิจารณาด้านขีดประสิทธิภาพของระบบแต่ละด้าน						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	10	10	21	5	10	10	11.00
148	14	14	23	1	14	13	13.17
149	2	2	17	20	2	2	7.50
157	10	10	21	5	10	10	11.00
158	14	14	24	1	14	13	13.33
159	3	3	18	21	3	3	8.50
167	7	7	26	3	7	7	9.50
168	8	8	27	4	8	8	10.50
169	1	1	25	19	1	1	8.00
247	16	16	4	7	16	16	12.50
248	19	19	2	10	19	20	14.83
249	6	6	7	25	6	6	9.33
257	16	16	4	10	16	16	13.00
258	21	21	1	8	21	21	15.50
259	5	5	8	26	5	5	9.00
267	16	16	4	10	16	16	13.00
268	20	20	3	9	20	19	15.17
269	4	4	9	27	4	4	8.67
347	23	23	15	16	23	23	20.50
348	27	27	11	14	27	25	21.83
349	13	12	13	23	12	12	14.17
357	22	22	14	17	22	22	19.83
358	26	26	10	13	26	24	20.83
359	9	9	12	24	9	9	12.00
367	24	24	20	18	24	26	22.67
368	25	25	16	15	25	27	22.17
369	12	13	19	22	13	15	15.67

ตารางที่ ข7 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 1 Queue = 5 Entity = 40

Rule	การจัดลำดับของดัชนีวัดประสิทธิภาพของระบบด้านต่างๆ						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	9	9	9	19	9	10	10.83
148	12	12	12	15	12	15	13.00
149	3	3	3	25	3	2	6.50
157	7	7	7	21	7	9	9.67
158	11	11	11	16	11	7	11.17
159	1	1	1	27	1	4	5.83
167	8	8	4	20	8	8	9.33
168	10	10	10	18	10	14	12.00
169	2	2	2	26	2	1	5.83
247	13	13	13	7	13	11	11.67
248	21	21	21	1	21	16	16.83
249	5	5	6	22	5	5	8.00
257	13	13	13	7	13	11	11.67
258	19	19	19	2	19	19	16.17
259	4	4	5	23	4	3	7.17
267	13	13	13	7	13	11	11.67
268	20	20	20	3	20	20	17.17
269	6	6	8	24	6	6	9.33
347	27	27	27	4	27	26	23.00
348	26	26	24	5	26	24	21.83
349	23	23	23	6	23	22	20.00
357	25	25	25	10	24	27	22.67
358	24	24	26	11	25	25	22.50
359	22	22	22	12	22	23	20.50
367	18	18	18	13	18	21	17.67
368	17	17	17	14	17	18	16.67
369	16	16	16	17	16	17	16.33

ตารางที่ ข8 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 1 Queue = 5 Entity = 60

Rule	ลำดับของกฎต่างๆเมื่อพิจารณาดัชนีวัดประสิทธิภาพของระบบแต่ละด้าน						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	6	6	7	15	6	7	7.83
148	9	9	8	9	9	11	9.17
149	1	1	3	25	1	1	5.33
157	8	8	4	17	8	12	9.50
158	12	12	5	7	12	13	10.17
159	2	2	2	26	2	2	6.00
167	10	10	6	16	11	18	11.83
168	11	11	9	11	10	14	11.00
169	3	3	1	27	3	3	6.67
247	13	13	13	4	13	8	10.67
248	16	16	17	2	16	15	13.67
249	7	7	12	19	7	5	9.50
257	13	13	13	4	13	8	10.67
258	18	18	19	3	18	17	15.50
259	5	5	11	18	5	6	8.33
267	13	13	13	4	13	8	10.67
268	17	17	18	1	17	16	14.33
269	4	4	10	21	4	4	7.83
347	26	26	25	8	26	24	22.50
348	25	25	24	10	25	25	22.33
349	21	21	20	14	21	20	19.50
357	27	27	27	12	27	27	24.50
358	24	24	26	13	24	23	22.33
359	20	20	22	20	20	21	20.50
367	23	23	23	23	23	26	23.50
368	22	22	21	22	22	22	21.83
369	19	19	16	24	19	19	19.33

ตารางที่ ข9 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 1 Queue = 5 Entity = 80

Rule	ลำดับของกฎต่างๆเมื่อพิจารณาดัชนีวัดประสิทธิภาพของระบบแต่ละด้าน						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	9	9	4	10	9	12	8.83
148	13	13	6	8	13	15	11.33
149	2	2	2	25	1	2	5.67
157	14	14	5	11	14	17	12.50
158	18	18	7	7	18	19	14.50
159	6	6	1	26	6	6	8.50
167	8	8	8	12	8	11	9.17
168	7	7	12	9	7	7	8.17
169	1	1	3	27	1	3	6.00
247	10	10	13	4	10	8	9.17
248	15	16	16	3	16	14	13.33
249	4	4	9	16	4	5	7.00
257	10	10	13	4	10	8	9.17
258	16	15	17	1	15	13	12.83
259	3	3	10	13	3	1	5.50
267	10	10	13	4	10	8	9.17
268	17	17	18	2	17	16	14.50
269	5	5	11	14	5	4	7.33
347	26	26	26	18	26	26	24.67
348	27	27	27	17	27	27	25.33
349	21	21	21	20	21	21	20.83
357	24	24	23	19	24	23	22.83
358	25	25	22	15	25	25	22.83
359	20	20	19	22	20	18	19.83
367	23	23	24	23	23	24	23.33
368	22	22	25	21	22	22	22.33
369	19	19	20	24	19	20	20.17

ตารางที่ ข10 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 2 Queue = 1 Entity = 40

Rule	ลำดับของกฎต่างๆเมื่อพิจารณาด้วยวิธีประสิทธิภาพของระบบแต่ละด้าน						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	16	16	16	15	16	9	14.67
148	15	15	12	2	15	23	13.67
149	1	1	19	23	1	8	8.83
157	13	13	10	13	13	18	13.33
158	21	22	13	7	22	17	17.00
159	2	2	21	24	2	5	9.33
167	14	14	18	14	14	20	15.67
168	24	23	23	8	24	26	21.33
169	3	3	22	22	3	1	9.00
247	10	10	5	16	10	13	10.67
248	25	25	4	5	25	25	18.17
249	7	7	27	27	6	11	14.17
257	10	10	5	16	10	13	10.67
258	27	26	8	6	27	24	19.67
259	5	6	26	26	5	7	12.50
267	10	10	5	16	10	13	10.67
268	23	21	2	9	23	27	17.50
269	4	4	25	25	4	6	11.33
347	19	19	11	10	19	19	16.17
348	22	24	3	1	20	10	13.33
349	6	5	15	19	7	4	9.33
357	17	17	9	12	17	22	15.67
358	20	20	1	3	21	16	13.50
359	9	9	14	20	9	3	10.67
367	18	18	20	11	18	21	17.67
368	26	27	17	4	26	12	18.67
369	8	8	24	21	8	2	11.83

ตารางที่ ข11 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 2 Queue = 1 Entity = 60

Rule	ลำดับของกฎต่างๆเมื่อพิจารณาดัชนีวัดประสิทธิภาพของระบบแต่ละด้าน						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	14	15	14	6	14	7	11.67
148	26	26	16	2	26	24	20.00
149	2	2	23	20	3	5	9.17
157	17	16	12	9	17	9	13.33
158	25	25	15	3	25	19	18.67
159	3	3	24	24	5	3	10.33
167	16	17	17	4	16	6	12.67
168	27	27	19	1	27	11	18.67
169	5	4	26	22	4	4	10.83
247	11	11	5	16	10	15	11.33
248	21	21	2	13	21	25	17.17
249	6	6	27	26	6	13	14.00
257	11	11	5	16	10	15	11.33
258	19	18	1	10	19	23	15.00
259	4	7	25	27	2	14	13.17
267	11	11	5	16	10	15	11.33
268	18	19	3	11	20	27	16.33
269	1	1	22	25	1	22	12.00
347	15	14	10	15	15	12	13.50
348	22	23	8	5	22	18	16.33
349	9	8	20	23	8	2	11.67
357	10	10	9	14	13	10	11.00
358	23	22	4	8	22	26	17.50
359	8	8	18	21	9	8	12.00
367	20	20	13	12	18	21	17.33
368	24	24	11	7	24	20	18.33
369	7	5	21	19	7	1	10.00

ตารางที่ ข12 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 2 Queue = 1 Entry = 80

Rule	ลำดับของกฎต่างๆเมื่อพิจารณาด้วยวิธีประสิทธิภาพของระบบแต่ละด้าน						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	15	15	14	6	15	2	11.17
148	24	24	15	2	24	5	15.67
149	2	2	22	20	1	9	9.33
157	16	16	13	5	16	1	11.17
158	26	26	16	3	26	12	18.17
159	5	6	21	21	5	10	11.33
167	20	20	19	4	20	6	14.83
168	27	27	27	1	27	3	18.67
169	8	7	26	19	7	7	12.33
247	10	10	4	16	10	18	11.33
248	19	19	2	12	19	25	16.00
249	3	4	25	27	2	26	14.50
257	10	10	4	16	10	18	11.33
258	18	17	1	11	18	22	14.50
259	1	1	20	25	3	17	11.17
267	10	10	4	16	10	18	11.33
268	21	21	3	8	21	21	15.33
269	7	8	23	26	7	16	14.50
347	14	14	10	14	14	13	13.17
348	22	22	8	7	22	23	17.33
349	6	5	17	23	6	11	11.33
357	13	13	9	15	13	24	14.50
358	23	23	7	9	23	14	16.50
359	9	9	18	24	9	8	12.83
367	17	17	11	13	17	15	15.00
368	25	25	12	10	25	27	20.67
369	4	3	24	22	4	4	10.17

ตารางที่ ข13 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 2 Queue = 3 Entity = 40

Rule	ลำดับของกฎต่างๆเมื่อพิจารณาด้วยวัดประสิทธิภาพของระบบแต่ละด้าน						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	15	11	15	15	15	10	13.50
148	9	7	9	12	9	21	11.17
149	2	2	2	22	1	13	7.00
157	10	10	10	19	11	12	12.00
158	11	12	11	13	10	15	12.00
159	3	3	3	26	3	2	6.67
167	8	9	8	21	8	11	10.83
168	7	7	7	11	7	1	6.67
169	4	4	5	27	5	4	8.17
247	12	13	12	16	12	25	15.00
248	19	17	21	9	19	18	17.17
249	5	5	4	24	4	14	9.33
257	12	13	12	16	12	25	15.00
258	17	20	17	7	17	5	13.83
259	6	6	6	25	6	17	11.00
267	12	13	12	16	12	25	15.00
268	20	18	19	8	18	16	16.50
269	1	1	1	23	1	8	5.83
347	26	26	26	1	26	7	18.67
348	27	27	27	2	27	20	21.67
349	22	21	20	10	21	9	17.17
357	24	24	24	5	24	23	20.67
358	25	25	25	4	25	22	21.00
359	21	22	22	14	22	24	20.83
367	23	23	23	6	23	19	19.50
368	18	19	18	3	20	6	14.00
369	16	16	16	20	16	3	14.50

ตารางที่ ข14 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 2 Queue = 3 Entity = 60

Rule	ลำดับของกฎต่างๆเมื่อพิจารณาดัชนีวัดประสิทธิภาพของระบบแต่ละด้าน						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	7	7	10	18	7	11	10.00
148	12	12	12	11	12	19	13.00
149	5	5	4	25	5	6	8.33
157	8	8	7	19	8	15	10.83
158	16	16	11	17	13	23	16.00
159	3	2	2	26	3	18	9.00
167	9	10	6	20	10	16	11.83
168	17	17	9	16	17	12	14.67
169	1	3	1	27	1	9	7.00
247	13	13	15	12	13	24	15.00
248	19	19	20	5	19	17	16.50
249	6	6	8	24	6	4	9.00
257	13	13	15	12	13	24	15.00
258	21	20	21	4	21	13	16.67
259	2	1	3	22	1	8	6.17
267	13	13	15	12	13	24	15.00
268	20	21	19	6	20	20	17.67
269	4	4	5	23	4	2	7.00
347	27	27	25	1	27	27	22.33
348	26	26	24	2	26	21	20.83
349	18	18	18	10	18	3	14.17
357	24	24	26	3	24	10	18.50
358	25	25	27	7	25	14	20.50
359	10	9	13	15	11	1	9.83
367	23	23	23	8	23	7	17.83
368	22	22	22	9	22	22	19.83
369	11	11	14	21	9	5	11.83

ตารางที่ ข15 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 2 Queue = 3 Entity = 80

Rule	ลำดับของกฎต่างๆเมื่อพิจารณาด้วยวัดประสิทธิภาพของระบบแต่ละด้าน						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	10	10	5	18	10	7	10.00
148	17	17	8	15	17	27	16.83
149	2	1	7	25	2	11	8.00
157	12	12	2	17	12	9	10.67
158	18	18	1	10	18	26	15.17
159	1	2	6	27	4	4	7.33
167	11	11	3	16	11	21	12.17
168	16	16	9	14	16	22	15.50
169	5	4	4	26	2	15	9.33
247	13	13	18	11	13	16	14.00
248	20	20	22	2	20	10	15.67
249	4	5	11	22	5	5	8.67
257	13	13	18	11	13	16	14.00
258	21	21	15	1	21	14	15.50
259	3	3	10	23	1	8	8.00
267	13	13	18	11	13	16	14.00
268	19	19	17	3	19	25	17.00
269	6	6	12	24	6	13	11.17
347	26	27	25	4	26	12	20.00
348	27	26	24	6	27	24	22.33
349	9	9	14	19	9	2	10.33
357	23	23	23	7	23	6	17.50
358	25	25	21	5	25	23	20.67
359	8	8	16	20	8	3	10.50
367	24	24	27	8	24	20	21.17
368	22	22	26	9	22	19	20.00
369	7	7	13	21	7	1	9.33

ตารางที่ ข16 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 2 Queue = 5 Entity = 40

Rule	ลำดับของกฎต่างๆเมื่อพิจารณาด้วยวิธีประสิทธิภาพของระบบแต่ละด้าน						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	11	10	10	23	10	11	12.50
148	17	17	15	12	15	2	13.00
149	1	1	1	22	2	4	5.17
157	9	9	9	24	9	17	12.83
158	10	10	11	5	10	1	7.83
159	3	3	3	21	3	10	7.17
167	14	16	14	10	14	8	12.67
168	7	7	7	11	7	6	7.50
169	8	8	8	25	8	5	10.33
247	22	22	22	18	22	25	21.83
248	21	21	21	9	21	22	19.17
249	2	2	2	17	1	7	5.17
257	22	22	22	18	22	26	22.00
258	15	14	16	13	16	12	14.33
259	6	6	6	27	6	21	12.00
267	22	22	22	18	22	27	22.17
268	15	14	16	13	16	12	14.33
269	5	4	5	26	5	19	10.67
347	25	25	25	4	25	24	21.33
348	27	27	27	3	27	20	21.83
349	13	13	12	6	13	3	10.00
357	12	12	13	1	12	18	11.33
358	26	26	26	8	26	23	22.50
359	19	19	19	16	18	9	16.67
367	20	20	20	7	20	16	17.17
368	18	18	18	2	18	15	14.83
369	4	5	4	15	4	14	7.67

ตารางที่ ข17 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 2 Queue = 5 Entity = 60

Rule	ลำดับของกฎต่างๆเมื่อพิจารณาชนิดวัดประสิทธิภาพของระบบแต่ละด้าน						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	7	7	5	13	5	14	8.50
148	19	17	18	18	18	15	17.50
149	3	3	3	26	3	1	6.50
157	14	14	14	20	8	13	13.83
158	5	8	6	19	6	26	11.67
159	1	1	1	25	1	9	6.33
167	9	10	9	21	10	12	11.83
168	15	15	15	17	15	21	16.33
169	4	4	4	27	4	20	10.50
247	10	11	10	14	11	6	10.33
248	16	16	16	9	16	22	15.83
249	8	6	8	22	8	27	13.17
257	10	11	10	14	11	6	10.33
258	17	18	17	6	17	25	16.67
259	2	2	2	23	2	3	5.67
267	10	11	10	14	11	6	10.33
268	21	21	21	5	21	10	16.50
269	6	5	7	24	6	5	8.83
347	26	26	26	1	25	17	20.17
348	24	24	24	2	24	19	19.50
349	20	19	20	10	20	11	16.67
357	25	24	25	3	26	24	21.17
358	27	27	27	4	27	18	21.67
359	18	20	19	11	19	2	14.83
367	22	22	22	7	22	23	19.67
368	23	23	23	8	23	16	19.33
369	13	9	13	12	14	4	10.83

ตารางที่ ข18 ผลการจัดลำดับกฎต่างๆ เมื่อกำหนดให้ AGV = 2 Queue = 5 Entity = 80

Rule	ลำดับของกฎต่างๆเมื่อพิจารณาด้วยวัดประสิทธิภาพของระบบแต่ละด้าน						
	Flow time	Lateness	M/C utilization	Number of jobs in central buffer	Jobs done	Tardiness	Average
147	11	11	11	21	11	24	14.83
148	7	7	9	14	7	19	10.50
149	3	3	2	25	2	3	6.33
157	8	10	10	19	9	9	10.83
158	16	15	15	18	16	27	17.83
159	1	1	1	27	1	6	6.17
167	10	8	7	16	10	14	10.83
168	9	9	8	15	7	12	10.00
169	2	2	3	26	3	13	8.17
247	12	12	12	11	12	21	13.33
248	21	21	21	6	21	25	19.17
249	5	5	5	23	6	16	10.00
257	12	12	12	11	12	21	13.33
258	19	19	19	5	19	5	14.33
259	4	4	4	22	4	4	7.00
267	12	12	12	11	12	21	13.33
268	20	20	20	4	20	18	17.00
269	6	6	6	24	5	11	9.67
347	26	26	26	1	27	7	18.83
348	25	25	24	2	23	26	20.83
349	18	18	18	10	18	1	13.83
357	24	24	25	3	25	10	18.50
358	27	27	27	7	26	20	22.33
359	17	17	17	17	17	8	15.50
367	23	23	23	8	23	17	19.50
368	22	22	22	9	22	15	18.67
369	15	16	16	20	15	2	14.00

ตารางที่ ข19 ค่าเฉลี่ยของการจัดลำดับของกฎต่างๆในแต่ละกรณีและค่าเฉลี่ยเมื่อพิจารณารวมทุกกรณี

ค่าเฉลี่ยของการจัดลำดับกฎต่างๆสำหรับกรณีที่																		
Rule	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
147	14.33	13.33	13.33	8.83	10.00	11.00	13.83	7.83	8.83	14.67	11.67	11.17	13.50	10.00	10.00	12.50	8.50	14.83
148	17.83	16.83	16.83	9.83	11.33	13.17	15.33	9.17	11.33	13.67	20.00	15.67	11.17	13.00	16.83	13.00	17.50	10.50
149	10.83	10.17	10.17	6.33	6.83	7.50	10.17	5.33	5.67	8.83	9.17	9.33	7.00	8.33	8.00	5.17	6.50	6.33
157	14.33	13.33	13.33	8.67	11.33	11.00	12.50	9.50	12.50	13.33	13.33	11.17	12.00	10.83	10.67	12.83	13.83	10.83
158	17.33	16.83	16.83	11.33	14.67	13.33	13.17	10.17	14.50	17.00	18.67	18.17	12.00	16.00	15.17	7.83	11.67	17.83
159	10.17	10.17	10.17	5.83	7.17	8.50	9.33	6.00	8.50	9.33	10.33	11.33	6.67	9.00	7.33	7.17	6.33	6.17
167	15.67	16.67	17.17	9.83	9.83	9.50	11.50	11.83	9.17	15.67	12.67	14.83	10.83	11.83	12.17	12.67	11.83	10.83
168	18.00	18.50	18.50	10.83	10.83	10.50	13.67	11.00	8.17	21.33	18.87	18.87	8.87	14.67	15.50	7.50	16.33	10.00
169	10.00	12.00	11.67	5.67	8.00	8.00	8.67	6.67	6.00	9.00	10.83	12.33	8.17	7.00	9.33	10.33	10.50	8.17
247	12.17	8.33	8.33	11.33	10.50	12.50	12.50	10.67	9.17	10.67	11.33	11.33	15.00	15.00	14.00	21.83	10.33	13.33
248	14.00	10.83	10.67	16.17	14.83	14.83	16.17	13.67	13.33	18.17	17.17	16.00	17.17	16.50	15.67	18.17	15.83	19.17
249	8.00	5.33	5.00	9.67	9.00	9.33	9.83	9.50	7.00	14.17	14.00	14.50	9.33	9.00	8.67	5.17	13.17	10.00
257	11.67	8.33	8.33	11.33	10.50	13.00	11.67	10.67	9.17	10.67	11.33	11.33	15.00	15.00	14.00	22.00	10.33	13.33
258	15.00	10.83	10.83	14.83	14.33	15.50	15.17	15.50	12.83	19.67	15.00	14.50	13.83	16.67	15.50	14.33	16.67	14.33
259	7.67	5.33	5.00	8.00	8.17	9.00	8.67	8.33	5.50	12.50	13.17	11.17	11.00	6.17	8.00	12.00	5.67	7.00
267	11.17	8.33	8.33	11.33	10.50	13.00	11.50	10.67	9.17	10.67	11.33	11.33	15.00	15.00	14.00	22.17	10.33	13.33
268	14.00	13.83	13.67	15.33	13.33	15.17	15.67	14.33	14.50	17.50	16.33	15.83	16.50	17.87	17.00	14.33	16.50	17.00
269	7.83	7.33	6.50	9.33	7.67	8.67	10.00	7.83	7.33	11.33	12.00	14.50	5.83	7.00	11.17	10.67	8.83	9.67
347	17.17	19.67	20.00	22.83	21.83	20.50	20.00	22.50	24.67	16.17	13.50	13.17	18.67	22.33	20.00	21.33	20.17	18.83
348	19.17	20.33	20.33	22.00	23.67	21.83	18.83	22.33	25.33	13.33	16.33	17.33	21.67	20.83	22.33	21.83	19.50	20.83
349	10.00	9.83	9.33	18.50	18.17	14.17	17.33	19.50	20.83	9.33	11.67	11.33	17.17	14.17	10.33	10.00	16.87	13.83
357	17.67	19.67	20.00	23.00	21.17	19.83	19.67	24.50	22.83	15.67	11.00	14.50	20.67	18.50	17.50	11.33	21.17	18.50
358	19.00	20.33	20.33	22.83	22.00	20.83	19.17	22.33	22.83	13.50	17.50	16.50	21.00	20.50	20.87	22.50	21.67	22.33
359	9.50	10.00	9.33	19.50	14.50	12.00	17.50	20.50	19.83	10.67	12.00	12.83	20.83	9.83	10.50	16.67	14.83	15.50
367	20.67	22.00	22.00	21.50	22.33	22.67	15.17	23.50	23.33	17.67	17.33	15.00	19.50	17.83	21.17	17.17	19.67	19.50
368	20.33	23.33	23.00	22.50	23.83	22.17	14.17	21.83	22.33	18.67	18.33	20.67	14.00	19.83	20.00	14.83	19.33	18.67
369	11.50	15.00	15.50	17.50	18.67	15.67	13.83	19.33	20.17	11.83	10.00	10.17	14.50	11.83	9.33	7.67	10.83	14.00

ภาคผนวก ค

ตัวอย่างไฟล์ตัวหนังสือของแบบจำลองปัญหาที่ทำการศึกษา

ภาคผนวกนี้เป็นการแสดงตัวอย่างไฟล์ตัวหนังสือของแบบจำลอง ซึ่งจะแยกเป็น 2 ส่วน คือ ส่วนของ Model และ Experiment ซึ่งแต่ละส่วนแสดงดังนี้

ส่วนของ Model

```

481$      CREATE,          20;
431$      ASSIGN:         B=B+1;
Chkcon2   QUEUE,          Chkcon2;
432$      SCAN:           ((Cap(1)<2).and.(Z0>0)).or.(Cap(2)<2).and.(Z0>0));
433$      BRANCH,         1:
If, (Cap(1)<2).or.(Cap(2)<2), Z0, Yes:
Else, Chkcon2, Yes;
Z0        BRANCH,         1:
If, Z0>1, 232$, Yes:
Else, Z1, Yes;
232$      BRANCH,         1:
If, (Cap(1)==0).and.(Cap(2)==0), 233$, Yes:
Else, 325$, Yes;
233$      BRANCH,         1:
If, L0>0, 234$, Yes:
Else, 235$, Yes;
234$      ASSIGN:         Compare0=10000:
Select0=0:
Unit0=0;
291$      ASSIGN:         i=1;
237$      WHILE:          i<=11;
238$      BRANCH,         1:
If, lock(i)==1, 239$, Yes:
Else, 246$, Yes;
239$      ASSIGN:         Unit=1;
240$      WHILE:          Unit<=2;
241$      ASSIGN:         Cmp(unit)=IDSNET(AgvPath, LT(Agv, Unit), i):
Sel (Unit)=i;
262$      ASSIGN:         Unit=Unit+1;
242$      ENDWHILE;
243$      BRANCH,         1:
If, Cmp(1)<=Cmp(2), 244$, Yes:
Else, 247$, Yes;
244$      BRANCH,         1:
If, Compare0>Cmp(1), 245$, Yes:
Else, 246$, Yes;
245$      ASSIGN:         Compare0=Cmp(1):
Unit0=1:
Select0=i;
246$      ASSIGN:         i=i+1;
263$      ENDWHILE;
292$      ASSIGN:         Unit=Unit0;
261$      ASSIGN:         Cmp (Unit)=Compare0:
Sel (Unit)=Select0:
N=Select0;
293$      ASSIGN:         Lock(N)=0:
L0=L0-1:
Que=N+11:
Nex=Aque (Que, 1, 18);
EVE       ASSIGN:         AgvCtrl (Unit, Cap (Unit) +1)=Sel (Unit):
AgvCtrl (Unit, Cap (Unit) +3)=Nex:
AgvCtrl (Unit, Cap (Unit) +5)=0:
Cap (Unit)=Cap (Unit) +1:
Z0=Z0-1:NEXT (K);
K         BRANCH,         1:
If, Unit==1, 266$, Yes:
Else, 277$, Yes;
266$      BRANCH,         1:
If, Cap(1)==1, 267$, Yes:
Else, 272$, Yes;
267$      BRANCH,         1:
If, N<=11, 268$, Yes:
Else, 269$, Yes;
268$      ASSIGN:         A(23, entatrank(1, queueset(n+11)))=1;
    
```

```

u4          REMOVE:      1, queueset (n+11), Dummy1: NEXT (chkcon2);
Dummy1     RELEASE:     BefQset (setindex), 1;
Dummy      QUEUE,      Dummyset (setindex), 4: DETACH;
269$       BRANCH,
           1:
           If, N==12, 270$, Yes:
           Else, 271$, Yes:
270$       ASSIGN:      A(23, entatrank(1, q))=1;
u5         REMOVE:     1, Q, Dq: NEXT (chkcon2);
Dq         QUEUE,      D12, 4: DETACH;
271$       ASSIGN:      A(23, entatrank(1, Agvque))=1;
u6         REMOVE:     1, Agvque, Dagvque: NEXT (chkcon2);
Dagvque    QUEUE,      D13, 4: DETACH;
272$       BRANCH,
           1:
           If, N<=11, 273$, Yes:
           Else, 274$, Yes:
273$       ASSIGN:      A(24, entatrank(1, queueset (n+11)))=1: NEXT (u4);
274$       BRANCH,
           1:
           If, N==12, 275$, Yes:
           Else, 276$, Yes:
275$       ASSIGN:      A(24, entatrank(1, q))=1: NEXT (u5);
276$       ASSIGN:      A(24, entatrank(1, Agvque))=1: NEXT (u6);
277$       BRANCH,
           1:
           If, Cap(2)==1, 278$, Yes:
           Else, 286$, Yes:
278$       BRANCH,
           1:
           If, N<=11, 279$, Yes:
           Else, 281$, Yes:
279$       ASSIGN:      A(25, entatrank(1, queueset (n+11)))=1;
280$       REMOVE:     1, queueset (n+11), Dummy1: NEXT (chkcon2);
281$       BRANCH,
           1:
           If, N==12, 282$, Yes:
           Else, 284$, Yes:
282$       ASSIGN:      A(25, entatrank(1, Q))=1;
283$       REMOVE:     1, Q, Dq: NEXT (chkcon2);
284$       ASSIGN:      A(25, entatrank(1, AgvQue))=1;
285$       REMOVE:     1, AgvQue, Dagvque: NEXT (chkcon2);
286$       BRANCH,
           1:
           If, N<=11, 287$, Yes:
           Else, 288$, Yes:
287$       ASSIGN:      A(26, entatrank(1, queueset (n+11)))=1: NEXT (280$);
288$       BRANCH,
           1:
           If, N==12, 289$, Yes:
           Else, 290$, Yes:
289$       ASSIGN:      A(26, entatrank(1, Q))=1: NEXT (283$);
290$       ASSIGN:      A(26, entatrank(1, AgvQue))=1: NEXT (285$);
247$       BRANCH,
           1:
           If, Compare0>Cmp(2), 248$, Yes:
           Else, 246$, Yes:
248$       ASSIGN:      Compare0=Cmp(2);
           Unit0=2;
           Select0=i: NEXT (246$);
235$       BRANCH,
           1:
           If, NQ(Q)>0, 236$, Yes:
           Else, 409$, Yes:
236$       ASSIGN:      i=12;
294$       ASSIGN:      Unit=1;
295$       WHILE:      Unit<=2;
298$       ASSIGN:      Cmp (unit)=IDSNET (AgvPath, LT (Agv, Unit), 28);
297$       ASSIGN:      Unit=Unit+1;
296$       ENDWHILE;
299$       BRANCH,
           1:
           If, Cmp(1)<=Cmp(2), 300$, Yes:
           Else, 301$, Yes:
300$       ASSIGN:      Unit=1;
302$       ASSIGN:      Sel (Unit)=Buffer:
           N=12;
           Nex=Aque (Q, 1, 21);
434$       ASSIGN:      AgvCtrl (Unit, Cap (Unit)+1)=Sel (Unit);
           AgvCtrl (Unit, Cap (Unit)+3)=Nex:
           AgvCtrl (Unit, Cap (Unit)+5)=0;
           Cap (Unit)=Cap (Unit)+1;
           Z0=Z0-1: NEXT (K);
301$       ASSIGN:      Unit=2: NEXT (302$);
409$       ASSIGN:      Compare0=10000;
           Unit0=0;
           Select0=0;
410$       ASSIGN:      i=1;
411$       WHILE:      i<=13;
412$       BRANCH,
           1:
           If, i<=11, 413$, Yes:

```

```

If, i=-13, 424$, Yes:
Else, 422$, Yes;
413$      BRANCH,
1:
If, NQ(QueueSet(i+11))>0, 414$, Yes:
Else, 422$, Yes;
414$      ASSIGN:  Cmp(1)=Idsnet(Agvpath, LT(Agv, 1), 1);
415$      BRANCH,  Cmp(2)=Idsnet(Agvpath, LT(Agv, 2), 1);
1:
If, Cmp(1)<=Cmp(2), 416$, Yes:
Else, 417$, Yes;
416$      BRANCH,
1:
If, Compare0>Cmp(1), 418$, Yes:
Else, 422$, Yes;
418$      ASSIGN:  Compare0=Cmp(1);
419$      ASSIGN:  Unit0=1;
422$      ASSIGN:  Select0=i;
423$      ENDWHILE;
426$      ASSIGN:  Unit=Unit0;
427$      BRANCH,  Sel(Unit)=Select0;
1:          N=Select0;
If, N<=11, 428$, Yes:
Else, 429$, Yes;
428$      ASSIGN:  Que=N+11;
430$      ASSIGN:  Nex=Aque(Que, 1, 18);
Agvctrl(Unit, Cap(Unit)+1)=Sel(unit):
Agvctrl(Unit, Cap(Unit)+3)=Nex:
Agvctrl(Unit, Cap(Unit)+5)=0:
Cap(Unit)=Cap(Unit)+1:
Z0=Z0-1:NEXT(K);
429$      ASSIGN:  Que=Agvque;
417$      BRANCH,  Nex=Aque(Que, 1, 18):NEXT(430$);
1:
If, Compare0>Cmp(2), 420$, Yes:
Else, 422$, Yes;
420$      ASSIGN:  Compare0=Cmp(2);
421$      ASSIGN:  Unit0=2;
424$      BRANCH,  Select0=i:NEXT(422$);
1:
If, NQ(AgvQue)>0, 425$, Yes:
Else, 422$, Yes;
425$      ASSIGN:  Cmp(1)=Idsnet(Agvpath, LT(Agv, 1), 1);
325$      BRANCH,  Cmp(2)=Idsnet(Agvpath, LT(Agv, 2), 1):NEXT(415$);
1:
If, (Cap(1)==0).or.(Cap(2)==0), 326$, Yes:
Else, 329$, Yes;
326$      BRANCH,
1:
If, Cap(1)==0, 327$, Yes:
Else, 328$, Yes;
327$      ASSIGN:  Unit=1;
332$      BRANCH,
1:
If, L0>0, 333$, Yes:
Else, 340$, Yes;
333$      ASSIGN:  i=1;
334$      WHILE:    Cmp(Unit)=10000;
335$      BRANCH,  i<=11;
1:
If, lock(i)==1, 336$, Yes:
Else, 338$, Yes;
336$      BRANCH,
1:
If, Cmp(Unit)>=IDSNET(AgvPath, LT(Agv, Unit), i), 337$, Yes:
Else, 338$, Yes;
337$      ASSIGN:  Cmp(Unit)=IDSNET(AgvPath, LT(Agv, Unit), i);
352$      ASSIGN:  Sel(Unit)=i;
338$      ASSIGN:  Nex=Aque(i+11, 1, 18);
339$      ENDWHILE;
353$      ASSIGN:  N=i;
353$      ASSIGN:  i=i+1;
Lock(N)=0:
L0=L0-1;
u1      ASSIGN:  AgvCtrl(Unit, Cap(Unit)+1)=Sel(Unit):
AgvCtrl(Unit, Cap(Unit)+3)=Nex:
AgvCtrl(Unit, Cap(Unit)+5)=0:
Cap(Unit)=Cap(Unit)+1:
Z0=Z0-1:NEXT(K);
340$      BRANCH,
1:
If, NQ(Q)>0, 341$, Yes:
Else, 342$, Yes;
341$      ASSIGN:  Sel(Unit)=Buffer:
Nex=Aque(q, 1, 21):

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N=12:NEXT(u1);
342$    ASSIGN:    i=1;
343$    WHILE:    Cmp(Unit)=10000;
354$    BRANCH,   i<=13;
1:
If, i<=11, 344$, Yes:
Else, 355$, Yes;
344$    BRANCH,   1:
If, NQ(QueueSet(i+1))>0, 345$, Yes:
Else, 347$, Yes;
345$    BRANCH,   1:
If, Cmp(Unit)>IDSNET(AgvPath, LT(Agv, Unit), 1), 346$, Yes:
Else, 347$, Yes;
346$    ASSIGN:    Cmp(Unit)=IDSNET(AgvPath, LT(Agv, Unit), 1);
351$    ASSIGN:    Sel(Unit)=i;
347$    ASSIGN:    N=sel(unit);
348$    ENDWHILE; i=i+1;
X3     BRANCH,   1:
If, N==13, 349$, Yes:
Else, 350$, Yes;
349$    ASSIGN:    Que=Agvque;
u2     ASSIGN:    Nex=Aque(Que, 1, 18);
AgvCtrl(Unit, Cap(Unit)+1)=Sel(Unit):
AgvCtrl(Unit, Cap(Unit)+3)=Nex:
AgvCtrl(Unit, Cap(Unit)+5)=0:
Cap(Unit)=Cap(Unit)+1:
Z0=Z0-1:NEXT(K);
350$    ASSIGN:    Que=N+11;
355$    BRANCH,   Nex=Aque(Que, 1, 18):NEXT(u2);
1:
If, i==12, 347$, Yes:
Else, 356$, Yes;
356$    BRANCH,   1:
If, NQ(Agvque)>0, 345$, Yes:
Else, 347$, Yes;
328$    ASSIGN:    Unit=2:NEXT(332$);
329$    BRANCH,   1:
If, (Cap(1)==1).and.(Cap(2)==1), 435$, Yes:
Else, 330$, Yes;
435$    BRANCH,   1:
If, L0>0, 436$, Yes:
Else, 437$, Yes;
436$    ASSIGN:    Compare0=10000:
Select0=0:
Unit0=0;
454$    ASSIGN:    i=1;
439$    WHILE:    i<=11;
440$    BRANCH,   1:
If, lock(i)==1, 441$, Yes:
Else, 448$, Yes;
441$    ASSIGN:    Unit=1;
442$    WHILE:    Unit<=2;
443$    ASSIGN:    Cmp(unit)=IDSNET(AgvPath, LT(Agv, Unit), 1):
Sel(Unit)=i;
452$    ASSIGN:    Unit=Unit+1;
444$    ENDWHILE;
445$    BRANCH,   1:
If, Cmp(1)<=Cmp(2), 446$, Yes:
Else, 449$, Yes;
446$    BRANCH,   1:
If, Compare0>Cmp(1), 447$, Yes:
Else, 448$, Yes;
447$    ASSIGN:    Compare0=Cmp(1):
Unit0=1:
Select0=1;
448$    ASSIGN:    i=i+1;
453$    ENDWHILE;
455$    ASSIGN:    Unit=Unit0;
451$    ASSIGN:    Cmp(Unit)=Compare0:
Sel(Unit)=Select0:
N=Select0;
456$    ASSIGN:    Lock(N)=0:
L0=L0-1:
Que=N+11:
Nex=Aque(Que, 1, 18);
457$    ASSIGN:    AgvCtrl(Unit, Cap(Unit)+1)=Sel(Unit):
AgvCtrl(Unit, Cap(Unit)+3)=Nex:
AgvCtrl(Unit, Cap(Unit)+5)=0:
Cap(Unit)=Cap(Unit)+1:
Z0=Z0-1:NEXT(K);

```



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449$      BRANCH,      1:
                          If, Compare0>Cmp(2), 450$, Yes:
                          Else, 448$, Yes;
450$      ASSIGN:      Compare0=Cmp(2):
                          Unit0=2:
                          Select0=1:NEXT(448$);
437$      BRANCH,      1:
                          If, NQ(Q)>0, 438$, Yes:
                          Else, 367$, Yes;
438$      ASSIGN:      i=12;
458$      ASSIGN:      Unit=1;
459$      WHILE:      Unit<=2;
462$      ASSIGN:      Cmp(unit)=IDSNET(AgvPath, LT(Agv, Unit), DT(Buffer));
461$      ASSIGN:      Unit=Unit+1;
460$      ENDWHILE;
463$      BRANCH,      1:
                          If, Cmp(1)<=Cmp(2), 464$, Yes:
                          Else, 465$, Yes;
464$      ASSIGN:      Unit=1;
466$      ASSIGN:      Sel(Unit)=Buffer:
                          N=12:
                          Nex=Aque(Q, 1, 21);
467$      ASSIGN:      AgvCtrl(Unit, Cap(Unit)+1)=Sel(Unit):
                          AgvCtrl(Unit, Cap(Unit)+3)=Nex:
                          AgvCtrl(Unit, Cap(Unit)+5)=0:
                          Cap(Unit)=Cap(Unit)+1:
                          Z0=Z0-1:NEXT(K);
465$      ASSIGN:      Unit=2:NEXT(466$);
367$      ASSIGN:      Compare0=10000:
                          Select0=0:
                          Unit0=0:
                          MQ=0;
358$      ASSIGN:      i=1;
359$      WHILE:      i<=13;
371$      BRANCH,      1:
                          If, i<=11, 360$, Yes:
                          Else, 372$, Yes;
360$      BRANCH,      1:
                          If, NQ(QueueSet(i+11))>0, 374$, Yes:
                          Else, III, Yes;
374$      BRANCH,      1:
                          If, MQ>NQ(QueueSet(i+11)), III, Yes:
                          Else, 375$, Yes;
III       ASSIGN:      i=i+1;
361$      ENDWHILE;
380$      ASSIGN:      N=Select0:
                          Unit=Unit0;
368$      BRANCH,      1:
                          If, N==13, 369$, Yes:
                          Else, 370$, Yes;
369$      ASSIGN:      Que=AgvQue:
                          Nex=Aque(Que, 1, 18);
385$      ASSIGN:      AgvCtrl(Unit, Cap(Unit)+1)=N:
                          AgvCtrl(Unit, Cap(Unit)+3)=Nex:
                          AgvCtrl(Unit, Cap(Unit)+5)=0:
                          Cap(Unit)=Cap(Unit)+1:
                          Z0=Z0-1:NEXT(K);
370$      ASSIGN:      Que=N+11:
                          Nex=Aque(Que, 1, 18):NEXT(385$);
375$      BRANCH,      1:
                          If, MQ==NQ(QueueSet(i+11)), 381$, Yes:
                          Else, 376$, Yes;
381$      ASSIGN:      Cmp(1)=Idsnet(Agvpath, LT(Agv, 1), i):
                          Cmp(2)=Idsnet(Agvpath, LT(Agv, 2), i);
362$      BRANCH,      1:
                          If, Cmp(1)<=Cmp(2), 363$, Yes:
                          Else, 365$, Yes;
363$      BRANCH,      1:
                          If, Compare0<=Cmp(1), III, Yes:
                          Else, 364$, Yes;
364$      ASSIGN:      Compare0=Cmp(1):
                          Unit0=1:
                          Select0=1:NEXT(III);
365$      BRANCH,      1:
                          If, Compare0<=Cmp(2), III, Yes:
                          Else, 366$, Yes;
366$      ASSIGN:      Compare0=Cmp(2):
                          Unit0=2:
                          Select0=1:NEXT(III);
376$      ASSIGN:      MQ=NQ(QueueSet(i+11)):

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```

Select0=i:
Cmp(1)=Idsnet(Agvpath,LT(Agv,1),i):
Cmp(2)=Idsnet(Agvpath,LT(Agv,2),i):
377$    BRANCH,
1:
If,Cmp(1)<=Cmp(2),378$,Yes:
378$    ASSIGN:
Compare0=Cmp(1):
Unit0=1:NEXT(III);
379$    ASSIGN:
Compare0=Cmp(2):
Unit0=2:NEXT(III);
372$    BRANCH,
1:
If,i==12,III,Yes:
Else,373$,Yes:
373$    BRANCH,
1:
If,NQ(Agvque)>0,382$,Yes:
Else,III,Yes:
382$    BRANCH,
1:
If,MQ>NQ(Agvque),III,Yes:
Else,383$,Yes:
383$    BRANCH,
1:
If,MQ==NQ(Agvque),381$,Yes:
Else,384$,Yes:
384$    ASSIGN:
MQ=NQ(Agvque):
Select0=i:
Cmp(1)=Idsnet(Agvpath,LT(Agv,1),i):
Cmp(2)=Idsnet(Agvpath,LT(Agv,2),i):NEXT(377$);
330$    BRANCH,
1:
If,Cap(1)==1,357$,Yes:
Else,331$,Yes:
357$    ASSIGN:
Unit=1;
468$    BRANCH,
1:
If,L0>0,469$,Yes:
Else,477$,Yes:
469$    ASSIGN:
i=1:
Cmp(Unit)=10000;
470$    WHILE:
i<=11;
471$    BRANCH,
1:
If,lock(i)==1,472$,Yes:
Else,474$,Yes:
472$    BRANCH,
1:
If,Cmp(Unit)>=IDSNET(AgvPath,LT(Agv,Unit),i),473$,Yes:
Else,474$,Yes:
473$    ASSIGN:
Cmp(Unit)=IDSNET(AgvPath,LT(Agv,Unit),i):
Sel(Unit)=i:
Nex=Aque(i+11,1,18);
479$    ASSIGN:
N=i;
474$    ASSIGN:
i=i+1;
475$    ENDWHILE;
480$    ASSIGN:
Lock(N)=0:
L0=L0-1;
476$    ASSIGN:
AgvCtrl(Unit,Cap(Unit)+1)=Sel(Unit):
AgvCtrl(Unit,Cap(Unit)+3)=Nex:
AgvCtrl(Unit,Cap(Unit)+5)=0:
Cap(Unit)=Cap(Unit)+1:
Z0=Z0-1:NEXT(K);
477$    BRANCH,
1:
If,NQ(Q)>0,478$,Yes:
Else,389$,Yes:
478$    ASSIGN:
Sel(Unit)=Buffer:
Nex=Aque(q,1,21):
N=12:NEXT(476$);
389$    ASSIGN:
Compare0=10000:
Select0=0:
MQ=0;
386$    ASSIGN:
i=1;
387$    WHILE:
i<=13;
390$    BRANCH,
1:
If,i<=11,388$,Yes:
Else,391$,Yes:
388$    BRANCH,
1:
If,NQ(QueueSet(i+11))>0,393$,Yes:
Else,I1,Yes:
393$    BRANCH,
1:
If,MQ>NQ(QueueSet(i+11)),I1,Yes:
Else,394$,Yes:
I1    ASSIGN:
i=i+1;
403$    ENDWHILE;
407$    ASSIGN:
N=Select0:
Sel(unit)=select0;
404$    BRANCH,
1:
If,N==13,405$,Yes:

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```

Else, 406$, Yes;
405$    ASSIGN:    Que=AgvQue;
408$    ASSIGN:    Nex=Aque(Que, 1, 18);
                    AgvCtrl(Unit, Cap(Unit)+1)=Sel(unit);
                    AgvCtrl(Unit, Cap(Unit)+3)=Nex;
                    AgvCtrl(Unit, Cap(Unit)+5)=0;
                    Cap(Unit)=Cap(Unit)+1;
                    ZO=ZO-1:NEXT(K);
406$    ASSIGN:    Que=N+11;
                    Nex=Aque(Que, 1, 18):NEXT(408$);
394$    BRANCH,   1;
                    If, MQ==NQ(Queuset(i+11)), 398$, Yes;
                    Else, 397$, Yes;
398$    BRANCH,   1;
                    If, Compare0<=Idsnet(Agvpath, LT(Agv, unit), i), I1, Yes;
                    Else, 399$, Yes;
399$    ASSIGN:    Compare0=Idsnet(Agvpath, LT(Agv, unit), i);
                    Select0=i:NEXT(I1);

397$    ASSIGN:    MQ=NQ(Queuset(i+11));
                    Select0=i;
                    Compare0=Idsnet(Agvpath, LT(Agv, Unit), i):NEXT(I1);
391$    BRANCH,   1;
                    If, i==13, 392$, Yes;
                    Else, I1, Yes;
392$    BRANCH,   1;
                    If, NQ(Agvque)>0, 395$, Yes;
                    Else, I1, Yes;
395$    BRANCH,   1;
                    If, MQ>NQ(Agvque), I1, Yes;
                    Else, 396$, Yes;
396$    BRANCH,   1;
                    If, MQ==NQ(Agvque), 400$, Yes;
                    Else, 402$, Yes;
400$    BRANCH,   1;
                    If, Compare0<=Idsnet(Agvpath, LT(Agv, unit), i), I1, Yes;
                    Else, 401$, Yes;
401$    ASSIGN:    Compare0=Idsnet(Agvpath, LT(Agv, unit), i);
                    Select0=i:NEXT(I1);
402$    ASSIGN:    MQ=NQ(AgvQue);
                    Select0=i:NEXT(I1);
331$    ASSIGN:    Unit=2:NEXT(468$);
Z1      BRANCH,   1;
                    If, (Cap(1)==0).and.(Cap(2)==0), Z2, Yes;
                    Else, 306$, Yes;
Z2      BRANCH,   1;
                    If, NQ(Q)>0, 485$, Yes;
                    Else, 249$, Yes;
485$    ASSIGN:    Unit=1;
486$    WHILE:    Unit<=2;
489$    ASSIGN:    Cmp(unit)=IDSNET(AgvPath, LT(Agv, Unit), 28);
488$    ASSIGN:    Unit=Unit+1;
487$    ENDWHILE;
490$    BRANCH,   1;
                    If, Cmp(1)<=Cmp(2), 491$, Yes;
                    Else, 492$, Yes;
491$    ASSIGN:    Unit=1;
493$    ASSIGN:    Sel(Unit)=Buffer;
                    N=12;
                    Nex=Aque(Q, 1, 21);
494$    ASSIGN:    AgvCtrl(Unit, Cap(Unit)+1)=Sel(Unit);
                    AgvCtrl(Unit, Cap(Unit)+3)=Nex;
                    AgvCtrl(Unit, Cap(Unit)+5)=0;
                    Cap(Unit)=Cap(Unit)+1;
                    ZO=ZO-1:NEXT(K);
492$    ASSIGN:    Unit=2:NEXT(493$);
249$    ASSIGN:    Unit=1;
250$    WHILE:    Unit<=2;
251$    ASSIGN:    i=1;
252$    WHILE:    i<=13;
303$    BRANCH,   1;
                    If, i<=11, 253$, Yes;
                    Else, 304$, Yes;
253$    BRANCH,   1;
                    If, NQ(Queuset(i+11))>0, 264$, Yes;
                    Else, 254$, Yes;
264$    ASSIGN:    Cmp(Unit)=IDSNET(AgvPath, LT(Agv, Unit), i);
                    Sel(Unit)=i;
                    Que=i+11;
                    Nex=Aque(Que, 1, 18);

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N=1;
254$    ASSIGN:    i=i+1;
255$    ENDWHILE;
256$    ASSIGN:    Unit=Unit+1;
257$    ENDWHILE;
258$    BRANCH,
        1:
        If, Cmp(1)<=Cmp(2), 259$, Yes:
        Else, 260$, Yes:
259$    ASSIGN:    Unit=1;
U11     ASSIGN:    AgvCtrl(Unit,Cap(Unit)+1)=Sel(Unit):
        AgvCtrl(Unit,Cap(Unit)+3)=Nex:
        AgvCtrl(Unit,Cap(Unit)+5)=0:
        Cap(Unit)=Cap(Unit)+1:
        Z0=Z0-1:NEXT(K);
260$    ASSIGN:    Unit=2:NEXT(U11);
304$    BRANCH,
        1:
        If, i==12, 254$, Yes:
        Else, 305$, Yes:
305$    BRANCH,
        1:
        If, NQ(Agvque)>0, 265$, Yes:
        Else, 254$, Yes:
265$    ASSIGN:    Cmp(Unit)=IDSNET(AgvPath, LT(Agv,Unit), 13):
        Sel(Unit)=13:
        Que=agvque:
        Nex=Aque(Que, 1, 18):
        N=i:NEXT(254$);
306$    BRANCH,
        1:
        If, (Cap(1)==0) .or. (Cap(2)==0), 307$, Yes:
        Else, 310$, Yes:
307$    BRANCH,
        1:
        If, Cap(1)==0, 308$, Yes:
        Else, 309$, Yes:
308$    ASSIGN:    Unit=1;
Z3     BRANCH,
        1:
        If, NQ(Q)>0, 484$, Yes:
        Else, 314$, Yes:
484$    ASSIGN:    Sel(Unit)=Buffer:
        Nex=Aque(q, 1, 21):
        N=12;
495$    ASSIGN:    AgvCtrl(Unit,Cap(Unit)+1)=Sel(Unit):
        AgvCtrl(Unit,Cap(Unit)+3)=Nex:
        AgvCtrl(Unit,Cap(Unit)+5)=0:
        Cap(Unit)=Cap(Unit)+1:
        Z0=Z0-1:NEXT(K);
314$    ASSIGN:    i=1;
315$    WHILE:    i<=13;
322$    BRANCH,
        1:
        If, i<=11, 316$, Yes:
        Else, 323$, Yes:
316$    BRANCH,
        1:
        If, NQ(QueueSet(i+11))>0, 319$, Yes:
        Else, 317$, Yes:
319$    ASSIGN:    Sel(Unit)=i:
        Que=i+11:
        Nex=Aque(Que, 1, 18):
        N=i;
317$    ASSIGN:    i=i+1;
318$    ENDWHILE;
321$    ASSIGN:    AgvCtrl(Unit,Cap(Unit)+1)=Sel(Unit):
        AgvCtrl(Unit,Cap(Unit)+3)=Nex:
        AgvCtrl(Unit,Cap(Unit)+5)=0:
        Cap(Unit)=Cap(Unit)+1:
        Z0=Z0-1:NEXT(K);
323$    BRANCH,
        1:
        If, i==12, 317$, Yes:
        Else, 324$, Yes:
324$    BRANCH,
        1:
        If, NQ(Agvque)>0, 320$, Yes:
        Else, 317$, Yes:
320$    ASSIGN:    Sel(Unit)=13:
        Que=agvque:
        Nex=Aque(Que, 1, 18):
        N=i:NEXT(317$);
309$    ASSIGN:    Unit=2:NEXT(Z3);
310$    BRANCH,
        1:
        If, (Cap(1)==1) .and. (Cap(2)==1), 22, Yes:
        Else, 311$, Yes:
311$    BRANCH,
        1:
        If, Cap(1)==1, 312$, Yes:
        Else, 313$, Yes:
312$    ASSIGN:    Unit=1:NEXT(Z3);

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313$      ASSIGN:      Unit=2:NEXT(23);

482$      CREATE,      1;
194$      BRANCH,      2;
                          Always, Agv1, Yes;
                          Always, Agv2, Yes;

agv1      QUEUE,      agv1;
0$        SCAN:      AgvCtrl(1,1)<>0;
230$      DELAY:      0.000001;
BRN       BRANCH,      1;
                          If, Agvctrl(1,2)<>0, Pick1, Yes;
                          Else, Allol, Yes;

Pick1     BRANCH,      1;
If, IDSNET(AgvPath,LT(Agv,1),DT(AgvCtrl(1,1)))<=IDSNET(AgvPath,LT(Agv,1),DT(AgvCtrl(1,2
))), 93$, Yes;
                          Else, 94$, Yes;

93$       ALLOCATE,    1:Agv(1), agvctrl(1,1);
97$       MOVE:      Agv(1), Agvctrl(1,1);
98$       ASSIGN:    Agvctrl(1,5)=1:NEXT(Branch5);
Branch5   BRANCH,      1;
If, IDSNET(AgvPath,LT(Agv,1),DT(AgvCtrl(1,2)))<=IDSNET(AgvPath,LT(Agv,1),DT(AgvCtrl(1,3
))), 1$, Yes;
                          Else, 3$, Yes;

1$        MOVE:      Agv(1), Agvctrl(1,2);
2$        ASSIGN:    Agvctrl(1,6)=1;
Branch6   BRANCH,      1;
If, IDSNET(AgvPath,LT(Agv,1),DT(AgvCtrl(1,3)))<=IDSNET(AgvPath,LT(Agv,1),DT(AgvCtrl(1,4
))), 4$, Yes;
                          Else, MB2, Yes;

4$        MOVE:      Agv(1), Agvctrl(1,3);
168$     BRANCH,      1;
                          If, Agvctrl(1,3)==12, 23$, Yes;
                          Else, 22$, Yes;

23$       ASSIGN:    Line(1)=1:NEXT(Loop1);
Loop1     ASSIGN:    i=1;
31$       WHILE:     i<=13;
32$       BRANCH,      1;
                          If, NQ(Dummyset(i))>0, 33$, Yes;
                          Else, 36$, Yes;

33$       FINDJ,      1, NQ(Dummyset(i)):Aque(Dummyset(i), J, 23)==1;
34$       BRANCH,      1;
                          If, J<>0, 35$, Yes;
                          Else, 36$, Yes;

35$       REMOVE:    J, Dummyset(i), station;
36$       ASSIGN:    i=i+1;
37$       ENDWHILE;
u7        BRANCH,      1;
                          If, Line(1)==1, AS1, Yes;
                          If, Line(2)==1, AS2, Yes;
                          If, Line(3)==1, AS3, Yes;
                          If, Line(4)==1, AS4, Yes;
                          If, Line(5)==1, AS5, Yes;
                          If, Line(6)==1, AS6, Yes;
                          If, Line(7)==1, AS7, Yes;
                          If, Line(8)==1, AS8, Yes;
                          If, Line(9)==1, AS9, Yes;
                          If, Line(10)==1, AS10, Yes;
                          If, Line(11)==1, AS11, Yes;
                          If, Line(12)==1, AS12, Yes;
                          Else, AS13, Yes;

AS1       ASSIGN:    Cap(1)=Cap(1)-1;
                          AgvCtrl(1,1)=AgvCtrl(1,2);
                          AgvCtrl(1,3)=AgvCtrl(1,4);
                          AgvCtrl(1,5)=AgvCtrl(1,6);
                          AgvCtrl(1,2)=0;
                          AgvCtrl(1,4)=0;
                          AgvCtrl(1,6)=0;
                          Line(1)=0;

153$     BRANCH,      1;
                          If, Agvctrl(1,1)==15, 154$, Yes;
                          Else, 74$, Yes;

154$     FINDJ,      1, nq(dummyset(12)):aque(dummyset(12), J, 24)==1;

155$     ASSIGN:      A(24, entatrank(J, dummyset(12)))=0;
                          A(23, entatrank(J, dummyset(12)))=1;
115$     DELAY:      0.000001:NEXT(Branch1);
Branch1   BRANCH,      1;
                          If, AgvCtrl(1,2)<>0, Branch5, Yes;
                          Else, 27$, Yes;

27$      MOVE:      Agv(1), Firstx(Intx(DT(Agvctrl(1,3)))));

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84$      BRANCH,      1:
                        If,Lt(Agv,1)==DT(Agvctrl(1,3)),165$,Yes:
                        Else,85$,Yes;
165$     BRANCH,      1:
                        If,Agvctrl(1,3)==12,28$,Yes:
                        Else,29$,Yes;
28$     ASSIGN:      Line(10)=1:NEXT(Loop1);
29$     BRANCH,      1:
                        If,nq(queueset(Agvctrl(1,3)))<3,28$,Yes:
                        Else,129$,Yes;
129$     BRANCH,      1:
                        If,Agvctrl(1,1)==15,130$,Yes:
                        Else,99$,Yes;
130$     FINDJ,      1,NQ(Dummyset(12)):Aque(Dummyset(12),J,23)==1);
131$     ASSIGN:      A(21,entatrank(J,dummyset(12)))=Agvctrl(1,3):
                        Agvctrl(1,3)=Buffer;
Branch3   BRANCH,      1:
                        If,AgvCtrl(1,2)<>0,Branch8,Yes:
                        Else,172$,Yes;
Branch8   BRANCH,      1:
                        If,IDSNET(AgvPath,LT(Agv,1),DT(AgvCtrl(1,2
                        )))>12$,Yes:
                        Else,14$,Yes;
12$     MOVE:        Agv(1),Agvctrl(1,3);
13$     ASSIGN:      Line(4)=1:NEXT(Loop2);
Loop2    ASSIGN:      i=1;
38$     WHILE:      i<=13;
39$     BRANCH,      1:
                        If,NQ(Dummyset(i))>0,40$,Yes:
                        Else,43$,Yes;
40$     FINDJ,      1,NQ(Dummyset(i)):Aque(Dummyset(i),J,23)==1;
41$     BRANCH,      1:
                        If,J<>0,42$,Yes:
                        Else,43$,Yes;
42$     REMOVE:      J,Dummyset(i),Buffer;
43$     ASSIGN:      i=i+1;
44$     ENDWHILE;
u8       BRANCH,      1:
                        If,Line(1)==1,AS1,Yes:
                        If,Line(2)==1,AS2,Yes:
                        If,Line(3)==1,AS3,Yes:
                        If,Line(4)==1,AS4,Yes:
                        If,Line(5)==1,AS5,Yes:
                        If,Line(6)==1,AS6,Yes:
                        If,Line(7)==1,Loop4,Yes:
                        If,Line(8)==1,AS8,Yes:
                        If,Line(9)==1,AS9,Yes:
                        If,Line(10)==1,AS10,Yes:
                        If,Line(11)==1,AS11,Yes:
                        If,Line(12)==1,AS12,Yes:
                        Else,AS13,Yes;
AS2      ASSIGN:      AgvCtrl(1,2)=0:
                        Agvctrl(1,4)=0:
                        Agvctrl(1,6)=0:
                        Cap(1)=Cap(1)-1:
                        Line(2)=0;
113$    DELAY:      0.000001:NEXT(Branch1);
AS3     ASSIGN:      Cap(1)=Cap(1)-1:
                        AgvCtrl(1,1)=AgvCtrl(1,2):
                        AgvCtrl(1,3)=AgvCtrl(1,4):
                        AgvCtrl(1,5)=AgvCtrl(1,6):
                        AgvCtrl(1,2)=0:
                        AgvCtrl(1,4)=0:
                        AgvCtrl(1,6)=0:
                        Line(3)=0;
147$    BRANCH,      1:
                        If,Agvctrl(1,1)==15,148$,Yes:
                        Else,72$,Yes;
148$    FINDJ,      1,nq(dummyset(12)):aque(dummyset(12),J,24)==1;
149$    ASSIGN:      A(24,entatrank(J,dummyset(12)))=0:
                        A(23,entatrank(J,dummyset(12)))=1;
122$    DELAY:      0.000001:NEXT(Branch4);
Branch4  BRANCH,      1:
                        If,Agvctrl(1,2)<>0,Branch4_2,Yes:
                        Else,M1,Yes;
Branch4_2 BRANCH,      1:
                        If,IDSNET(AgvPath,LT(Agv,1),DT(AgvCtrl(1,2
                        )))>59$,Yes:
                        Else,61$,Yes;
59$     MOVE:        Agv(1),Agvctrl(1,1);
60$     ASSIGN:      AgvCtrl(1,5)=1:NEXT(Branch5);

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61$      MOVE:      Agv(1),Agvctrl(1,2);
62$      ASSIGN:    Agvctrl(1,6)=1;
Branch4_1 BRANCH,
1:
If, IDSNET(AgvPath,LT(Agv,1),DT(AgvCtrl(1,1))) <=IDSNET(AgvPath,LT(Agv,1),DT(AgvCtrl(1,4))) , 63$, Yes:
63$      MOVE:      Agv(1),Agvctrl(1,1);
64$      ASSIGN:    Agvctrl(1,5)=1:NEXT(Branch6);
65$      MOVE:      Agv(1),Agvctrl(1,4);
171$     BRANCH,
1:
If, Agvctrl(1,4)==12, 67$, Yes:
Else, 66$, Yes;
Line(12)=1:NEXT(Loop3);
67$     ASSIGN:
Loop3    ASSIGN:
45$     WHILE:      i=1;
46$     BRANCH,    i<=13;
1:
If, NQ(Dummyset(i))>0, 47$, Yes:
Else, 50$, Yes;
47$     FINDJ,      1,NQ(Dummyset(i)):Aque(Dummyset(i),J,24)==1;
48$     BRANCH,    1:
If, J<>0, 49$, Yes:
Else, 50$, Yes;
49$     REMOVE:     J,Dummyset(i),station;
50$     ASSIGN:     i=i+1;
51$     ENDWHILE;
u9      BRANCH,    1:
If, Line(1)==1, AS1, Yes:
If, Line(2)==1, AS2, Yes:
If, Line(3)==1, AS3, Yes:
If, Line(4)==1, AS4, Yes:
If, Line(5)==1, AS5, Yes:
If, Line(6)==1, AS6, Yes:
If, Line(7)==1, AS7, Yes:
If, Line(8)==1, AS8, Yes:
If, Line(9)==1, AS9, Yes:
If, Line(10)==1, AS10, Yes:
If, Line(11)==1, AS11, Yes:
If, Line(12)==1, AS12, Yes:
Else, AS13, Yes;
AS4     ASSIGN:     Cap(1)=Cap(1)-1;
AgvCtrl(1,1)=AgvCtrl(1,2);
AgvCtrl(1,3)=AgvCtrl(1,4);
AgvCtrl(1,5)=AgvCtrl(1,6);
AgvCtrl(1,2)=0;
AgvCtrl(1,4)=0;
AgvCtrl(1,6)=0;
Line(4)=0;
150$    BRANCH,    1:
If, Agvctrl(1,1)==15, 151$, Yes:
Else, 78$, Yes;
151$    FINDJ,      1,nq(dummyset(12)):aque(dummyset(12),J,24)==1;
152$    ASSIGN:     A(24,entatrank(J,dummyset(12)))=0;
A(23,entatrank(J,dummyset(12)))=1;
123$    DELAY:      0.000001:NEXT(Branch4);
78$     FINDJ,
1,nq(dummyset(agvctrl(1,1))):aque(dummyset(agvctrl(1,1)),J,24)==1;
79$     ASSIGN:     A(24,entatrank(J,dummyset(agvctrl(1,1))))=0;
A(23,entatrank(J,dummyset(agvctrl(1,1))))=1:NEXT(123$);
AS5     ASSIGN:     Cap(1)=Cap(1)-1;
AgvCtrl(1,1)=AgvCtrl(1,2);
AgvCtrl(1,3)=AgvCtrl(1,4);
AgvCtrl(1,5)=AgvCtrl(1,6);
AgvCtrl(1,2)=0;
AgvCtrl(1,4)=0;
AgvCtrl(1,6)=0;
Line(5)=0;
162$    BRANCH,    1:
If, Agvctrl(1,1)==15, 163$, Yes:
Else, 80$, Yes;
163$    FINDJ,      1,nq(dummyset(12)):aque(dummyset(12),J,24)==1;
164$    ASSIGN:     A(24,entatrank(J,dummyset(12)))=0;
A(23,entatrank(J,dummyset(12)))=1;
125$    DELAY:      0.000001:NEXT(Branch1);
80$     FINDJ,
1,nq(dummyset(agvctrl(1,1))):aque(dummyset(agvctrl(1,1)),J,24)==1;
81$     ASSIGN:     A(24,entatrank(J,dummyset(agvctrl(1,1))))=0;
A(23,entatrank(J,dummyset(agvctrl(1,1))))=1:NEXT(125$);
AS6     ASSIGN:     Cap(1)=Cap(1)-1;
AgvCtrl(1,2)=0;
AgvCtrl(1,4)=0;

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If,LT(Agv,1)==Int10,Branch2,Yes:
If,LT(Agv,1)==Int11,Branch2,Yes:
If,LT(Agv,1)==Int12,Branch2,Yes:
If,LT(Agv,1)==Int13,Branch2,Yes:
If,LT(Agv,1)==Int27,Branch2,Yes:
If,LT(Agv,1)==Int28,Branch2,Yes:
Else,MV,Yes:
AS8      ASSIGN:  Agvctrl(1,1)=Agvctrl(1,2):
                Agvctrl(1,2)=0:
                Agvctrl(1,3)=Agvctrl(1,4):
                Agvctrl(1,4)=0:
                Agvctrl(1,5)=Agvctrl(1,6):
                Agvctrl(1,6)=0:
                Cap(1)=Cap(1)-1:
                Line(8)=0:
156$     BRANCH,  1:
                If,Agvctrl(1,1)==15,157$,Yes:
                Else,76$,Yes:
157$     FINDJ,   1,nq(dummyset(12)):aque(dummyset(12),J,24)==1;
158$     ASSIGN:  A(24,entatrank(J,dummyset(12)))=0:
                A(23,entatrank(J,dummyset(12)))=1:
                0.000001:NEXT(Branch3);
114$     DELAY:
76$      FINDJ,   1,nq(dummyset(agvctrl(1,1))):aque(dummyset(agvctrl(1,1)),J,24)==1;
77$      ASSIGN:  A(24,entatrank(J,dummyset(agvctrl(1,1))))=0:
                A(23,entatrank(J,dummyset(agvctrl(1,1))))=1:NEXT(114$);
AS9      ASSIGN:  Agvctrl(1,2)=0:
                Agvctrl(1,4)=0:
                Agvctrl(1,6)=0:
                Cap(1)=Cap(1)-1:
                Line(9)=0:
118$     DELAY:  0.000001:NEXT(Branch1);
AS10     ASSIGN:  Cap(1)=Cap(1)-1:
                AgvCtrl(1,1)=0:
                AgvCtrl(1,3)=0:
                AgvCtrl(1,5)=0:
                Line(10)=0:
183$     BRANCH,  1:
                If,Agvctrl(1,2)<>0,184$,Yes:
                Else,121$,Yes;
184$     ASSIGN:  AgvCtrl(1,1)=AgvCtrl(1,2):
                AgvCtrl(1,3)=AgvCtrl(1,4):
                AgvCtrl(1,5)=AgvCtrl(1,6):
                Agvctrl(1,2)=0:
                Agvctrl(1,4)=0:
                Agvctrl(1,6)=0:
187$     BRANCH,  1:
                If,Agvctrl(1,1)==15,188$,Yes:
                Else,185$,Yes;
188$     FINDJ,   1,nq(dummyset(12)):aque(dummyset(12),J,24)==1;
189$     ASSIGN:  A(24,entatrank(J,dummyset(12)))=0:
                A(23,entatrank(J,dummyset(12)))=1:NEXT(Branch4);
185$     FINDJ,   1,nq(dummyset(agvctrl(1,1))):aque(dummyset(agvctrl(1,1)),J,24)==1;
186$     ASSIGN:  A(24,entatrank(J,dummyset(agvctrl(1,1))))=0:
                A(23,entatrank(J,dummyset(agvctrl(1,1))))=1:NEXT(Branch4);
121$     DELAY:  0.000001:NEXT(Branch2);
AS11     ASSIGN:  Cap(1)=Cap(1)-1:
                AgvCtrl(1,1)=0:
                AgvCtrl(1,3)=0:
                AgvCtrl(1,5)=0:
                Line(11)=0:NEXT(Branch2);
AS12     ASSIGN:  Cap(1)=Cap(1)-1:
                AgvCtrl(1,2)=0:
                AgvCtrl(1,4)=0:
                AgvCtrl(1,6)=0:
                Line(12)=0;
117$     DELAY:  0.000001:NEXT(Branch4);
AS13     ASSIGN:  Cap(1)=Cap(1)-1:
                AgvCtrl(1,2)=0:
                AgvCtrl(1,4)=0:
                AgvCtrl(1,6)=0:
                Line(13)=0;
116$     DELAY:  0.000001:NEXT(Branch4);
Station  STATION,  DeptSet;
217$     ASSIGN:  K11=0:
                K12=0:
                K21=0:
                K22=0;
AlmostFin BRANCH,  1:
                If,NextMM1<>Dept12,A1,Yes:

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Else, tal, Yes;
A1          ASSIGN:      SetIndex=MemIdx (DeptSet, NextMM1);
213$        BRANCH,      1:
                If, nq (queueset (setindex)) == 2, 214$, Yes:
                Else, Qin, Yes;
214$        BRANCH,      1:
                If, nq (queueset (setindex+11)) == 3, 215$, Yes:
                Else, Qin, Yes;
215$        ASSIGN:      lock (setindex) = 1;
216$        ASSIGN:      L0 = L0 + 1;
Qin         QUEUE,       QueueSet (SetIndex), 3;
197$        SEIZE,       1:
                MachineSet (SetIndex), 1;
B1          BRANCH,      2:
                Always, 208$, Yes:
                Always, Processing, Yes;
208$        BRANCH,      1:
                If, nq (BufferQ) <> 0, Find, Yes:
                Else, Disp, Yes;
Find        FINDJ,       1, nq (bufferq) : aqe (bufferq, j, 21) == Nextmm1;
209$        BRANCH,      1:
                If, J <> 0, 210$, Yes:
                Else, Disp, Yes;
210$        ASSIGN:      Nextmm1 = Remember;
REM         REMOVE:      J, BufferQ, Detach2: NEXT (Disp);
Disp        DISPOSE;
Detach2     ASSIGN:      Z0 = Z0 + 1;
Detach1     QUEUE,       Q: DETACH;
Processing  DELAY:      Opt (2ndLp);
Seize       SEIZE,       1:
                BefQSet (setindex), 1;
205$        RELEASE:    MachineSet (Setindex), 1;
206$        ASSIGN:      2ndLp = 2ndLp + 1;
207$        BRANCH,      1:
                If, 2ndLp > Optnum, Exit, Yes:
                Else, N_Sta, Yes;
                NextMM1 = Member (DeptSet, 12);
Exit        ASSIGN:      Z0 = Z0 + 1;
212$        ASSIGN:      QueueSet (SetIndex+11), 3: DETACH;
Qout        QUEUE,       NextMM = MM (2ndLp);
N_Sta       ASSIGN:      NextMM1 = Member (DeptSet, NextMM) : NEXT (212$);
tal         TALLY:      Flowtime, INT (Timein), 1;
226$        ASSIGN:      Lateness = Tnow - DueDate;
224$        BRANCH,      1:
                If, Tnow > DueDate, 225$, Yes:
                Else, 227$, Yes;
225$        ASSIGN:      Tardiness = Tnow - DueDate;
                TardyJob = TardyJob + 1;
                Earliness = 0;
497$        TALLY:      Tardy1, Tardiness, 1;
228$        TALLY:      Late, Lateness, 1;
229$        TALLY:      Tardy2, Tardiness, 1;
498$        TALLY:      Early2, Earliness, 1;
out         ASSIGN:      out = out + 1: NEXT (Delete);
Delete      ASSIGN:      ToTalOpt = 0;
                Nextmm = 0;
                Nextmm1 = 0;
                Duedate = 0;
                OptNum = 0;
                Lateness = 0;
                Tardiness = 0;
                OptNo = 0;
                Earliness = 0;
219$        ASSIGN:      Del = 1;
220$        WHILE:      Del <= 6;
221$        ASSIGN:      Opt (Del) = 0;
                MM (Del) = 0;
223$        ASSIGN:      Del = Del + 1;
222$        ENDWHILE: NEXT (BBB);
BBB         ASSIGN:      B1 = B1 + 1;
OPT         ASSIGN:      OptNum = Disc (0.33, 4, 0.66, 5, 1.00, 6);
                M = ENTER;
                1stLp = 1;
                OptNo = B1: MARK (Timein);
195$        WHILE:      1stLp <= OptNum;
198$        ASSIGN:      Opt (1stLp) = Expo (10);
Assign1     ASSIGN:      MM (1stLp) =
DISC (0.091, 1, 0.182, 2, 0.273, 3, 0.364, 4, 0.455, 5, 0.545, 6, 0.636, 7, 0.727, 8, 0.818, 9, 0.909, 10,
1, 1);
199$        BRANCH,      1:
                If, 1stLp <> 1, Assign2, Yes:

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Assign2      ASSIGN:      Else, Assign4, Yes;
200$        WHILE:      C=1StLp;
201$        BRANCH,    C<>1;
                1:
                If, MM(1StLp)<>MM(C-1), Assign3, Yes:
                Else, Assign1, Yes;
                C=C-1;

Assign3      ASSIGN:      ENDWHILE;
202$        ENDWHILE;
Assign4      ASSIGN:      TotalOpt=TotalOpt+Opt(1stLp);
                1StLp=1StLp+1;

196$        ENDWHILE;
203$        ASSIGN:      2ndLp=1;
                DueDate=Timein+(14*TotalOpt);
                NextMM=MM(2ndLp);
                NextMM1=Member(DeptSet, NextMM);

ToStart      ASSIGN:      Z0=Z0+1;
                AGVQue:DETACH;
                NonTardy=NonTardy+1;
                Tardiness=0;
                Earliness=DueDate-Thow;
                Early1, Earliness, 1:NEXT(228$);

211$        ASSIGN:      1:
                If, nq(queueSet(agvctrl(1,4)))<3, 67$, Yes:
                Else, 144$, Yes;

144$        BRANCH,    1:
                If, Agvctrl(1,2)==15, 145$, Yes:
                Else, 107$, Yes;
                1, NQ(Dummyset(12)): (Aque(Dummyset(12), J, 24)==1);
145$        FINDJ,    A(21, entatrank(J, dummyset(12)))=Agvctrl(1,4);
146$        ASSIGN:      Agvctrl(1,4)=Buffer;
                1:

Branch4_3    BRANCH,    1:
If, IDSNET(AgvPath, LT(Agv, 1), DT(AgvCtrl(1,1)))<=IDSNET(AgvPath, LT(Agv, 1), DT(AgvCtrl(1,4)
)), 68$, Yes:
                Else, 70$, Yes;
68$        MOVE:      Agv(1), Agvctrl(1,1);
69$        ASSIGN:      Agvctrl(1,5)=1:NEXT(Branch7);
Branch7      BRANCH,    1:
If, IDSNET(AgvPath, LT(Agv, 1), DT(AgvCtrl(1,3)))<=IDSNET(AgvPath, LT(Agv, 1), DT(AgvCtrl(1,4)
)), 6$, Yes:
                Else, 24$, Yes;
6$         MOVE:      Agv(1), Agvctrl(1,3);
170$        BRANCH,    1:
                If, Agvctrl(1,3)==12, 9$, Yes:
                Else, 25$, Yes;
9$         ASSIGN:      Line(8)=1:NEXT(Loop1);
25$        BRANCH,    1:
                If, nq(queueSet(Agvctrl(1,3)))<3, 9$, Yes:
                Else, 135$, Yes;
135$       BRANCH,    1:
                If, Agvctrl(1,1)==15, 136$, Yes:
                Else, 105$, Yes;
136$       FINDJ,    1, NQ(Dummyset(12)): (Aque(Dummyset(12), J, 23)==1);
137$       ASSIGN:      A(21, entatrank(J, dummyset(12)))=Agvctrl(1,3);
                Agvctrl(1,3)=Buffer:NEXT(MB1);
MB1         MOVE:      Agv(1), buffer;
21$        ASSIGN:      Line(7)=1:NEXT(Loop2);
105$       FINDJ,
1, NQ(Dummyset(agvctrl(1,1))): (Aque(Dummyset(Agvctrl(1,1)), J, 23)==1);
106$       ASSIGN:      A(21, entatrank(J, dummyset(agvctrl(1,1))))=Agvctrl(1,3);
                Agvctrl(1,3)=Buffer:NEXT(MB1);
24$        MOVE:      Agv(1), Buffer;
26$        ASSIGN:      Line(9)=1:NEXT(Loop4);
Loop4      ASSIGN:      i=1;
52$        WHILE:      i<=13;
53$        BRANCH,    1:
                If, NQ(Dummyset(i))>0, 54$, Yes:
                Else, 57$, Yes;
54$        FINDJ,    1, NQ(Dummyset(i)): Aque(Dummyset(i), J, 24)==1;
55$        BRANCH,    1:
                If, J<>0, 56$, Yes:
                Else, 57$, Yes;
56$        REMOVE:      J, Dummyset(i), Buffer;
57$        ASSIGN:      i=i+1;
58$        ENDWHILE;
u10         BRANCH,    1:
                If, Line(1)==1, AS1, Yes:
                If, Line(2)==1, AS2, Yes:
                If, Line(3)==1, AS3, Yes:
                If, Line(4)==1, AS4, Yes:
                If, Line(5)==1, AS5, Yes:
                If, Line(6)==1, AS6, Yes:

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If, Line (7) == 1, AS7, Yes:
If, Line (8) == 1, AS8, Yes:
If, Line (9) == 1, AS9, Yes:
If, Line (10) == 1, AS10, Yes:
If, Line (11) == 1, AS11, Yes:
If, Line (12) == 1, AS12, Yes:
Else, AS13, Yes;
Buffer;
218$ STATION, ASSIGN: K11=0;
K12=0;
K21=0;
K22=0;
204$ QUEUE, BufferQ:DETACH;
70$ MOVE: Agv(1), Agvctrl(1, 4);
71$ ASSIGN: Line(13)=1:NEXT(Loop4);
107$ FINDJ,
1, NQ(Dummyset(agvctrl(1, 2))): (Aque(Dummyset(Agvctrl(1, 2)), J, 24) == 1);
108$ ASSIGN: A(21, entatrank(J, dummyset(agvctrl(1, 2)))) = agvctrl(1, 4);
Agvctrl(1, 4) = Buffer:NEXT(Branch4_3);
M1 MOVE: Agv(1), Firstx(Intx(DT(agvctrl(1, 1)))));
82$ BRANCH, 1:
If, Lt(Agv, 1) == DT(Agvctrl(1, 1)), 10$, Yes:
Else, 83$, Yes;
10$ ASSIGN: Agvctrl(1, 5) = 1:NEXT(Branch1);
83$ BRANCH, 1:
If, LT(agv, 1) == Int1, Branch4, Yes:
If, LT(agv, 1) == Int2, Branch4, Yes:
If, LT(agv, 1) == Int3, Branch4, Yes:
If, LT(agv, 1) == Int4, Branch4, Yes:
If, LT(agv, 1) == Int5, Branch4, Yes:
If, LT(Agv, 1) == Int6, Branch4, Yes:
If, LT(Agv, 1) == Int7, Branch4, Yes:
If, LT(Agv, 1) == Int8, Branch4, Yes:
If, LT(Agv, 1) == Int9, Branch4, Yes:
If, LT(Agv, 1) == Int10, Branch4, Yes:
If, LT(Agv, 1) == Int11, Branch4, Yes:
If, LT(Agv, 1) == Int12, Branch4, Yes:
If, LT(Agv, 1) == Int13, Branch4, Yes:
If, LT(agv, 1) == Int27, Branch4, Yes:
If, LT(Agv, 1) == Int28, Branch4, Yes:
Else, M1, Yes;
72$ FINDJ,
1, nq(dummyset(agvctrl(1, 1))): aque(dummyset(agvctrl(1, 1)), J, 24) == 1;
73$ ASSIGN: A(24, entatrank(J, dummyset(agvctrl(1, 1)))) = 0;
A(23, entatrank(J, dummyset(agvctrl(1, 1)))) = 1:NEXT(122$);
14$ MOVE: Agv(1), Agvctrl(1, 2);
15$ ASSIGN: Agvctrl(1, 6) = 1;
Branch11 BRANCH, 1:
If, IDSNET(AgvPath, LT(Agv, 1), DT(AgvCtrl(1, 3))) <= IDSNET(AgvPath, LT(Agv, 1), DT(AgvCtrl(1, 4))), 16$, Yes:
Else, 18$, Yes;
16$ MOVE: Agv(1), Agvctrl(1, 3);
17$ ASSIGN: Line(5) = 1:NEXT(Loop2);
18$ MOVE: Agv(1), Agvctrl(1, 4);
166$ BRANCH, 1:
If, Agvctrl(1, 4) == 12, 19$, Yes:
Else, 20$, Yes;
19$ ASSIGN: Line(6) = 1:NEXT(Loop3);
20$ BRANCH, 1:
If, nq(queueaset(Agvctrl(1, 4))) < 3, 19$, Yes:
Else, 138$, Yes;
138$ BRANCH, 1:
If, Agvctrl(1, 2) == 15, 139$, Yes:
Else, 109$, Yes;
139$ FINDJ, 1, NQ(Dummyset(12)): (Aque(Dummyset(12), J, 24) == 1);
140$ ASSIGN: A(21, entatrank(J, dummyset(12))) = Agvctrl(1, 4);
Agvctrl(1, 4) = Buffer:NEXT(MB1);
109$ FINDJ,
1, NQ(Dummyset(agvctrl(1, 2))): (Aque(Dummyset(Agvctrl(1, 2)), J, 24) == 1);
110$ ASSIGN: A(21, entatrank(J, dummyset(agvctrl(1, 2)))) = agvctrl(1, 4);
Agvctrl(1, 4) = Buffer:NEXT(MB1);
172$ MOVE: Agv(1), Firstx(Intx(DT(Agvctrl(1, 3)))));
174$ BRANCH, 1:
If, Lt(Agv, 1) == DT(Agvctrl(1, 3)), 30$, Yes:
Else, 173$, Yes;
30$ ASSIGN: Line(11) = 1:NEXT(Loop2);
173$ BRANCH, 1:
If, LT(agv, 1) == Int1, Branch3, Yes:
If, LT(agv, 1) == Int2, Branch3, Yes:
If, LT(agv, 1) == Int3, Branch3, Yes:
If, LT(agv, 1) == Int4, Branch3, Yes:

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If, LT (Agv, 1) == Int5, Branch3, Yes:
If, LT (Agv, 1) == Int6, Branch3, Yes:
If, LT (Agv, 1) == Int7, Branch3, Yes:
If, LT (Agv, 1) == Int8, Branch3, Yes:
If, LT (Agv, 1) == Int9, Branch3, Yes:
If, LT (Agv, 1) == Int10, Branch3, Yes:
If, LT (Agv, 1) == Int11, Branch3, Yes:
If, LT (Agv, 1) == Int12, Branch3, Yes:
If, LT (Agv, 1) == Int13, Branch3, Yes:
If, LT (Agv, 1) == Int27, Branch3, Yes:
If, LT (Agv, 1) == Int28, Branch3, Yes:
Else, 172$, Yes;

99$      FINDJ,
1, NQ (Dummyset (agvctrl (1, 1))) : (Aque (Dummyset (agvctrl (1, 1)), J, 23) == 1);
100$     ASSIGN:
A (21, entatrank (J, dummyset (agvctrl (1, 1)))) = Agvctrl (1, 3);
Agvctrl (1, 3) = Buffer: NEXT (Branch3);
85$      BRANCH,
1:
If, LT (agv, 1) == Int1, Branch1, Yes:
If, LT (agv, 1) == Int2, Branch1, Yes:
If, LT (agv, 1) == Int3, Branch1, Yes:
If, LT (agv, 1) == Int4, Branch1, Yes:
If, LT (agv, 1) == Int5, Branch1, Yes:
If, LT (Agv, 1) == Int6, Branch1, Yes:
If, LT (Agv, 1) == Int7, Branch1, Yes:
If, LT (Agv, 1) == Int8, Branch1, Yes:
If, LT (Agv, 1) == Int9, Branch1, Yes:
If, LT (Agv, 1) == Int10, Branch1, Yes:
If, LT (Agv, 1) == Int11, Branch1, Yes:
If, LT (Agv, 1) == Int12, Branch1, Yes:
If, LT (Agv, 1) == Int13, Branch1, Yes:
If, LT (Agv, 1) == Int27, Branch1, Yes:
If, LT (Agv, 1) == Int28, Branch1, Yes:
Else, 27$, Yes;

74$      FINDJ,
1, nq (dummyset (agvctrl (1, 1))) : aque (dummyset (agvctrl (1, 1)), J, 24) == 1;
75$      ASSIGN:
A (24, entatrank (J, dummyset (agvctrl (1, 1)))) = 0;
A (23, entatrank (J, dummyset (agvctrl (1, 1)))) = 1: NEXT (115$);
22$      BRANCH,
1:
If, nq (queue set (Agvctrl (1, 3))) < 3, 23$, Yes:
Else, 132$, Yes;
132$     BRANCH,
1:
If, Agvctrl (1, 1) == 15, 133$, Yes:
Else, 103$, Yes;
133$     FINDJ,
1, NQ (Dummyset (12)) : (Aque (Dummyset (12), J, 23) == 1);
134$     ASSIGN:
A (21, entatrank (J, dummyset (12))) = Agvctrl (1, 3);
Agvctrl (1, 3) = Buffer: NEXT (Branch11);
103$     FINDJ,
1, NQ (Dummyset (agvctrl (1, 1))) : (Aque (Dummyset (agvctrl (1, 1)), J, 23) == 1);
104$     ASSIGN:
A (21, entatrank (J, dummyset (agvctrl (1, 1)))) = Agvctrl (1, 3);
Agvctrl (1, 3) = Buffer: NEXT (Branch11);
MB2      MOVE:
169$     BRANCH,
1:
If, Agvctrl (1, 4) == 12, 8$, Yes:
Else, 5$, Yes;
8$       ASSIGN:
Line (2) = 1: NEXT (Loop3);
5$       BRANCH,
1:
If, nq (queue set (Agvctrl (1, 4))) < 3, 8$, Yes:
Else, 126$, Yes;
126$     BRANCH,
1:
If, Agvctrl (1, 2) == 15, 127$, Yes:
Else, 111$, Yes;
127$     FINDJ,
1, NQ (Dummyset (12)) : (Aque (Dummyset (12), J, 24) == 1);
128$     ASSIGN:
A (21, entatrank (J, dummyset (12))) = Agvctrl (1, 4);
Agvctrl (1, 4) = Buffer: NEXT (Branch7);
111$     FINDJ,
1, NQ (Dummyset (agvctrl (1, 2))) : (Aque (Dummyset (agvctrl (1, 2)), J, 24) == 1);
112$     ASSIGN:
A (21, entatrank (J, dummyset (agvctrl (1, 2)))) = Agvctrl (1, 4);
Agvctrl (1, 4) = Buffer: NEXT (Branch7);
3$       MOVE:
167$     BRANCH,
1:
If, Agvctrl (1, 3) == 12, 7$, Yes:
Else, 11$, Yes;
7$       ASSIGN:
Line (3) = 1: NEXT (Loop1);
11$      BRANCH,
1:
If, nq (queue set (Agvctrl (1, 3))) < 3, 7$, Yes:
Else, 141$, Yes;
141$     BRANCH,
1:
If, Agvctrl (1, 1) == 15, 142$, Yes:
Else, 101$, Yes;
142$     FINDJ,
1, NQ (Dummyset (12)) : (Aque (Dummyset (12), J, 23) == 1);

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143$      ASSIGN:      A(21,entatrank(J,dummyset(12)))=Agvctrl(1,3):
                                Agvctrl(1,3)=Buffer:NEXT(Branch8);
101$      FINDJ,
1,NQ(Dummyset(agvctrl(1,1))):(Aque(Dummyset(Agvctrl(1,1)),J,23)--1);
102$      ASSIGN:      A(21,entatrank(J,dummyset(agvctrl(1,1))))=agvctrl(1,3):
                                Agvctrl(1,3)=Buffer:NEXT(Branch8);
94$       ALLOCATE,
95$       MOVE:        Agv(1),agvctrl(1,2);
96$       ASSIGN:      Agv(1),Agvctrl(1,2);
All01    ASSIGN:      Agvctrl(1,6)=1:NEXT(Branch4_1);
agv2     ALLOCATE,
P23      QUEUE,
P23      SCAN:        AgvCtrl(2,1)<>0;
231$     DELAY:        0.000001;
BRN2     BRANCH,
                                1:
                                If,Agvctrl(2,2)<>0,Pick2,Yes;
                                Else,All0101,Yes;
Pick2    BRANCH,
                                1:
                                If,IDSNET(AgvPath,LT(Agv,2),DT(AgvCtrl(2,1)))<=IDSNET(AgvPath,LT(Agv,2),DT(AgvCtrl(2,2)
                                )),P27,Yes:
                                                Else,P30,Yes;
P27      ALLOCATE,
P28      MOVE:        1:agv(2),agvctrl(2,1);
P29      ASSIGN:      Agv(2),Agvctrl(2,1);
Branch105 BRANCH,
                                1:
                                If,IDSNET(AgvPath,LT(Agv,2),DT(AgvCtrl(2,2)))<=IDSNET(AgvPath,LT(Agv,2),DT(AgvCtrl(2,3)
                                )),P36,Yes:
                                                Else,P80,Yes;
P36      MOVE:        Agv(2),Agvctrl(2,2);
P37      ASSIGN:      Agvctrl(2,6)=1;
Branch106 BRANCH,
                                1:
                                If,IDSNET(AgvPath,LT(Agv,2),DT(AgvCtrl(2,3)))<=IDSNET(AgvPath,LT(Agv,2),DT(AgvCtrl(2,4)
                                )),P38,Yes:
                                                Else,MB102,Yes;
P38      MOVE:        Agv(2),Agvctrl(2,3);
p39      BRANCH,
                                1:
                                If,Agvctrl(2,3)==12,P41,Yes;
                                Else,P40,Yes;
P41      ASSIGN:      Line(14)=1:NEXT(Loop101);
Loop101  ASSIGN:      i=1;
L1       WHILE:       i<=13;
L2       BRANCH,
                                1:
                                If,NQ(Dummyset(i))>0,L3,Yes;
                                Else,L6,Yes;
L3       FINDJ,
L4       BRANCH,
                                1:
                                1,NQ(Dummyset(i)):Aque(Dummyset(i),J,25)--1;
                                1:
                                If,J<>0,L5,Yes;
                                Else,L6,Yes;
L5       REMOVE:      J,Dummyset(i),station;
L6       ASSIGN:      i=i+1;
L7       ENDWHILE;
u107    BRANCH,
                                1:
                                If,Line(14)==1,AS14,Yes;
                                If,Line(15)==1,AS15,Yes;
                                If,Line(16)==1,AS16,Yes;
                                If,Line(17)==1,AS17,Yes;
                                If,Line(18)==1,AS18,Yes;
                                If,Line(19)==1,AS19,Yes;
                                If,Line(20)==1,AS20,Yes;
                                If,Line(21)==1,AS21,Yes;
                                If,Line(22)==1,AS22,Yes;
                                If,Line(23)==1,AS23,Yes;
                                If,Line(24)==1,AS24,Yes;
                                If,Line(25)==1,AS25,Yes;
                                Else,AS26,Yes;
AS14    ASSIGN:      Cap(2)=Cap(2)-1;
                                AgvCtrl(2,1)=AgvCtrl(2,2);
                                AgvCtrl(2,3)=AgvCtrl(2,4);
                                AgvCtrl(2,5)=AgvCtrl(2,6);
                                AgvCtrl(2,2)=0;
                                AgvCtrl(2,4)=0;
                                AgvCtrl(2,6)=0;
                                Line(14)=0;
P47      BRANCH,
                                1:
                                If,Agvctrl(2,1)==15,P48,Yes;
                                Else,P49,Yes;
P48      FINDJ,
P50      ASSIGN:      1,nq(dummyset(12)):aque(dummyset(12),J,26)--1;
                                A(26,entatrank(J,dummyset(12)))=0;
                                A(25,entatrank(J,dummyset(12)))=1;
P52      DELAY:        0.000001:NEXT(Branch101);
Branch101 BRANCH,
                                1:

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If, AgvCtrl (2, 2) <> 0, Branch105, Yes:
Else, P105, Yes;
P105 MOVE: Agv(2), Firstx(Intx(DT(Agvctrl(2, 3)))));
P106 BRANCH, 1:
If, Lt(Agv, 2) == DT(Agvctrl(2, 3)), P108, Yes:
Else, P107, Yes;
P108 BRANCH, 1:
If, Agvctrl(2, 3) == 12, P109, Yes:
Else, P110, Yes;
P109 ASSIGN: Line(23) = 1: NEXT(Loop101);
P110 BRANCH, 1:
If, nq(queueSet(Agvctrl(2, 3))) < 3, P109, Yes:
Else, P111, Yes;
P111 BRANCH, 1:
If, Agvctrl(2, 1) == 15, P113, Yes:
Else, P112, Yes;
P113 FINDJ, 1, NQ(Dummyset(12)): (Aque(Dummyset(12), J, 25) == 1);
P114 ASSIGN: A(21, entatrank(J, dummyset(12))) = Agvctrl(2, 3):
Agvctrl(2, 3) = Buffer;
Branch103 BRANCH, 1:
If, AgvCtrl(2, 2) <> 0, Branch108, Yes:
Else, P118, Yes;
Branch108 BRANCH, 1:
If, IDSNET(AgvPath, LT(Agv, 2), DT(AgvCtrl(2, 3))) <= IDSNET(AgvPath, LT(Agv, 2), DT(AgvCtrl(2, 2
))), P95, Yes:
Else, P161, Yes;
P95 MOVE: Agv(2), Agvctrl(2, 3);
P96 ASSIGN: Line(17) = 1: NEXT(Loop102);
Loop102 ASSIGN: i = 1;
L8 WHILE: i <= 13;
L9 BRANCH, 1:
If, NQ(Dummyset(i)) > 0, L10, Yes:
Else, L13, Yes;
L10 FINDJ, 1, NQ(Dummyset(i)): Aque(Dummyset(i), J, 25) == 1;
L11 BRANCH, 1:
If, J <> 0, L12, Yes:
Else, L13, Yes;
L12 REMOVE: J, Dummyset(i), Buffer;
L13 ASSIGN: i = i + 1;
L14 ENDWHILE;
u108 BRANCH, 1:
If, Line(14) == 1, AS14, Yes:
If, Line(15) == 1, AS15, Yes:
If, Line(16) == 1, AS16, Yes:
If, Line(17) == 1, AS17, Yes:
If, Line(18) == 1, AS18, Yes:
If, Line(19) == 1, AS19, Yes:
If, Line(20) == 1, LOOP104, Yes:
If, Line(21) == 1, AS21, Yes:
If, Line(22) == 1, AS22, Yes:
If, Line(23) == 1, AS23, Yes:
If, Line(24) == 1, AS24, Yes:
If, Line(25) == 1, AS25, Yes:
Else, AS26, Yes;
AS15 ASSIGN: Agvctrl(2, 2) = 0:
Agvctrl(2, 4) = 0:
Agvctrl(2, 6) = 0:
Cap(2) = Cap(2) - 1:
Line(15) = 0;
P56 DELAY: 0.000001: NEXT(Branch101);
AS16 ASSIGN: Cap(2) = Cap(2) - 1:
AgvCtrl(2, 1) = AgvCtrl(2, 2):
AgvCtrl(2, 3) = AgvCtrl(2, 4):
AgvCtrl(2, 5) = AgvCtrl(2, 6):
AgvCtrl(2, 2) = 0:
AgvCtrl(2, 4) = 0:
AgvCtrl(2, 6) = 0:
Line(16) = 0;
P84 BRANCH, 1:
If, Agvctrl(2, 1) == 15, P85, Yes:
Else, P87, Yes;
P85 FINDJ, 1, nq(dummyset(12)): aque(dummyset(12), J, 26) == 1;
P86 ASSIGN: A(26, entatrank(J, dummyset(12))) = 0:
A(25, entatrank(J, dummyset(12))) = 1;
P89 DELAY: 0.000001: NEXT(Branch104);
Branch104 BRANCH, 1:
If, Agvctrl(2, 2) <> 0, Branch104_2, Yes:
Else, M101, Yes;

```

```

Branch104_2  BRANCH,      1:
If, IDSNET (AgvPath,LT (Agv, 2),DT (AgvCtrl (2,1))) <=IDSNET (AgvPath,LT (Agv, 2),DT (AgvCtrl (2,2
))), P1, Yes:
Else, P3, Yes;
P1          MOVE:      Agv (2), Agvctrl (2, 1);
P2          ASSIGN:   Agvctrl (2, 5)=1:NEXT (Branch105);
P3          MOVE:      Agv (2), Agvctrl (2, 2);
P4          ASSIGN:   Agvctrl (2, 6)=1;
Branch104_1  BRANCH,      1:
If, IDSNET (AgvPath,LT (Agv, 2),DT (AgvCtrl (2,1))) <=IDSNET (AgvPath,LT (Agv, 2),DT (AgvCtrl (2, 4
))), P5, Yes:
Else, P7, Yes;
P5          MOVE:      Agv (2), Agvctrl (2, 1);
P6          ASSIGN:   Agvctrl (2, 5)=1:NEXT (Branch106);
P7          MOVE:      Agv (2), Agvctrl (2, 4);
P8          BRANCH,    1:
                If, Agvctrl (2, 4)==12, P9, Yes:
                Else, P11, Yes;
P9          ASSIGN:   Line (25)=1:NEXT (Loop103);
Loop103     ASSIGN:   i=1;
L15         WHILE:    i<=13;
L16         BRANCH,    1:
                If, NQ (Dummyset (i)) > 0, L17, Yes:
                Else, L20, Yes;
L17         FINDJ,     1, NQ (Dummyset (i)) : Aque (Dummyset (i), J, 26) ==1;
L18         BRANCH,    1:
                If, J > 0, L19, Yes:
                Else, L20, Yes;
L19         REMOVE:   J, Dummyset (i), station;
L20         ASSIGN:   i=i+1;
L21         ENDWHILE;
u109        BRANCH,    1:
                If, Line (14) ==1, AS14, Yes:
                If, Line (15) ==1, AS15, Yes:
                If, Line (16) ==1, AS16, Yes:
                If, Line (17) ==1, AS17, Yes:
                If, Line (18) ==1, AS18, Yes:
                If, Line (19) ==1, AS19, Yes:
                If, Line (20) ==1, AS20, Yes:
                If, Line (21) ==1, AS21, Yes:
                If, Line (22) ==1, AS22, Yes:
                If, Line (23) ==1, AS23, Yes:
                If, Line (24) ==1, AS24, Yes:
                If, Line (25) ==1, AS25, Yes:
                Else, AS26, Yes;
AS17        ASSIGN:   Cap (2)=Cap (2)-1;
                AgvCtrl (2, 1)=AgvCtrl (2, 2);
                AgvCtrl (2, 3)=AgvCtrl (2, 4);
                AgvCtrl (2, 5)=AgvCtrl (2, 6);
                AgvCtrl (2, 2)=0;
                AgvCtrl (2, 4)=0;
                AgvCtrl (2, 6)=0;
                Line (17)=0;
P97         BRANCH,    1:
                If, Agvctrl (2, 1) ==15, P98, Yes:
                Else, P101, Yes;
P98         FINDJ,     1, nq (dummyset (12)) : aque (dummyset (12), J, 26) ==1;
P99         ASSIGN:   A (26, entatrank (J, dummyset (12))) =0;
                A (25, entatrank (J, dummyset (12))) =1;
P100        DELAY:     0.000001:NEXT (Branch104);
P101        FINDJ,     1, nq (dummyset (agvctrl (2, 1))) : aque (dummyset (agvctrl (2, 1)), J, 26) ==1;
P102        ASSIGN:   A (26, entatrank (J, dummyset (agvctrl (2, 1)))) =0;
                A (25, entatrank (J, dummyset (agvctrl (2, 1)))) =1:NEXT (P100);
AS18        ASSIGN:   Cap (2)=Cap (2)-1;
                AgvCtrl (2, 1)=AgvCtrl (2, 2);
                AgvCtrl (2, 3)=AgvCtrl (2, 4);
                AgvCtrl (2, 5)=AgvCtrl (2, 6);
                AgvCtrl (2, 2)=0;
                AgvCtrl (2, 4)=0;
                AgvCtrl (2, 6)=0;
                Line (18)=0;
P165        BRANCH,    1:
                If, Agvctrl (2, 1) ==15, P166, Yes:
                Else, P169, Yes;
P166        FINDJ,     1, nq (dummyset (12)) : aque (dummyset (12), J, 26) ==1;
P167        ASSIGN:   A (26, entatrank (J, dummyset (12))) =0;
                A (25, entatrank (J, dummyset (12))) =1;
P168        DELAY:     0.000001:NEXT (Branch101);
P169        FINDJ,     1, nq (dummyset (agvctrl (2, 1))) : aque (dummyset (agvctrl (2, 1)), J, 26) ==1;

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If, LT(Agv, 2) == Int5, Branch102, Yes:
If, LT(Agv, 2) == Int6, Branch102, Yes:
If, LT(Agv, 2) == Int7, Branch102, Yes:
If, LT(Agv, 2) == Int8, Branch102, Yes:
If, LT(Agv, 2) == Int9, Branch102, Yes:
If, LT(Agv, 2) == Int10, Branch102, Yes:
If, LT(Agv, 2) == Int11, Branch102, Yes:
If, LT(Agv, 2) == Int12, Branch102, Yes:
If, LT(Agv, 2) == Int13, Branch102, Yes:
If, LT(Agv, 2) == Int27, Branch102, Yes:
If, LT(Agv, 2) == Int28, Branch102, Yes:
Else, MV2, Yes;
AS21      ASSIGN:  Agvctrl(2,1)=Agvctrl(2,2):
                Agvctrl(2,2)=0:
                Agvctrl(2,3)=Agvctrl(2,4):
                Agvctrl(2,4)=0:
                Agvctrl(2,5)=Agvctrl(2,6):
                Agvctrl(2,6)=0:
                Cap(2)=Cap(2)-1:
                Line(21)=0;
P74       BRANCH,  1:
                If, Agvctrl(2,1) == 15, P75, Yes:
                Else, P76, Yes;
P75       FINDJ,   1, nq(dummyset(12)): aque(dummyset(12), J, 26) == 1;
P77       ASSIGN:  A(26, entatrank(J, dummyset(12))) = 0:
                A(25, entatrank(J, dummyset(12))) = 1;
P79       DELAY:   0.000001: NEXT(Branch103);
p76       FINDJ,   1, nq(dummyset(agvctrl(2,1))): aque(dummyset(agvctrl(2,1)), J, 26) == 1;
P78       ASSIGN:  A(26, entatrank(J, dummyset(agvctrl(2,1)))) = 0:
                A(25, entatrank(J, dummyset(agvctrl(2,1)))) = 1: NEXT(P79);
AS22      ASSIGN:  Agvctrl(2,2)=0:
                Agvctrl(2,4)=0:
                Agvctrl(2,6)=0:
                Cap(2)=Cap(2)-1:
                Line(22)=0;
p65       DELAY:   0.000001: NEXT(Branch101);
AS23      ASSIGN:  Cap(2)=Cap(2)-1:
                AgvCtrl(2,1)=0:
                AgvCtrl(2,3)=0:
                AgvCtrl(2,5)=0:
                Line(23)=0;
P153      BRANCH,  1:
                If, Agvctrl(2,2) <> 0, P155, Yes:
                Else, P154, Yes;
P155      ASSIGN:  AgvCtrl(2,1)=AgvCtrl(2,2):
                AgvCtrl(2,3)=AgvCtrl(2,4):
                AgvCtrl(2,5)=AgvCtrl(2,6):
                Agvctrl(2,2)=0:
                Agvctrl(2,4)=0:
                Agvctrl(2,6)=0;
P156      BRANCH,  1:
                If, Agvctrl(2,1) == 15, P157, Yes:
                Else, P159, Yes;
P157      FINDJ,   1, nq(dummyset(12)): aque(dummyset(12), J, 26) == 1;
P158      ASSIGN:  A(26, entatrank(J, dummyset(12))) = 0:
                A(25, entatrank(J, dummyset(12))) = 1: NEXT(Branch104);
P159      FINDJ,   1, nq(dummyset(agvctrl(2,1))): aque(dummyset(agvctrl(2,1)), J, 26) == 1;
P160      ASSIGN:  A(26, entatrank(J, dummyset(agvctrl(2,1)))) = 0:
                A(25, entatrank(J, dummyset(agvctrl(2,1)))) = 1: NEXT(Branch104);
P154      DELAY:   0.000001: NEXT(Branch102);
AS24      ASSIGN:  Cap(2)=Cap(2)-1:
                AgvCtrl(2,1)=0:
                AgvCtrl(2,3)=0:
                AgvCtrl(2,5)=0:
                Line(24)=0: NEXT(Branch102);
AS25      ASSIGN:  Cap(2)=Cap(2)-1:
                AgvCtrl(2,2)=0:
                AgvCtrl(2,4)=0:
                AgvCtrl(2,6)=0:
                Line(25)=0;
P10       DELAY:   0.000001: NEXT(Branch104);
AS26      ASSIGN:  Cap(2)=Cap(2)-1:
                AgvCtrl(2,2)=0:
                AgvCtrl(2,4)=0:
                AgvCtrl(2,6)=0:
                Line(26)=0;
P22       DELAY:   0.000001: NEXT(Branch104);
P11       BRANCH,  1:

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If, nq(queue set (agvctrl(2,4))) < 3, P9, Yes:
Else, P12, Yes;
P12      BRANCH,      1:
If, Agvctrl(2,2) == 15, P13, Yes:
Else, P15, Yes;
P13      FINDJ,      1, NQ(Dummyset(12)) : (Aque(Dummyset(12), J, 26) == 1);
P14      ASSIGN:      A(21, entatrank(J, dummyset(12))) = Agvctrl(2,4);
Agvctrl(2,4) = Buffer;
Branch104_3 BRANCH, 1:
If, IDSNET(AgvPath, LT(Agv, 2), DT(AgvCtrl(2,1))) <= IDSNET(AgvPath, LT(Agv, 2), DT(AgvCtrl(2,4))), P18, Yes:
Else, P20, Yes;
P18      MOVE:      Agv(2), Agvctrl(2,1);
P19      ASSIGN:      Agvctrl(2,5) = 1: NEXT(Branch107);
Branch107 BRANCH, 1:
If, IDSNET(AgvPath, LT(Agv, 2), DT(AgvCtrl(2,3))) <= IDSNET(AgvPath, LT(Agv, 2), DT(AgvCtrl(2,4))), P62, Yes:
Else, P63, Yes;
P62      MOVE:      Agv(2), Agvctrl(2,3);

P66      BRANCH,      1:
If, Agvctrl(2,3) == 12, P67, Yes:
Else, P68, Yes;
P67      ASSIGN:      Line(21) = 1: NEXT(Loop101);
P68      BRANCH,      1:
If, nq(queue set (Agvctrl(2,3))) < 3, P67, Yes:
Else, P69, Yes;
P69      BRANCH,      1:
If, Agvctrl(2,1) == 15, P70, Yes:
Else, P72, Yes;
P70      FINDJ,      1, NQ(Dummyset(12)) : (Aque(Dummyset(12), J, 25) == 1);
P71      ASSIGN:      A(21, entatrank(J, dummyset(12))) = Agvctrl(2,3);
Agvctrl(2,3) = Buffer: NEXT(MB101);
MB101    MOVE:      Agv(2), buffer;
P181     ASSIGN:      Line(20) = 1: NEXT(Loop102);
P72      FINDJ,
1, NQ(Dummyset(agvctrl(2,1))) : (Aque(Dummyset(Agvctrl(2,1)), J, 25) == 1);
P73      ASSIGN:      A(21, entatrank(J, dummyset(agvctrl(2,1)))) = Agvctrl(2,3);
Agvctrl(2,3) = Buffer: NEXT(MB101);
P63      MOVE:      Agv(2), Buffer;
p64      ASSIGN:      Line(22) = 1: NEXT(Loop104);
Loop104  ASSIGN:      i = 1;
L22      WHILE:      i <= 13;
L23      BRANCH,      1:
If, NQ(Dummyset(i)) > 0, L24, Yes:
Else, L27, Yes;
L24      FINDJ,      1, NQ(Dummyset(i)) : Aque(Dummyset(i), J, 26) == 1;
L25      BRANCH,      1:
If, J <> 0, L26, Yes:
Else, L27, Yes;
L26      REMOVE:      J, Dummyset(i), Buffer;
L27      ASSIGN:      i = i + 1;
L28      ENDWHILE;
u110     BRANCH,      1:
If, Line(14) == 1, AS14, Yes:
If, Line(15) == 1, AS15, Yes:
If, Line(16) == 1, AS16, Yes:
If, Line(17) == 1, AS17, Yes:
If, Line(18) == 1, AS18, Yes:
If, Line(19) == 1, AS19, Yes:
If, Line(20) == 1, AS20, Yes:
If, Line(21) == 1, AS21, Yes:
If, Line(22) == 1, AS22, Yes:
If, Line(23) == 1, AS23, Yes:
If, Line(24) == 1, AS24, Yes:
If, Line(25) == 1, AS25, Yes:
Else, AS26, Yes;
P20      MOVE:      Agv(2), Agvctrl(2,4);
P21      ASSIGN:      Line(26) = 1: NEXT(Loop104);
P15      FINDJ,
1, NQ(Dummyset(agvctrl(2,2))) : (Aque(Dummyset(Agvctrl(2,2)), J, 26) == 1);
P16      ASSIGN:      A(21, entatrank(J, dummyset(agvctrl(2,2)))) = agvctrl(2,4);
Agvctrl(2,4) = Buffer: NEXT(Branch104_3);
M101     MOVE:      Agv(2), Firstx(Intx(DT(agvctrl(2,1)))));
P33      BRANCH,      1:
If, Lt(Agv, 2) == DT(Agvctrl(2,1)), P35, Yes:
Else, P34, Yes;
P35      ASSIGN:      Agvctrl(2,5) = 1: NEXT(Branch101);
P34      BRANCH,      1:
If, Lt(agv, 2) == Int1, Branch104, Yes:

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If, LT (agv, 2) == Int2, Branch104, Yes:
If, LT (agv, 2) == Int3, Branch104, Yes:
If, LT (agv, 2) == Int4, Branch104, Yes:
If, LT (agv, 2) == Int5, Branch104, Yes:
If, LT (Agv, 2) == Int6, Branch104, Yes:
If, LT (Agv, 2) == Int7, Branch104, Yes:
If, LT (Agv, 2) == Int8, Branch104, Yes:
If, LT (Agv, 2) == Int9, Branch104, Yes:
If, LT (Agv, 2) == Int10, Branch104, Yes:
If, LT (Agv, 2) == Int11, Branch104, Yes:
If, LT (Agv, 2) == Int12, Branch104, Yes:
If, LT (Agv, 2) == Int13, Branch104, Yes:
If, LT (agv, 2) == Int27, Branch104, Yes:
If, LT (Agv, 2) == Int28, Branch104, Yes:
Else, M101, Yes;

P87      FINDJ,
1, nq (dummyset (agvctrl (2, 1))) : aque (dummyset (agvctrl (2, 1)), J, 26) == 1;
P88      ASSIGN:
A (26, entatranc (J, dummyset (agvctrl (2, 1)))) = 0;
A (25, entatranc (J, dummyset (agvctrl (2, 1)))) = 1: NEXT (P89);

P161     MOVE:
P162     ASSIGN:
Branch111 BRANCH,
If, IDSNET (AgvPath, LT (Agv, 2), DT (AgvCtrl (2, 3))) <= IDSNET (AgvPath, LT (Agv, 2), DT (AgvCtrl (2, 4))), P163, Yes:
Else, P171, Yes;
P163     MOVE:
P164     ASSIGN:
P171     MOVE:
P172     BRANCH,
1:
If, Agvctrl (2, 4) == 12, P173, Yes:
Else, P175, Yes;
P173     ASSIGN:
P175     BRANCH,
1:
If, nq (queueset (Agvctrl (2, 4))) < 3, P173, Yes:
Else, P176, Yes;
P176     BRANCH,
1:
If, Agvctrl (2, 2) == 15, P177, Yes:
Else, P179, Yes;
P177     FINDJ,
P178     ASSIGN:
1, NQ (Dummyset (12)) : (Aque (Dummyset (12)), J, 26) == 1);
A (21, entatranc (J, dummyset (12))) = Agvctrl (2, 4):
Agvctrl (2, 4) = Buffer: NEXT (MB101);

P179     FINDJ,
1, NQ (Dummyset (agvctrl (2, 2))) : (Aque (Dummyset (agvctrl (2, 2)), J, 26) == 1);
P180     ASSIGN:
A (21, entatranc (J, dummyset (agvctrl (2, 2)))) = agvctrl (2, 4):
Agvctrl (2, 4) = Buffer: NEXT (MB101);
P118     MOVE:
P119     BRANCH,
1:
If, Lt (Agv, 2) == DT (Agvctrl (2, 3)), P120, Yes:
Else, P121, Yes;
P120     ASSIGN:
P121     BRANCH,
1:
If, LT (agv, 2) == Int1, Branch103, Yes:
If, LT (agv, 2) == Int2, Branch103, Yes:
If, LT (agv, 2) == Int3, Branch103, Yes:
If, LT (agv, 2) == Int4, Branch103, Yes:
If, LT (agv, 2) == Int5, Branch103, Yes:
If, LT (Agv, 2) == Int6, Branch103, Yes:
If, LT (Agv, 2) == Int7, Branch103, Yes:
If, LT (Agv, 2) == Int8, Branch103, Yes:
If, LT (Agv, 2) == Int9, Branch103, Yes:
If, LT (Agv, 2) == Int10, Branch103, Yes:
If, LT (Agv, 2) == Int11, Branch103, Yes:
If, LT (Agv, 2) == Int12, Branch103, Yes:
If, LT (Agv, 2) == Int13, Branch103, Yes:
If, LT (Agv, 2) == Int27, Branch103, Yes:
If, LT (Agv, 2) == Int28, Branch103, Yes:
Else, P118, Yes;

P112     FINDJ,
1, NQ (Dummyset (agvctrl (2, 1))) : (Aque (Dummyset (agvctrl (2, 1)), J, 25) == 1);
P115     ASSIGN:
A (21, entatranc (J, dummyset (agvctrl (2, 1)))) = Agvctrl (2, 3):
Agvctrl (2, 3) = Buffer: NEXT (Branch103);
P107     BRANCH,
1:
If, LT (agv, 2) == Int1, Branch101, Yes:
If, LT (agv, 2) == Int2, Branch101, Yes:
If, LT (agv, 2) == Int3, Branch101, Yes:
If, LT (agv, 2) == Int4, Branch101, Yes:
If, LT (agv, 2) == Int5, Branch101, Yes:
If, LT (Agv, 2) == Int6, Branch101, Yes:
If, LT (Agv, 2) == Int7, Branch101, Yes:
If, LT (Agv, 2) == Int8, Branch101, Yes:
If, LT (Agv, 2) == Int9, Branch101, Yes:

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If, LT (Agv, 2) == Int10, Branch101, Yes:
If, LT (Agv, 2) == Int11, Branch101, Yes:
If, LT (Agv, 2) == Int12, Branch101, Yes:
If, LT (Agv, 2) == Int13, Branch101, Yes:
If, LT (Agv, 2) == Int27, Branch101, Yes:
If, LT (Agv, 2) == Int28, Branch101, Yes:
Else, P105, Yes;

P49      FINDJ,
1, nq (dummyset (agvctrl (2, 1))) : aque (dummyset (agvctrl (2, 1)), J, 26) == 1;
P51      ASSIGN:
A (26, entatrank (J, dummyset (agvctrl (2, 1)))) = 0;
A (25, entatrank (J, dummyset (agvctrl (2, 1)))) = 1: NEXT (P52);

P40      BRANCH,
1:
If, nq (queueset (Agvctrl (2, 3))) < 3, P41, Yes:
Else, P42, Yes;

P42      BRANCH,
1:
If, Agvctrl (2, 1) == 15, P43, Yes:
Else, P45, Yes;

P43      FINDJ,
P44      ASSIGN:
1, NQ (Dummyset (12)) : (Aque (Dummyset (12), J, 25) == 1);
A (21, entatrank (J, dummyset (12))) = Agvctrl (2, 3);
Agvctrl (2, 3) = Buffer: NEXT (Branch111);

P45      FINDJ,
1, NQ (Dummyset (agvctrl (2, 1))) : (Aque (Dummyset (agvctrl (2, 1)), J, 25) == 1);
P46      ASSIGN:
A (21, entatrank (J, dummyset (agvctrl (2, 1)))) = Agvctrl (2, 3);
Agvctrl (2, 3) = Buffer: NEXT (Branch111);

MB102    MOVE:
P53      BRANCH,
1:
If, Agvctrl (2, 4) == 12, P55, Yes:
Else, P54, Yes;

P55      ASSIGN:
Line (15) = 1: NEXT (Loop103);
P54      BRANCH,
1:
If, nq (queueset (Agvctrl (2, 4))) < 3, P55, Yes:
Else, P57, Yes;

P57      BRANCH,
1:
If, Agvctrl (2, 2) == 15, P58, Yes:
Else, P60, Yes;

P58      FINDJ,
P59      ASSIGN:
1, NQ (Dummyset (12)) : (Aque (Dummyset (12), J, 26) == 1);
A (21, entatrank (J, dummyset (12))) = Agvctrl (2, 4);
Agvctrl (2, 4) = Buffer: NEXT (Branch107);

P60      FINDJ,
1, NQ (Dummyset (agvctrl (2, 2))) : (Aque (Dummyset (Agvctrl (2, 2)), J, 26) == 1);
P61      ASSIGN:
A (21, entatrank (J, dummyset (agvctrl (2, 2)))) = Agvctrl (2, 4);
Agvctrl (2, 4) = Buffer: NEXT (Branch107);

P80      MOVE:
P81      BRANCH,
1:
If, Agvctrl (2, 3) == 12, P83, Yes:
Else, P82, Yes;

P83      ASSIGN:
Line (16) = 1: NEXT (Loop101);
P82      BRANCH,
1:
If, nq (queueset (Agvctrl (2, 3))) < 3, P83, Yes:
Else, P90, Yes;

P90      BRANCH,
1:
If, Agvctrl (2, 1) == 15, P91, Yes:
Else, P92, Yes;

P91      FINDJ,
P93      ASSIGN:
1, NQ (Dummyset (12)) : (Aque (Dummyset (12), J, 25) == 1);
A (21, entatrank (J, dummyset (12))) = Agvctrl (2, 3);
Agvctrl (2, 3) = Buffer: NEXT (Branch108);

P92      FINDJ,
1, NQ (Dummyset (agvctrl (2, 1))) : (Aque (Dummyset (Agvctrl (2, 1)), J, 25) == 1);
P94      ASSIGN:
A (21, entatrank (J, dummyset (agvctrl (2, 1)))) = agvctrl (2, 3);
Agvctrl (2, 3) = Buffer: NEXT (Branch108);

P30      ALLOCATE,
P31      MOVE:
1: agv (2), agvctrl (2, 2);
P32      ASSIGN:
Agv (2), Agvctrl (2, 2);
Agvctrl (2, 6) = 1: NEXT (Branch104 1);
All0101  ALLOCATE,
4835     CREATE,
1: agv (2), agvctrl (2, 1): NEXT (M101);
80: : NEXT (BBB);

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ส่วนที่ ๑ Experiment

PROJECT, Q1MNS80, ROTCHANART, 16/1/98, Yes;
 ATTRIBUTES:

1, TimeIn:
 2, OptNum:
 3, 1stLp:
 4, Opt (6):
 10, MM (6):
 16, 2ndLp:
 17, NextMM:
 18, NextMM1:
 19, SetIndex:
 20, C:
 21, Remember:
 22, OptNo:
 23, K11:
 24, K12:
 25, K21:
 26, K22:
 27, TotalOpt:
 28, Lateness:
 29, Tardiness:
 30, Duedate:
 31, Earliness;

VARIABLES:

B1:
 Compare0:
 cmp (14):
 Agvctrl (2, 6):
 MQ:
 Unit:
 TardyJob:
 I:
 Sel (2):
 Line (26):
 Z (13):
 LO:
 Del:
 ZO:
 N:
 Select0:
 Unit0:
 out:
 Lock (11):
 Nontardy:
 Nex:
 Que:
 Cap (2):
 B:
 DT (15), 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 27, 28:
 IntN;

INTERSECTIONS: 1, Int1, 1, FCFS (), 1.0:
 2, Int2, 1, FCFS (), 1.0:
 3, Int3, 1, FCFS (), 1.0:
 4, Int4, 1, FCFS (), 1.0:
 5, Int5, 1, FCFS (), 1.0:
 6, Int6, 1, FCFS (), 1.0:
 7, Int7, 1, FCFS (), 1.0:
 8, Int8, 1, FCFS (), 1.0:
 9, Int9, 1, FCFS (), 1.0:
 10, Int10, 1, FCFS (), 1.0:
 11, Int11, 1, FCFS (), 1.0:
 12, Int12, 1, FCFS (), 1.0:
 13, Int13, 1, FCFS (), 1.0:
 14, Int14, 1, FCFS (), 1.0:
 15, Int15, 1, FCFS (), 1.0:
 16, Int16, 1, FCFS (), 1.0:
 17, Int17, 1, FCFS (), 1.0:
 18, Int18, 1, FCFS (), 1.0:
 19, Int19, 1, FCFS (), 1.0:
 20, Int20, 1, FCFS (), 1.0:
 21, Int21, 1, FCFS (), 1.0:
 22, Int22, 1, FCFS (), 1.0:
 23, Int23, 1, FCFS (), 1.0:
 24, Int24, 1, FCFS (), 1.0:
 25, Int25, 1, FCFS (), 1.0:
 26, Int26, 1, FCFS (), 1.0:
 27, Int27, 1, FCFS (), 1.0:
 28, Int28, 1, FCFS (), 1.0;

QUEUES: 1, Q1, FirstInFirstOut:
 2, Q2, FirstInFirstOut:
 3, Q3, FirstInFirstOut:
 4, Q4, FirstInFirstOut:
 5, Q5, FirstInFirstOut:
 6, Q6, FirstInFirstOut:
 7, Q7, FirstInFirstOut:
 8, Q8, FirstInFirstOut:
 9, Q9, FirstInFirstOut:
 10, Q10, FirstInFirstOut:
 11, Q11, FirstInFirstOut:
 12, Q12, FirstInFirstOut:
 13, Q13, FirstInFirstOut:
 14, Q14, FirstInFirstOut:
 15, Q15, FirstInFirstOut:
 16, Q16, FirstInFirstOut:
 17, Q17, FirstInFirstOut:
 18, Q18, FirstInFirstOut:
 19, Q19, FirstInFirstOut:
 20, Q20, FirstInFirstOut:
 21, Q21, FirstInFirstOut:
 22, Q22, FirstInFirstOut:
 23, AGVQue, FirstInFirstOut:
 24, BufferQ, FirstInFirstOut:
 25, Q, FirstInFirstOut:
 26, D1, FirstInFirstOut:
 27, D2, FirstInFirstOut:
 28, D3, FirstInFirstOut:
 29, D4, FirstInFirstOut:
 30, D5, FirstInFirstOut:
 31, D6, FirstInFirstOut:
 32, D7, FirstInFirstOut:
 33, D8, FirstInFirstOut:
 34, D9, FirstInFirstOut:
 35, D10, FirstInFirstOut:
 36, D11, FirstInFirstOut:
 37, D12, FirstInFirstOut:
 38, D13, FirstInFirstOut:
 39, Chkcon1, FirstInFirstOut:
 40, Chkcon2, FirstInFirstOut:
 41, agv1, FirstInFirstOut:
 42, AGV2, FirstInFirstOut:
 43, qq, FirstInFirstOut;

RESOURCES: 1, MC1, Capacity(1,):
 2, MC2, Capacity(1,):
 3, MC3, Capacity(1,):
 4, MC4, Capacity(1,):
 5, MC5, Capacity(1,):
 6, MC6, Capacity(1,):
 7, MC7, Capacity(1,):
 8, MC8, Capacity(1,):
 9, MC9, Capacity(1,):
 10, MC10, Capacity(1,):
 11, MC11, Capacity(1,):
 12, BefQ12, Capacity(1,):
 13, BefQ13, Capacity(1,):
 14, BefQ14, Capacity(1,):
 15, BefQ15, Capacity(1,):
 16, BefQ16, Capacity(1,):
 17, BefQ17, Capacity(1,):
 18, BefQ18, Capacity(1,):
 19, BefQ19, Capacity(1,):
 20, BefQ20, Capacity(1,):
 21, BefQ21, Capacity(1,):
 22, BefQ22, Capacity(1,);

STATIONS: 1, Dept1, Int1:
 2, Dept2, Int2:
 3, Dept3, Int3:
 4, Dept4, Int4:
 5, Dept5, Int5:
 6, Dept6, Int6:
 7, Dept7, Int7:
 8, Dept8, Int8:
 9, Dept9, Int9:
 10, Dept10, Int10:
 11, Dept11, Int11:
 12, Dept12, Int12:
 13, ENTER, Int13:

14, Staging, Int27;
15, Buffer, Int28;

LINKS:

1, L1, Int13-0, Int18-, 1, 19, Unidirectional, 1.0:
2, L2, Int18-0, Int19-, 1, 20, Unidirectional, 1.0:
3, L3, Int19-0, Int3-, 1, 60, Unidirectional, 1.0:
4, L4, Int3-0, Int14-, 1, 12, Unidirectional, 1.0:
5, L5, Int14-0, Int11-, 1, 9, Unidirectional, 1.0:
6, L6, Int11-0, Int12-, 1, 29, Unidirectional, 1.0:
7, L7, Int12-0, Int15-, 1, 29, Unidirectional, 1.0:
8, L8, Int18-0, Int2-, 1, 11, Unidirectional, 1.0:
9, L9, Int2-0, Int17-, 1, 10, Unidirectional, 1.0:
10, L10, Int17-0, Int4-, 1, 19, Unidirectional, 1.0:
11, L11, Int4-0, Int16-, 1, 6, Unidirectional, 1.0:
12, L12, Int16-0, Int8-, 1, 6, Unidirectional, 1.0:
13, L13, Int8-0, Int15-, 1, 5, Unidirectional, 1.0:
14, L14, Int17-0, Int14-, 1, 29, Unidirectional, 1.0:
15, L15, Int15-0, Int10-, 1, 14, Unidirectional, 1.0:
16, L16, Int10-0, Int20-, 1, 13, Unidirectional, 1.0:
17, L17, Int20-0, Int9-, 1, 12, Unidirectional, 1.0:
18, L18, Int9-0, Int6-, 1, 21, Unidirectional, 1.0:
19, L19, Int6-0, Int26-, 1, 13, Unidirectional, 1.0:
20, L20, Int26-0, Int23-, 1, 48, Unidirectional, 1.0:
21, L21, Int26-0, Int25-, 1, 15, Unidirectional, 1.0:
22, L22, Int25-0, Int22-, 1, 12, Unidirectional, 1.0:
23, L23, Int23-0, Int5-, 1, 9, Unidirectional, 1.0:
24, L24, Int5-0, Int22-, 1, 9, Unidirectional, 1.0:
25, L25, Int22-0, Int21-, 1, 6, Unidirectional, 1.0:
26, L26, Int21-0, Int20-, 1, 12, Unidirectional, 1.0:
27, L27, Int9-0, Int7-, 1, 5, Unidirectional, 1.0:
28, L28, Int7-0, Int25-, 1, 13, Unidirectional, 1.0:
29, L29, Int21-0, Int16-, 1, 28, Unidirectional, 1.0:
30, L30, Int23-0, Int1-, 1, 10, Unidirectional, 1.0:
31, L31, Int1-0, Int24-, 1, 11, Unidirectional, 1.0:
32, L32, Int24-0, Int13-, 1, 8, Unidirectional, 1.0:
33, L33, Int24-0, Int19-, 1, 49, Unidirectional, 1.0:
34, L34, Int23-0, Int27-, 12, 1, Unidirectional, 1.0:
35, L35, Int27-0, Int24-, 1, 12, Unidirectional, 1.0:
36, L36, Int17-0, Int28-, 1, 10, Unidirectional, 1.0:
37, L37, Int28-0, Int4-, 1, 10, Unidirectional, 1.0;

NETWORKS: AGVPath, 1-37;

TRANSPORTERS: 1, AGV, 2, Network (AGVPath)-Start, 200-0.0-0.0-1.0, Link (L34,) -Active-Zone (1);

TALLIES: Early1:
Early2:
Late:
Flowtime:
Tardy1:
Tardy2;

DSTATS: 1, NT (Agv) / 2;
2, (NR (MC1) + NR (MC2) + NR (MC3) + NR (MC4) + NR (MC5) + NR (MC6) + NR (MC7) + NR (MC8) + NR (MC9) + NR (MC10) + NR (MC11)) / 11, UTIL_MC;
3, TardyJob;
4, (lock (1) + lock (2) + lock (3) + lock (4) + lock (5) + lock (6) + lock (7) + lock (8) + lock (9) + lock (10) + lock (11)) / 11, LOCKING;
5, L0:
6, NQ (Bufferq):
7, NonTardy;

REPLICATE, 10, 0, 6000, No, Yes, 3000;

SETS: QueueSet, Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15, Q16, Q17, Q18, Q19, Q20, Q21, Q22;

DeptSet, Dept1, Dept2, Dept3, Dept4, Dept5, Dept6, Dept7, Dept8, Dept9, Dept10, Dept11, Dept12:
MachineSet, MC1, MC2, MC3, MC4, MC5, MC6, MC7, MC8, MC9, MC10, MC11:
DummySet, D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13:
BefQset, BefQ12.. BefQ22;

ประวัติผู้เขียน

นางสาวรจนาภ โกรบัญญัติพงษ์ เกิดเมื่อวันที่ 7 ตุลาคม พ.ศ.2513 ที่จังหวัดบุรีรัมย์ สำเร็จการศึกษาปริญญาตรี วิศวกรรมศาสตรบัณฑิต สาขาวิศวกรรมอุตสาหการจากมหาวิทยาลัยขอนแก่น ในปีการศึกษา 2535 หลังจากนั้นได้เข้าทำงานที่บริษัทไทยโก้เอ็นจิเนียริง จำกัด และบริษัทไนซ์ แอปพารเรล จำกัด แล้วเข้าศึกษาต่อในหลักสูตรวิศวกรรมศาสตรมหาบัณฑิต สาขาวิศวกรรมอุตสาหการ จุฬาลงกรณ์มหาวิทยาลัย ในปีการศึกษา 2538



สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย