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ภาคผนวก

ภาคผนวก ก.

การทำงานโปรแกรมทูลบุค

การทำงานโปรแกรมทูลบุค

องค์ประกอบของภาษา โอเพ็นสคริพท์

ภาษา โอเพ็นสคริพท์ ของทูลบุค มีหลายส่วนประกอบที่ใช้หลักการเขียนโปรแกรมเหมือนหรือคล้ายกับโปรแกรมภาษาคอมพิวเตอร์ทั่วๆไป และส่วนเพิ่มเติมที่ใช้หลักการของภาษาเชิงวัตถุ (objected oriented programming)

1. องค์ประกอบการเขียนโปรแกรมพื้นฐาน อธิบายดังนี้

สคริพท์ (Scripts) คือ อนุกรมของประโยคภาษาโอเพ็นสคริพท์ที่รวมเป็นกลุ่มซึ่งจะบอกว่าให้ทำอะไรสำหรับเหตุการณ์เฉพาะนั้น

ตัวจัดกระทำ (Handlers) คือ กลุ่มของข้อความสั่ง (statements) ที่ถูกจัดขึ้นเพื่อใช้สำหรับตอบสนองข้อความ(message)ที่กำหนดขึ้น

ข้อความสั่ง (Statements) คือ โครงสร้างของคำสั่ง(instruction)ที่อยู่ในสคริพท์ และเกือบทุกโครงสร้างคำสั่งจะขึ้นต้นด้วย คำสั่ง (command)

ข้อความ (Messages) คือ การติดต่อสื่อสารไปยังวัตถุที่ถูกอ้างถึง โดยตัวจัดกระทำข้อความ (message handler)ที่ตรงกับ message ที่ต้องการติดต่อ จะถูกสั่งให้ทำงาน

คำสั่ง (Commands) คือ คำเฉพาะในภาษาโอเพ็นสคริพท์ เพื่อบอกให้ทูลบุคทำงานเฉพาะอย่าง ตัวอย่างของคำสั่ง เช่น send, get, show, hide , ฯ

โครงสร้างควบคุม (Control structures) เป็นอนุกรมของข้อความสั่งที่สามารถกำหนดสภาวะการทำงานได้

วัตถุ (Objects) ในภาษาโอเพ็นสคริพท์มีวัตถุหลายลักษณะ คือ button , field , record field , hot word , graphic , group , page , background , book ทุกวัตถุจะมีคุณสมบัติเฉพาะเป็นของตัวเองและอาจจะมีสคริพท์ประกอบด้วยหรือไม่ก็ได้

คุณสมบัติเฉพาะ (Properties) คือ คุณสมบัติลักษณะที่ถูกใช้เพื่อบ่งบอกในแต่ละ วัตถุโดยคุณสมบัติจะถูกจัดเก็บไว้ในวัตถุนั้นๆเลย และคุณสมบัตินี้สามารถเปลี่ยนแปลงแก้ไขโดยการเขียนสคริพท์เก็บในวัตถุนั้น

ตัวแปร (Variables) ในภาษาโอเพ็นสคริพท์กำหนดตัวแปรไว้ 2 ลักษณะ คือ ตัวแปรเฉพาะที่ (local variable) และ ตัวแปรระบบ แบบแรกจะทำการเก็บค่าตัวแปรไว้ใช้

ชั่วคราวในขณะที่ถูกเรียกใช้งานและตัวแปรจะหายไปเมื่อเลิกใช้งาน ส่วนกรณีแบบหลังค่าของตัวแปรจะอยู่ในระบบตลอดเวลาที่ยังคงใช้งานอยู่ในโปรแกรมระบบ

นิพจน์ (Expression) เป็นรูปแบบของสูตรประกอบด้วยค่าเฉพาะ สามารถบรรจุไว้ในประโยคภาษาโอเพ็นสคริพท์ และภายในนิพจน์สามารถอ้างถึง วัตถุ , คุณสมบัติเฉพาะ , ตัวแปร,ค่าสัญพจน์ (literal value) , ฟังชั่น และ นิพจน์

ฟังชั่น (Functions) คือ วิธีการกำหนดรูปแบบการทำงานไว้ก่อนหน้า ซึ่งเมื่อหลังจากได้ทำงานเสร็จสิ้นลง จะให้ค่าเฉพาะค่าๆหนึ่งคืนมา

2. องค์ประกอบของโปรแกรมเชิงวัตถุ คือ

2.1 ข้อความ

เป็นการติดต่อสื่อสารระหว่างวัตถุ สามารถแบ่งออกได้เป็น 2 ลักษณะ คือ ข้อความในตัว (built-in messages) และ ข้อความผู้ใช้กำหนด (user-defined messages)

ข้อความในตัว จะถูกส่งออกมาเมื่อ มีเหตุการณ์เฉพาะเกิดขึ้นกับทูลบุค เช่น มีการเลือกแถบรายการเลือกย่อย , เลือกวัตถุ โดยทูลบุคจะทำงานอัตโนมัติ ด้วยการส่งข้อความที่มีความสัมพันธ์กับเหตุการณ์นั้นๆ และทำการเลือกหาตัวจัดกระทำข้อความปลายทางที่จะต้องรับข้อความนั้นให้ด้วย

สามารถแบ่งรูปแบบของเหตุการณ์ได้ ดังนี้

1. ข้อความเหตุการณ์รายการเลือก (Menu-event message) จะทำการส่งข้อความเหล่านี้เมื่อมีคำสั่งจากแถบรายการเลือก (memubar)

2. ข้อความเหตุการณ์เมาส์ (Mouse-event message) จะเกิดขึ้นเมื่อมีการกดปุ่มหรือเคลื่อนเมาส์

3. ข้อความเหตุการณ์แป้นกด (Keyboard-event message) จะเกิดขึ้นเมื่อมีการกดปุ่มที่แป้นกด

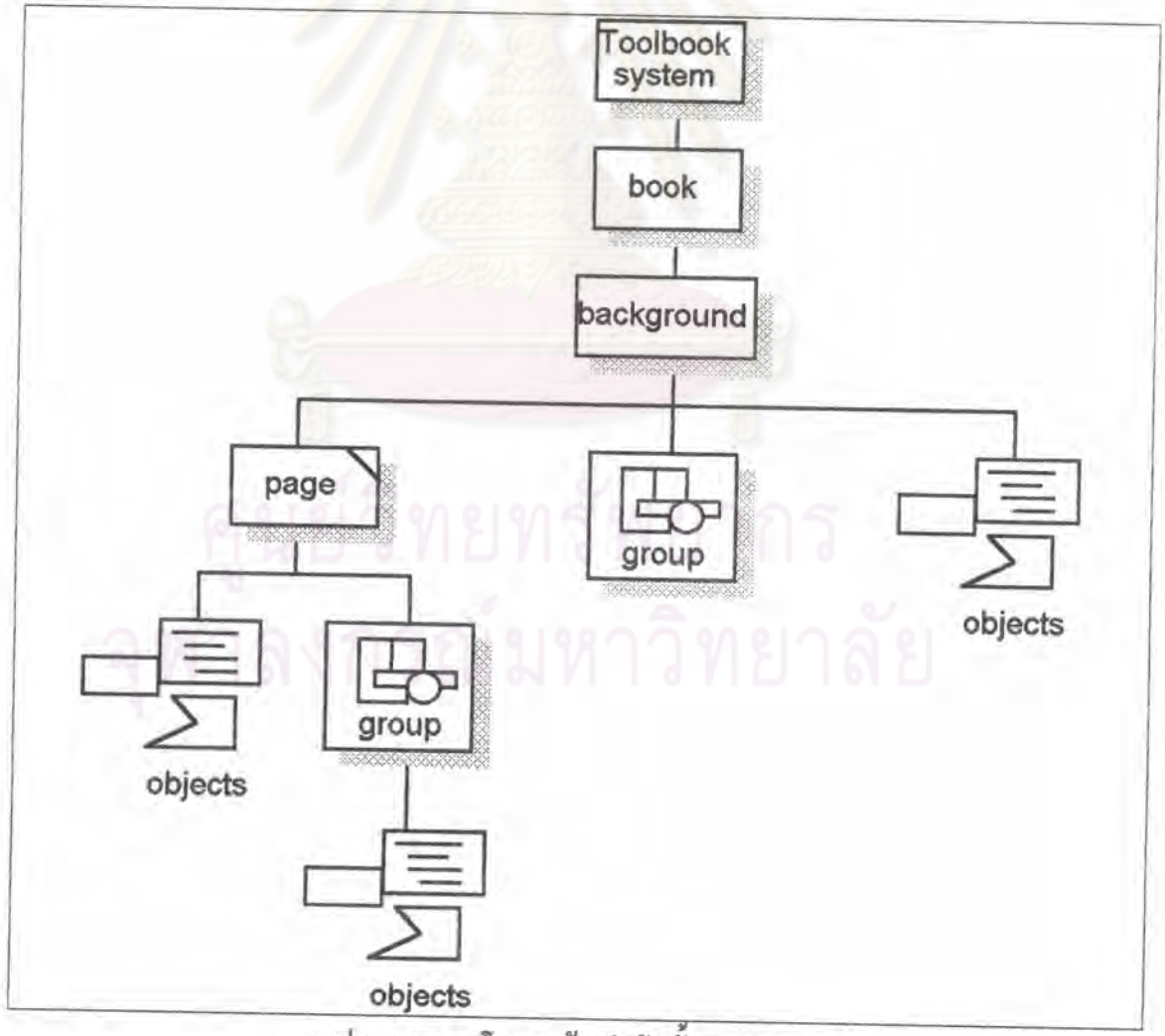
4. ข้อความเหตุการณ์เข้า/ออก (Enter/Leave-event message) ระบบจะทำการส่งข้อความนี้เมื่อมีการเข้า/ออกจากเพจ , บุค , หลังฉาก (background) , ระบบ , ...

5. ข้อความเหตุการณ์ดีดีอี (DDE event message : Dynamic Data Exchange) จะถูกส่งขึ้นเมื่อมีการเรียกใช้ดีดีอี การรับส่งจะเป็นไปตามมาตราฐานของไมโครซอฟต์วินโดวส์ ดีดีอี

6. ข้อความบันทึก (Notification message) จะเป็นข้อความที่ถูกส่งออกมาเตือนเมื่อมีการทำเหตุการณ์ที่สำคัญๆ เช่นการลบเพจออกจากบุค , ออกจากบุค โดยมีการแก้ไขสคริพท์

ข้อความผู้ใช้กำหนด คือ ตัวจัดกระทำข้อความที่ผู้ใช้สามารถกำหนดขึ้นให้ตรงตามความประสงค์ของผู้ใช้ ซึ่งอาจจะกำหนดเรียกผ่านรายการในข้อความผู้ใช้กำหนด หรือใช้คำสั่งsend <ตัวจัดกระทำข้อความ> [ตัวแปร] โดยมีรูปแบบการกำหนดข้อความผู้ใช้กำหนด ดังนี้

```
to handle    -- ชื่อข้อความผู้ใช้กำหนด
   .....     --อนุกรมสคริพท์ที่จะกำหนดให้ข้อความนี้ทำงาน
end [ชื่อข้อความผู้ใช้กำหนด]
```



รูป ก.1 แสดงโครงสร้างลำดับชั้นของทูลบุค

ทูลบุคได้กำหนดลำดับชั้นของการติดต่อส่งข้อความดังแสดงในรูป ก.1 เมื่อมีการเลื่อนเมาส์ไปยังตำแหน่งต่างๆบนจอ และในจังหวะนั้นหากมีการกดปุ่มเมาส์ ระบบจะทำการสร้างข้อความของการกดปุ่มและส่งไปยังวัตถุปลายทาง ซึ่งถูกชี้อ้างถึงโดยตำแหน่งเมาส์ขณะนั้น โดยจะทำการตรวจสอบตัวจัดกระทำข้อความที่รับการตอบสนองของการกดปุ่มเมาส์ ซึ่งถูกเขียนเป็นสคริพท์ และจะทำการตรวจสอบจากวัตถุ (object) , เพจ (page) , หลังฉาก (background) , บุค(book) , ระบบทูลบุค (toolbook system) ตามลำดับ กล่าวคือ ถ้าตำแหน่งวัตถุที่เมาส์เลือกกดไม่มีตัวจัดกระทำข้อความที่ถูกส่งออกมานี้ จะทำให้ข้อความนี้ถูกส่งต่อไปยังวัตถุที่อยู่ลำดับชั้นถัดไปแต่ถ้าไม่มีอีกแล้วก็จะถูกส่งต่อไปยังเพจ และถ้าในคุณสมบัติเฉพาะของเพจมีตัวจัดกระทำข้อความนี้ ตัวจัดกระทำข้อความในเพจ จะถูกเรียกให้ทำงาน และสิ้นสุดอยู่ที่เพจเป็นต้น

2.2 <u>คุณสมบัติเฉพาะ</u>

คุณสมบัติเฉพาะ คือ คุณลักษณะที่ใช้บ่งบอกถึงในแต่ละวัตถุ สามารถแบ่งออกเป็น 2 ลักษณะ คือ คุณสมบัติเฉพาะภายใน (built-in properties) และ คุณสมบัติเฉพาะระบบ (user definded properties)

คุณสมบัติเฉพาะภายใน ถูกใช้กำหนดคุณลักษณะเฉพาะของวัตถุ, หน้าต่าง, แพลอิท (palatte) , ระบบทูลบุค

คุณสมบัติเฉพาะวัตถุ (Object properties) ใช้สำหรับบ่งบอกและอ้างอิงวัตถุนั้นๆเช่น idNumber, uniqueName ฯ

คุณสมบัติเฉพาะระบบ (system properties) เป็นสิ่งที่ระบบกำหนดขึ้นให้เป็นค่าโดยปริยาย (default) เช่น sysFontStyle = bold และสามารถแบ่งคุณสมบัติเฉพาะระบบออกเป็น4 รูปแบบ คือ

1. คุณสมบัติเฉพาะระบบเริ่มต้น (start up system properties)คุณสมบัตินี้จะมีผลต่อทุกๆบุคที่ถูกเปิดขึ้น โดยทูลบุคสามารถกำหนดคุณสมบัติเริ่มต้นไว้ในแฟ้ม WIN.INI ของไมโครซอฟต์วินโดวส์

2. คุณสมบัติเฉพาะระบบเครื่องพิมพ์(printer system properties)กำหนดคุณสมบัติของการพิมพ์ เช่น printerBroader is true/false

3. คุณสมบัติเฉพาะระบบภายใน (internal system properties) เช่นsysDecimal

4. คุณสมบัติเฉพาะระบบทั่วไป (general system properties) เช่น sysTimeFormat , sysDate , sysPassword,..

คุณสมบัติเฉพาะหน้าต่างและแพลอิท (Window and palatte properties) เป็นคุณสมบัติถูกใช้กำหนดหน้าต่างและแพลอิท เช่น bounds, position, visible, ...

คุณสมบัติเฉพาะผู้ใช้กำหนด (User-definded properties) ผู้ใช้สามารถกำหนดคุณสมบัติของ objectเพิ่มเติมได้ เช่น ดังแสดงตัวอย่างของสคริพท์ เช่น

```
if hideable of target is true then
        hide target
end
```

ถ้าค่าตัวแปร hideable ของวัตถุปลายทางที่ถูกเลือกเป็นจริง จะเป็นผลให้วัตถุปลายทางนั้นถูกซ่อน เป็นต้น

2.3 คำสั่ง

ในทุกๆประโยคจะต้องขึ้นต้นด้วยคำสั่งและตามด้วยค่าตัวแปร ยกเว้นในส่วนต้นสุดและท้ายสุด ของตัวจัดกระทำ และ โครงสร้างควบคุม ตัวอย่าง เช่น

```
to handle last
        fxZoom fast at 2050,1400        -- คำสั่งแสดงผลภาพ
        go last page                    -- คำสั่งแสดงเพจก่อนหน้า
end last
```

โครงสร้างควบคุมสามารถนำมาใช้โดยต้องบรรจุอยู่ในตัวจัดกระทำ ในแต่ละโครงสร้างควบคุมจะต้องขึ้นต้นด้วยข้อความสั่ง เช่น conditions , step และต้องปิดท้ายด้วย end ตัวอย่าง เช่น

```
step i from 1 to 10 by 2
        move rectangle "CZ" to 200,200
end
```

สามารถเปรียบเทียบโครงสร้างควบคุมในภาษาโอเพ็นสคริพท์กับโปรแกรมภาษาอื่น ๆ ดังแสดงในตารางเปรียบเทียบดังนี้

โอเพ็นสคริพท์	C	BASIC	Pascal
if/then/else	if/else	if/then	if/then/else
step/by	for	for/next	for/do
while	while		while/do
do/until	do/while		repeat/until
condition/when	switch/case		case/of
start spooler			
link DLL			
translate window message			

ตาราง ก.1 แสดงการเปรียบเทียบโครงสร้างควบคุมภาษาโอเพ็นสคริพท์กับโปรแกรมภาษาอื่นๆ

2.4 <u>ฟังชั่น</u>

คือวิธีการกำหนดรูปแบบการทำงานไว้ก่อนหน้า ซึ่งเมื่อหลังจากได้ทำงานเสร็จสิ้นลงจะให้ค่าเฉพาะค่าๆหนึ่งคืนมา (return value) โดยรูปแบบของfunction สามารถแบ่งออกได้เป็น 3 ลักษณะ คือ ฟังชั่นภายใน (built-in function) , ฟังชั่นผู้ใช้กำหนด (user-definded function) และ ดีแอลแอล (dynamic link library)

ฟังชั่นภายใน ยังสามารถแบ่งย่อยออกเป็น

ฟังชั่นคำนวณ (arithmetic function) เช่น abs() , sin() , log() ,...

ฟังชั่นสายอักขระ (string function) เช่น ansiToChar(), lowerCase()

และฟังชั่นเฉพาะ (special function) เช่น keyState(), menuState()

ฟังชั่นผู้ใช้กำหนด คือ ฟังชั่นที่ผู้ใช้สามารถกำหนดการทำงานให้ตรงกับความต้องการของตัวเองได้ เช่น สูตรคำนวณเฉพาะทางคณิตศาสตร์ ,บัญชี หรือให้ปฏิบัติงานเฉพาะ โดยรูปแบบของการกำหนดมีดังนี้

```
to get <ชื่อฟังชั่นผู้ใช้กำหนด> [ตัวแปร]
      .....     -- ประโยคคำสั่งต่าง รวมทั้งประโยคคำสั่งส่งคืนค่า
end
```

และกรณีเรียกใช้ฟังชั่นผู้ใช้กำหนดมีรูปแบบ คือ

```
get <ชื่อฟังชั่นผู้ใช้กำหนด> [ตัวแปร]
```

ดีแอลแอล เป็นฟังชั่นที่ถูกแปรแล้วจัดเก็บในลักษณะของรหัสจุดหมาย (objected code) พร้อมถูกเรียกใช้งาน โดยจะถูกจัดเก็บไว้ในแฟ้มนามสกุล dll. ก่อนที่จะมีการเรียกใช้ จำเป็นต้องประกาศให้รับรู้ก่อน แสดงดังตัวอย่างของการประกาศ :

```
linkDLL "user"
      INT ShowWindow (WORD,INT)
end linkDLL
```

และตัวอย่างของการเรียกใช้ จะมีรูปแบบ ดังนี้

get Shadow(systemhandle,1) เป็นต้น

ภาคผนวก ข.

รายละเอียดโปรแกรม

โปรแกรมควบคุมนำเสนอและเก็บสภาวะผู้เรียน

```
Book property "CONTROL.TBK"
to handle enterBook
        system svlearn_speed
        system svlastTime , svcountTime
        system svlastCoffeTime , svcountCoffeeTime, svlastCountCoffeeTime

        hide scrollBar
        send SizeToPage
        set caption of this book to "CONTROL"
        set captionShown of this book to true

        hide menubar
        hide scrollbar
        send sizeToPage
        send dllLink
        set sysChangesDB to false
        set svlastCountCoffeeTime to 99

        set sysTimeFormat to "sec"
        set svcountTime to 0
        set svlastTime to sysTime

        set sysTimeFormat to "min"
        set svcountCoffeeTime to 0
        set svlastCoffeTime to sysTime

        set svlearn_speed to 420
        set svlastTime to 0
        set sysTimeFormat to "sec"
        set svlastTime to sysTime

        send statusShow
end


to handle leaveBook
        system svleaveBook
        if svleaveBook is null
                set svleaveBook to FALSE
        end
        if svleaveBook is FALSE then
                send save                --need not to exit this book
                run "toolbook.exe control.tbk"
        end
end


to handle needToLeave
        system svleaveBook
        set svleaveBook to TRUE
end


to handle idle
        if name of this page is "control" then
                send trickerClock
        end
end
```

```
to handle trickerClock
        system svlearn_speed
        system svlastTime , svcountTime
        system svlastCoffeTime , svcountCoffeeTime

        send checkResponse
        if svlearn_speed >= 1000 then
                set svlearn_speed to 1000                -- min. svlastTime speed
                set topp to position of rectangle "level"
                move group "pointer" of page id 0  to item 1 of topp,item 2 of topp+1000
        end if
        if svcountTime > 20 then   -- more than 20 seconds will count speed down
                set topp to position of rectangle "level"
                set tmp to "group pointer of page id 0 of book control.tbk"
                move group "pointer" of page id 0  to item 1 of topp,item 2 of topp -
svlearn_speed

                set svlearn_speed to svlearn_speed +20

                send DispStatus  -1 to background id 0

                set svcountTime to 0
                set svlastTime to sysTime
                send statusShow
        end if
        send checkCoffeTime
end


to handle checkResponse
        system svlastTime, svcountTime

        set sysTimeFormat to "sec"
        conditions
                when svlastTime = sysTime
                        break
                when svlastTime < sysTime
                        set svcountTime to sysTime - svlastTIme
                        send indicator
                when svlastTime > sysTime
                        set svcountTime to (60-svlastTime) +sysTime
        end
end


to handle indicator
        show ellipse "indicator"
        hide ellipse "indicator"
end


to handle speedUp para
        system svlearn_speed

        set vtemp to svlearn_speed-para
        if vtemp > 0 then
                set svlearn_speed to vtemp
                get position of group "pointer"
                select group "pointer"
                move selection to item 1 of it,item 2 of it - para
        end
end speedUp
```

```
to handle speedDown para
        system svlearn_speed

        set vtemp to svlearn_speed+para
        if vtemp <= 1000 then
                set svlearn_speed to vtemp
                get position of group "pointer"
                select group "pointer"
                move selection to item 1 of it,item 2 of it + para
        end
end speedDown


to handle delay x
        system svlearn_speed
        step i from 1 to x
                pause svlearn_speed/10
        end step
end delay



to handle trickerDo
        system svlearn_speed, topp
        system svlastTime ,svcountTime

        send checkResponse

        if svlearn_speed <= 0 then
                set svlearn_speed to 0              -- max. svlastTime speed
                set topp to position of rectangle "level"
                move group "pointer" of page id 0  to topp
        end if
        if svcountTime < 11 then    -- 10 second response for speed up
                set topp to position of rectangle "level"
                move group "pointer" of page id 0  to item 1 of topp,item 2 of topp +
svlearn_speed
                set svlearn_speed to svlearn_speed -20
                send DispStatus  -1 to background id 0
        end
        set svcountTime to 0
        set svlastTime to sysTime


        send statusShow

end


to handle DispStatus para
        system svlearn_speed
        get position of group "pointer" of page id 0
        move group "pointer" of page id 0  to item 1 of it,item 2 of it +para*20
end


to handle checkcoffeTime

        system svlastCoffeTime
        system svcountCoffeeTime

        set sysTimeFormat to "min"
        conditions
                when svlastCoffeTime = sysTime
                        break
                when svlastCoffeTime < sysTime
```

```
                    set svcountCoffeeTime to sysTime - svlastCoffeTIme
                when svlastCoffeTime > sysTime
                    set svcountCoffeeTime to (60-svlastCoffeTime) +sysTime
        end

        if svcountCoffeeTime > 29 then   -- more than 30 min to coffe break
            set svcountCoffeeTime to 0
            set svlastCoffeTime to sysTime
            executeRemote "send coffeeTimeSHow"
        end if
        send statusShow
        set sysTimeFormat to "sec"
end


to handle statusShow
        system svcountTIme
        system svcountCoffeeTime
        system svlastCountCoffeeTime
        if svlastCountCoffeeTime <> svcountCoffeeTime then
            put 30-svcountCoffeeTime into text of field "time_to_coffee1"
            put 30-svcountCoffeeTime into text of field "time_to_coffee2"
            set svlastCountCoffeeTime to svcountCoffeeTime
        end
end


to handle dllLink
        linkdll "TBKDB3.DLL"
            INT closeAllDBFiles()
            INT closeDBFile(STRING)
            INT closeDBIndexFile(STRING)
            INT createDBIndexFile(STRING, STRING, WORD, WORD)
            INT createDBFieldTag(WORD)
            INT createDBFile(STRING,WORD,WORD)
            INT setDBFieldTag(WORD,WORD,STRING,STRING,WORD,WORD)
            INT deleteDBFile(STRING)
            INT findDBKey(STRING)
            INT firstDBKey()
            INT firstDBRecord()
            STRING getDBDateFormat()
            STRING getDBErrorString(INT)
            STRING getDBFieldValue(STRING)
            INT getDBKeyType()
            STRING getDBKeyValue()
            INT getDBNavigateToDeleted()
            LONG getDBRecordCount()
            INT getDBRecordDeleted()
            LONG getDBRecordNumber()
            INT gotoDBRecord(DWORD)
            INT lastDBKey()
            INT lastDBRecord()
            INT nextDBKey()
            INT nextDBRecord()
            INT openDBFile(STRING)
            INT openDBIndexFile(STRING)
            INT packDBFile()
            INT previousDBKey()
            INT previousDBRecord()
            INT reindexDBFile(STRING)
            INT removeDBRecords(DWORD, DWORD)
            INT selectDBIndexFile(STRING)
            INT setDBFieldValue(STRING, STRING)
            INT setDBNavigateToDeleted(INT)
            INT setDBRecordDeleted(WORD)
            INT writeDBRecord(DWORD)
```

```
        end
end

to handle schedule vscript
        put vscript into text of field "scheduleField" of page "saving"
end


                --saving1,2 used for saving state before coffee break
to handle saving1 para1,vid,vselectedObj
                -- para1 : receive state inside *.tbk
        set txtFile to vid&".pnt"           --Keep student state inside *.tbk
        createFile txtFile
        writeFile "go to "&para1&CRLF to txtFile
        writeFile vselectedObj&CRLF to txtFile
        closeFile txtFile

        format number vid
        set sysDateFormat to "mm/dd/yy"
        get openDBFile("student.dbf")
        get createDBIndexFile("student.ndx",std_id,1,0)
        get findDBKey(vid)
        get setDBFieldValue("std_date",sysDate)
        get writeDBRecord(0)
        get closeDBFile("student.dbf")
        get closeDBIndexFile("student.ndx")
end


to handle saving2 vid,vselectedObj,vlessonState
        set sysDateFormat to "mm/dd/yy"
        go to page "saving"
        set vscript to textline vlessonState of text of field "scheduleField"
        get openDBFile("chap.dbf")
        while vendRecord <> "end"
                get getDBFieldValue("ch_script")
                if it = vscript then
                        set vchid to getDBFieldValue("ch_id")
                        get openDBFile(vid&".chp")
                        get createDBIndexFile(vid&".ndx","ch_id",1,0)
                        get findDBKey(vchid)
                        get setDBFieldValue("status_ch","S")
                        get setDBFieldValue("last_date",sysDate)
                        get setDBFieldValue("std_ls_st",vlessonState)
                        get writeDBRecord(0)
                        get closeDBIndexFile(vid&".ndx")
                        get closeDBFile(vid&".chp")
                        break while
                end
                get nextDBRecord()
                if it < 1 then
                        set vendRecord to "end"
                end
        end while
        get closeDBFile("chap.dbf")
        go to page "control"

end


to handle saving3
        executeRemote "send leaveBook" topic "fmenu02.tbk"
        send needToLeave
        send exit
end
```

```
                --to handle saveLessonState vid,vlessonState,vselectedchap
to handle saveLessonState vid,vlessonState
                --used for saving state when finished each lesson
        set sysDateFormat to "mm/dd/yy"
        set vlessonState to vlessonState+1
        go to page "saving"
        set vscript to textline vlessonState-1 of text of field "scheduleField"
        get openDBFile("chap.dbf")
        while vendRecord <> "end"
                get getDBFieldValue("ch_script")
                if it is vscript then
                        set vchid to getDBFieldValue("ch_id")
                        get openDBFile(vid&".chp")
                        get createDBIndexFile(vid&".ndx","ch_id",1,0)
                        get findDBKey(vchid)
                        get setDBFieldValue("status_ch","M")
                        get setDBFieldValue("last_date",sysDate)
                        get writeDBRecord(0)
                        get closeDBIndexFile(vid&".ndx")
                        get closeDBFile(vid&".chp")
                end
                get nextDBRecord()
                if it < 1 then
                        set vendRecord to "end"
                end
        end while
        get closeDBFile("chap.dbf")

        get openDBFile("student.dbf")
        get createDBIndexFile("student.ndx","std_id",1,0)
        get findDBKey(vid)
        get setDBFieldValue("std_ls_st",vlessonState)
        get writeDBRecord(0)
        get closeDBIndexFile("student.ndx")
        get closeDBFile("student.dbf")

        go to page "control"
end


to get learnSpeed
        system svlearn_speed
        return svlearn_speed
end


to handle test
--      request "This is the test module !!!"
end
```

โปรแกรมการควบคุมบทเรียน

Book property of FMENU02.TBK

```
to handle enterBook
        system svmasterCalling
        system svfirstEnterBook
        system svtricker

        restore menubar at reader
        remove menu "file" at reader
        remove menu "edit" at reader
        remove menu "text" at reader
        remove menu "page" at reader
        remove menu "help" at reader

        add menu "&Page" at reader
                add menuitem "&Forward" to menu "Page" at reader
                add menuitem "&Backward" to menu "Page" at reader
        add menu "&State" at reader
                add menuitem "check&State" to menu "State" at reader
                if svrepeat is TRUE then
                        add menuitem "&Return to main" to menu "State" at reader
                else
                        add menuitem "&Coffee break" to menu "State" at reader
                end
                add menuitem "" to menu "State" at reader
                add menuitem "speed &Up" to menu "State" at reader
                add menuitem "speed &Down" to menu "State" at reader
        add menu "&Tutor" at reader
                add menuitem "&Beginner" to menu "Tutor" at reader
                add menuitem "lesson &History" to menu "Tutor" at reader

        deactivate menuitem "speedUp" at reader
        deactivate menuitem "speedDown" at reader
        deactivate menuitem "forward" at reader
        deactivate menuitem "backward" at reader

        set svtricker to 1
        if svfirstEnterBook is null then
                send dllLink
                set sysLevel to reader
                set sysChangesDB to false
                set svmasterCalling to uniqueName of this book
                hide scrollbar
                hide menubar
                send sizeToPage
                set svfirstEnterBook to 1
                set focus to button "startLesson"

                hide field "remind"
        end
end


to handle leaveBook
        send save
end


to handle idle
        system svtricker
        set svtricker to svtricker+1
        if svtricker is 30 then
                executeRemote "send idle" topic "control.tbk"
```

```
                set svtricker to 1
        end
end


to handle mailBox para1
                -- para1 : receive state inside *.tbk
        system svid
        system svselectedObj

        set txtFile to svid&".pnt"                      --Keep student state inside *.tbk
        createFile txtFile
        writeFile para1&CRLF to txtFile
        writeFile svselectedObj&CRLF to txtFile
        closeFile txtFile

end


to handle insideChapState
        system svlessonState
        system svid
        system svmasterCalling

        set sysDateFormat to "mm/dd/yy"

        go to page "presentation"
        set vscript to textline svlessonState of text of field "scheduleField"
        get openDBFile("chap.dbf")
        while vendRecord <> "end"
                get getDBFieldValue("ch_script")
                if it = vscript then
                        set vchid to getDBFieldValue("ch_id")
                        get openDBFile(svid&".chp")
                        get createDBIndexFile(svid&".ndx","ch_id",1,0)
                        get findDBKey(vchid)
                        get setDBFieldValue("status_ch","S")
                        get setDBFieldValue("last_date",sysDate)
                        get setDBFieldValue("std_ls_st",svlessonState)
                        get writeDBRecord(0)
                        get closeDBIndexFile(svid&".ndx")
                        get closeDBFile(svid&".chp")
                        break while
                end
                get nextDBRecord()
                if it < 1 then
                        set vendRecord to "end"
                end
        end while
        get closeDBFile("chap.dbf")

        set svlessonState to 1
        go to first page
end


to handle dllLink
        system svmisNo          --look for number missing enter
        set svmisNo to 1

        linkdll "TBKDB3.DLL"
           INT closeAllDBFiles()
           INT closeDBFile(STRING)
           INT closeDBIndexFile(STRING)
           INT createDBIndexFile(STRING, STRING, WORD, WORD)
           INT createDBFieldTag(WORD)
```

```
            INT createDBFile(STRING,WORD,WORD)
            INT setDBFieldTag(WORD,WORD,STRING,STRING,WORD,WORD)
            INT deleteDBFile(STRING)
            INT findDBKey(STRING)
            INT firstDBKey()
            INT firstDBRecord()
            STRING getDBDateFormat()
            STRING getDBErrorString(INT)
            STRING getDBFieldValue(STRING)
            INT getDBKeyType()
            STRING getDBKeyValue()
            INT getDBNavigateToDeleted()
            LONG getDBRecordCount()
            INT getDBRecordDeleted()
            LONG getDBRecordNumber()
            INT gotoDBRecord(DWORD)
            INT lastDBKey()
            INT lastDBRecord()
            INT nextDBKey()
            INT nextDBRecord()
            INT openDBFile(STRING)
            INT openDBIndexFile(STRING)
            INT packDBFile()
            INT previousDBKey()
            INT previousDBRecord()
            INT reindexDBFile(STRING)
            INT removeDBRecords(DWORD, DWORD)
            INT selectDBIndexFile(STRING)
            INT setDBFieldValue(STRING, STRING)
            INT setDBNavigateToDeleted(INT)
            INT setDBRecordDeleted(WORD)
            INT writeDBRecord(DWORD)
        end

        linkDLL "tbkdlg.dll"
                string dialog(string, string)
                string setValue(string, string, string)
                string getValue(string, string)
        end
end

to handle coffeeTimeShow
        request "TIME TO COFFEE NOW !"
        request "อย่าลืมเก็บบทเรียนก่อนครับ"
end

to handle Forward
        request "Can't use this command ! "
end

to handle Backward
        request "Can't use this command ! "
end

to handle Coffeebreak
        executeRemote "send saving3 " topic "control.tbk"
        send exit
end

to handle Beginner
        -- go to book "begin.tbk"
```

```
end

to handle lessonHistory
        send buttonup to button "history"
end


to handle checkState
        local otherWindowHandle

        linkdll "user"
            int bringWindowToTop(word)
        end

                --make sure the other book is running
        getRemote "sysWindowHandle" application toolbook topic "control.tbk"
        if "ok" is not in syserror
                request strRunToolBookButton()
        end
        set otherWindowHandle to it
        --have to bring the window to the top for the palettes to show
        set sysSuspend to false
        get bringWindowToTop(otherWindowHandle)
        set sysSuspend to true
        pause 1 seconds

        --restore window focus to this dde book
        get bringWindowToTop(sysWindowHandle)

        unlinkdll "user"
end

to handle introCourse
        hide field "course"
        hide field "recommend"
        hide field "thanks"
        pause 1.5 seconds
        show field "course"
        pause 4 seconds
        show field "recommend"
        pause 3 seconds
        show field "thanks"
        pause 3 seconds
end
```

Page property "StartUp" of book "fmenu02.tbk"

```
to handle enterPage
        system svlessonState

        if svlessonState is null then        --check for first open book
                set svlessonState to 1
        end

        if svlessonState  > 1 then
                go to next page
        end

        if sysLevel is Author then
                show menubar
        end

        hide field "remind"
end
```

```
to handle leavePage
        hide field "course"
        hide field "recommend"
        hide field "thanks"
        send save
end
```

Button property "startLesson" of page "startUp"

```
to handle buttonUp
        send introCourse
        send buttonup to button "dlgId"
end
```

Button property "dlgId" of page "startUp"

```
to handle buttonUp
        system svid

        get closeAllDBFiles()
        get openDBFile("student.dbf")
        get createDBIndexfile("student.ndx","std_id",1,0)

        set init to dlgInit of target
        set retValue to dialog(dlgBox of target, init)
        set svid to  getValue(retValue,"idField")

        get findDBKey(svid)
        if it <> 1 then     --not found
                get writeDBRecord(getDbRecordCount()+1)
                get setDBFieldValue("std_id",svid)
                if it is not 1
                        pause 1 seconds
                        show field "remind"
                        get closeDBFile("student.dbf")
                        get closeDBIndexfile("student.ndx")
                        send buttonup to button "dlgid"
                        break
                end
                hide field "remind"
                send buttonup to button "dlgReg"
        else
                hide field "remind"
                send buttonup to button "passwd"
        end
end
```

Button property "dlgReg" of page "startUp"

```
to handle buttonUp

        set init to dlgInit of target
        --set init to setValue(init,"","")  --DLL function

        set retValue to dialog(dlgBox of target, init)

        get setDBFieldValue("std_name",getValue(retValue, "regNameField"))
        get setDBFieldValue("std_sname",getValue(retValue, "regSurenameField"))
        get setDBFieldValue("std_add",getValue(retValue, "regAddField"))
        get setDBFieldValue("std_tel",getValue(retValue, "regTelField"))

        get writeDBRecord(0)

        send buttonup to button "firstReg"
end
```

Button property "passwd" of page "startUp"

```
to handle buttonUp
        system svmisNo
        system svlessonState
        system svid
        system svselectedObj

        set init to dlgInit of target
        set retValue to dialog(dlgBox of target, init)

        ask password "กรุณาใส่รหัสผ่านของท่าน"          --Please enter your passwd

        set vpwd to it
        if vpwd is null
                set pwd to "wrong that is not passed."
        end
        if vpwd <> getDBFieldValue("std_pwd") then
                set svmisNO to svmisNo+1
                if svmisNo = 3 then
                        set svmisNo to 1
                        break                           --Stop process
                end
                send buttonup to button "passwd"
        else
                set vstdFile to getDBFieldValue("std_co_fil")
                set svlessonState to getDBFieldValue("std_ls_st")
                get closeDBIndexFile("student.ndx")
                get closeDBFile("student.dbf")

                openFile vstdFile
                readfile vstdFile to 99999
                put it into text of field "scheduleField" of next page
                closeFile vstdFile

                set txtFile to svid&".pnt"              --to run state before coffee break
                openFile txtFile
                if sysError is not null then
                        break
                end
                readFile txtFile to CR
                set vstate to it
                readFile txtFile to CR
                set svselectedObj to it
                format number svselectedObj
                closeFile txtFile
                execute vstate                          --execute command line
        end
end
```

Button property "firstreg" of page "startUp"

```
to handle buttonUp
        system svmisNo
        system svid

        do
                ask password "กรุณากำหนดรหัสผ่านของท่าน"

                set pwd to it
                if pwd is null
                        set pwd to "wrong that is not passed."
                end
                ask password "ยืนยันรหัสผ่าน"                   --Verify pwd
                set pwdcomp to it
```

```
                put pwd into text of field "f1"
                put pwdcomp after text of field "f1"

                if pwd = pwdcomp then
                        get setDBFieldValue("std_pwd",pwd)
                        get setDBFieldValue("std_co_fil",svid&".cos")
                        get setDBFieldValue("std_ls_st",1)
                        get writeDBRecord(0)
                        get closeDBFile("student.dbf")    --Open from button "dlgId"
                        get closeDBIndexfile("student.ndx")
                        send buttonup to button "createStudentTable" of page startUp
                        send buttonup to button "obj"
                else
                        request "Try again.."
                        set svmisNo to svmisNo+1
                        if svmisNo = 3 then
                                set svmisNo to 1
                                break do
                        end
                end
        until pwd = pwdcomp

        if pwd <> pwdcomp then
                get getDBRecordNumber()
                get removeDBRecords(it,it)
                break
        end

end


Button property "obj" of page "startUp"
to handle buttonUp
        system svselectedObj

        send checkObjTable
        get openDBFile("obj.dbf")
        set totalRec to getDBRecordCount()

        set init to dlgInit of target
        set vlines to textlineCount(text of field "f2")
        if vlines = 0
                request "Aleardy learn ! "
                request "Use HISTORY button to relearning"
                break
        end
        set vtmp to textlines 1 to vlines of text of field "f2"
        set init to setValue(init,"selectObj",vtmp)

        set retValue to dialog(dlgBox of target, init)
        set vselectObj to getValue(retValue,"selectObj")
        if vselectObj is null then
                get closeDBFile("obj.dbf")
                send buttonup to button "obj"
                break
        end
        put vselectObj into text of field "f1"

        get firstDBRecord()
        while TRUE
                get getDBFieldValue("obj_cont")
                if it = vselectObj then
                        set svselectedObj to getDBFieldValue("obj_id")
                        send schObj svselectedObj
                        put "*" &CRLF after text of field "objField" of next page
                        break while
```

```
            end
            get nextDBRecord()
            if it <> 1 then             --end record
                  break while
            end
      end

      get closeDBFile("obj.dbf")

      send insideObjState
      send buttonup to button "Kn"

end


to handle  schObj para
      system svid

      get openDBFile("obj_ch.dbf")
      clear text of field "f1"
      while endrecord <> "end"
            get getDBFieldValue("obj_id")
            if it = para then
                  get getDBFieldValue("ch_id")
                  put it &CRLF after text of field "f1"
            end if
            get nextDBRecord()
            if it < 1 then
                  set endrecord to "end"
            end if
      end while
      get closeDBFile("obj_ch.dbf")

      get openDBFile(svid&".chp")
      get createDBIndexFile(svid&".ndx","ch_id",1,0)

      clear text of field "f2"
      set i to 1
      while TRUE
            set vckChap to textline i of text of field "f1"
            if vckChap is null then
                  break while
            end
            get findDBKey(vckChap)
            get getDBFieldValue("status_ch")
            if it is not "M" then
                  put vckChap&CRLF after text of field "f2"
            end
            set i to i+1
      end
      get closeDBIndexFile(svid&".ndx")
      get closeDBFile(svid&".chp")
      put text of field "f2" into text of field "objField" of next page
end


to handle checkObjTable
      system svid

      get openDBFile(svid&".obj")
      clear text of field "f1"
      do
            set tmp to getDBFieldValue("status_obj")
            if tmp is not "M" then          --M = studied object
                  get getDBFieldValue("obj_id")
                  put it&CRLF after text of field "f1"
```

```
            end
            get nextDBRecord()
        until it < 1                --until end record
        get closeDBFile(svid&".obj")
        get openDBFile("obj.dbf")
        get createDBIndexFile("obj.ndx","obj_id",1,0)
        clear text of field "f2"
        set i to 1
        while TRUE
            set tmp to textline i of text of field "f1"
            if tmp is null then
                break           -- data is null, and come back to caller message
            end
            get findDBKey(tmp)
            get getDBFieldValue("obj_cont")
            put it&CRLF after text of field "f2"
            set i to i+1
        end

        get closeDBIndexFile("obj.ndx")
        get closeDBFile("obj.dbf")
end


to handle insideObjState        --Mark "S" in file "xxx.obj"
        system svselectedObj
        system svid

        set sysDateFormat to "mm/dd/yy"
        get openDBFile(svid&".obj")
        while vendRecord <> "end"
            get getDBFieldValue("obj_id")
            if it = svselectedObj then
                get setDBFieldValue("status_obj","S")
                get setDBFieldValue("last_date",sysDate)
                get writeDBRecord(0)
                break while
            end
            get nextDBRecord()
            if it < 1 then
                set vendRecord to "end"
            end
        end while
        get closeDBFile(svid&".obj")
end


Button property "kn" of page "startUp"
to handle buttonUp
        system svid
        system svselectedObj

        go to next page
        send buttonup to button "o"
        send buttonup to button "c"
        go to previous page

        get openDBFile("known.dbf")
        send preKnown
        if text of field "f2" is null then
            request "NOTHING TO LEARN AGAIN ! "
            send finalTest
            break           --break handle
        end
```

```
        set vlines to textlineCount(text of field "f2")
        set vtmp to textlines 1 to vlines of text of field "f2"

        set init to dlgInit of target
        set init to setValue(init,"selectKn",vtmp)

        set retValue to dialog(dlgBox of target, init)

        put getValue(retValue, "selectKn") into text of field "f1"

        send adjust

        set vlastLine to textLineCOunt(text of field "f1")
        clear text of field "st_known" of page "presentation"
        step i from 1 to vlastLine
                set vknCont to textline i of text of field "f1"
                get firstDBRecord()
                while vendRecord <> "end"
                        get getDBFieldValue("kn_cont")
                        if it = vknCont then
                                set vknId to getDBFieldValue("kn_id")
                                put vknId &CRLF after text of field "st_known" of page
"presentation"
                                break while
                        end
                        get nextDBRecord()
                        if it < 1 then
                                set vendRecord to "end"
                        end
                end while

        end step
        put "*" &CRLF after text of field "st_known" of page "presentation"
        get closeDBFile("known.dbf")

        go to page "presentation"
        send buttonup to button "s"
        send buttonup to button "sc"

        set txtFile to svid&".cos"                      --Keep each student course file
        createFile txtFile
        writeFile text of field "scheduleField" to txtFile
        closeFile txtFile

        set txtFile to svid&".pnt"                      --initial state in *.tbk
        createFile txtFile
        writeFile textline 1 of text of field "scheduleField" to txtFile
        writeFile CRLF&svselectedObj&CRLF to txtFile
        closeFile txtFile

        send buttonup to button "com"
end


to handle preKnown
        get createDBIndexFile("known.ndx","kn_id",1,0)
        clear text of field "f2"
        set i to 1
        while vendrecord <> "end"
                set vknid to textline i of text of field "chapField" of page "presentation"
                conditions
                        when vknid = "*"
                                set vendrecord to "end"
                        when vknid = "-"
                                set i to i+1
                        when vknid = "c"
```

```
                        set i to i+2
                    else
                        get findDBKey(vknid)
                        put getDBFieldValue("kn_cont") after text of field "f2"
                        put CRLF after text of field "f2"
                        set i to i+1
                end
        end
        get closeDBIndexFile("known.ndx")
end


to handle adjust
        set i to 1
        set vsource to " "
        set vcomp to " "

        while vsource <> null
                set vsource to textline i of text of field "f2"
                if vsource = null then
                        break while
                end
                set j to 1
                while vcomp <> null
                        set vcomp to textline j of text of field "f1"
                        if vcomp is null then
                                set vcomp to " "
                                break while
                        end
                        if vcomp = vsource then
                                set textline i of text of field "f2" to "-"
                        end
                        set j to j+1
                end
                set i to i+1
        end while
        clear text of field "f1"
        set i to 1
        while TRUE
                set vtmp to textline i of text of field "f2"
                if vtmp is null then
                        break while
                end
                if vtmp is not "-" then
                        put vtmp&CRLF after text of field "f1"
                end
                set i to i+1
        end
end


to handle finalTest
        ask "ต้องการทดสอบความรู้หรือไม่ ?" with Yes  -- if need to test module
        if it is Yes
                go book "lesson\final.tbk"
        end
end


Button property "history" of page "startUp"
to handle buttonUp
        system svrepeat          --case to repeate lesson
        system svid
        system svlessonCaller
```

```
        set svrepreat to FALSE
        clear text of field "f1" of this background
        get openDbFile(svid&".chp")
        while endrecord <> "end"
                get getDBFieldValue("status_ch")
                if it is "M" then
                        get getDBFieldValue("ch_id")
                        put it&CRLF after text of field "f1" of this background
                end
                get nextDBRecord()
                if it < 1 then
                        set endrecord to "end"
                end
        end
        get closeDbFile(svid&".chp")
        set vnoLines to textlineCount(text of field "f1" of this background)
        get openDBFile("chap.dbf")
        get createDBIndexFile("chap.ndx","ch_id",1,0)
        set i to 1
        clear text of field "f2" of this background
        do
                set vchid to textline i of text of field "f1" of this background
                get findDBKey(vchid)
                put getDBFieldValue("ch_cont")&CRLF after text of field "f2" of this
background
                set i to i+1
        until i > vnoLines
        get closeDBFile("chap.dbf")
        get closeDBIndexFile("chap.ndx")

        linkDLL "tbkdlg.dll"
                string dialog(string, string)
                string setValue(string, string, string)
                string getValue(string, string)
        end

        set init to dlgInit of target
        set vtmp to text of field "f2" of this background
        set init to setValue(init,"history",vtmp)  --DLL function
        set retValue to dialog(dlgBox of target, init)

        get getValue(retValue, "history")  --DLL function
        set vlesson to it
        if vlesson is null then
                break           --do nothing
        end
        unlinkDLL "tbkdlg.dll"

        set svrepeat to TRUE
        set svlessonCaller to uniqueName of this page
        set vScript to lessonToRepeat(vlesson)
        execute vScript

end


to get lessonToRepeat vlesson

        get openDBFile ("chap.dbf")
        while TRUE
                get getDBFieldValue("ch_cont")
                if it is vlesson then
                        set vlessonScript to getDBFieldValue("ch_script")
                        return vlessonScript
                        break while
                end
```

```
                get nextDBRecord()
                if it < 1 then
                        return null
                        break while
                end
        end
        get closeDBFile("chap.dbf")
end
```

Button property "date_test" of page "startUp"

```
to handle buttonUp
        get openDBFile("88.dbf")
        set sysdateFormat to "mm/dd/yy"

        get firstDBRecord()
        set tmp1 to getDBFieldValue("last_date")
        request tmp1
        put tmp1 into text of field "f1"

        format date tmp1 as "seconds"
        get nextDBRecord()
        set tmp2 to getDBFieldValue("last_date")
        format date tmp2 as "seconds"
        get closeDBFile("88.dbf")
end
```

Button property "createStudenTable" of page "startUp"

```
to handle buttonUp
        system svid
        set sysDateFormat to "mm/dd/yy"

        send studentObj
        send studentChap
end


to handle studentObj
        system svid

        get openDBFile("obj.dbf")
        set vobjCount to getDBRecordCount()
        get closeDBFile("obj.dbf")

        set tagNo to createDBFieldTag(3)
        get setDBFieldTag(tagNo,1,"obj_id","n",2,0)
        get setDBFieldTag(tagNo,2,"status_obj","c",1,0)
        get setDBFieldTag(tagNo,3,"last_date","d",8,0)
        get createDBFile(svid&".obj",tagNo,0)

        step i from 1 to vobjCount
                get setDBFieldValue("obj_id",i)
                get writeDBRecord(i)
        end
        get closeDBFile(svid&".obj")
        get freeDBFieldTag(tagNo)
end


to handle studentChap
        system svid

        get openDBFile("chap.dbf")
        set vchapCount to getDBRecordCount()
        get closeDBFile("chap.dbf")
```

```
        set tagNo to createDBFieldTag(3)
        get setDBFieldTag(tagNo,1,"ch_id","n",2,0)
        get setDBFieldTag(tagNo,2,"status_ch","c",1,0)
        get setDBFieldTag(tagNo,3,"last_date","d",8,0)
        get createDBFile(svid&".chp",tagNo,0)

        step i from 1 to vchapCount
                get setDBFieldValue("ch_id",i)
                get writeDBRecord(i)
        end
        get closeDBFile(svid&".chp")
        get freeDBFieldTag(tagNo)
end
```

Page property "presentation" of book "fmenu02.tbk"

```
to handle updateDisp
        put getDbFieldValue("ch_id") into text of field "c1"
        put getDbFieldValue("ch_cont") into text of field "c2"
        put getDbFieldValue("ch_script") into text of field "c3"

        put getDbFieldValue("kn_id") into text of field "k1"
        put getDbFieldValue("kn_cont") into text of field "k2"
        put getDbFieldValue("kn_script") into text of field "k3"
end


to handle selectCont  chap
        get firstDBRecord()
        clear text of field "pre"
        set i to 1
        while i = 1
                set chapId to getDBFieldValue("ch_id")
                set knownId to getDBFieldValue("kn_id")
                if chapId = chap then
                        put knownId after text of field "pre"
                        put CRLF after text of field "pre"
                end if
                get nextdbrecord()
                        if it <> 1 then
                                set i to 0
                        end if
        end while
end
```

Button property "o" of page "presentation"

```
to handle buttonUp
        get opendbfile("pre.dbf")
        clear text of field "chapField"
        set i to 1
        while vobjtmp <> "*"
                set vobjtmp to textline i of text of field "objField"
                if vobjtmp <> "*" then
                        set i to i+1
                        get firstDBRecord()
                        send schChap vobjtmp
                        put "c" &CRLF after text of field "chapField"
                        put vobjtmp &CRLF after text of field "chapField"
                end if
        end while
        put "*" &CRLF after text of field "chapField"
        get closedbfile("pre.dbf")
end
```

```
to handle  schChap para
        while endrecord <> "end"
                get getdbfieldvalue("cn_id")
                if it = para then
                        put getDBFieldValue("kn_id") after text of field "chapField"
                        put CRLF after text of field "chapField"
                end if
                get nextDBRecord()
                if it < 1 then
                        set endrecord to "end"
                end if
        end while
end
```

Button property "c" of page "presentation"

```
to handle buttonUp                --Clear duplicated known base in field "chapField"
        set i to 1
        while vsource <> "*"
                set vsource to textline i of text of field "chapfield"
                if vsource is "c" then
                        set i to i+2
                end
                if vsource is not "c" then
                        if vsource = "*" then
                                break                --break handle
                        end
                        set j to i+1
                        set vcomp to null
                        while vcomp <> "*"
                                set vcomp to textline j of text of field "chapfield"
                                if vcomp = "c" then
                                        set j to j+2
                                        set vcomp to textline j of text of field "chapfield"
                                else
                                        if vsource = vcomp then
                                                set textline j of text of field "chapfield"
to "-"
                                        end if
                                        set j to j+1
                                end
                        end while
                        set i to i+1
                end
        end while
end
```

Button property "s" of page "presentation"

```
to handle buttonUp
        set i to 1
        while vsource <> "*"
                set vsource to textline i of text of field "st_known"
                if vsource = "*" then
                        break
                end
                set j to 1
                set vcomp to null
                while vcomp <> "*"
                        set vcomp to textline j of text of field "chapfield"
                        if vcomp = "c" then
                                set j to j+2
                                set vcomp to textline j of text of field "chapfield"
                        else
                                if vsource = vcomp then
                                        set textline j of text of field "chapfield" to "-"
```

```
                                end if
                                set j to j+1
                        end
                end while
                set i to i+1
        end while
end


Button property "sc" of page "presentation"
to handle buttonUp
        send knSchedule
        send chSchedule
        send schedule
        set vtmp to text of field "scheduleField"
        setRemote "text of field scheduleField of page saving"  to vtmp topic "control.tbk"

end


to handle knSchedule
        get openDBFile("known.dbf")
        get createDBIndexFile("known.ndx","kn_id",1,0)
        clear text of field "knScriptField"
        set i to 1
        while vendrecord <> "end"
                set vknid to textline i of text of field "chapField"
                conditions
                        when vknid = "*"
                                set vendrecord to "end"
                        when vknid = "-"
                                set i to i+1
                        when vknid = "c"
                                put "c" &CRLF after text of field "knScriptField"
                                set i to i+2
                        else
                                get findDBKey(vknid)
                                put getDBFieldValue("kn_script") after text of field "
knScriptField"
                                put CRLF after text of field "knScriptField"
                                set i to i+1
                end
        end
        put "*" &CRLF after text of field "knScriptField"
        get closeDBFile("known.dbf")
        get closeDBIndexFile("known.ndx")
end


to handle chSchedule
        get openDBFile("chap.dbf")
        get createDBIndexFile("chap.ndx","ch_id",1,0)
        clear text of field "chScriptField"
        set i to 1
        while vendrecord <> "end"
                set vchid to textline i of text of field "chapField"
                conditions
                        when vchid = "*"
                                set vendrecord to "end"
                        when vchid = "c"
                                set i to i+1
                                set vchid to textline i of text of field "chapField"
                                get findDBKey(vchid)
                                put getDBFieldValue("ch_script") after text of field "
chScriptField"
                                put CRLF after text of field "chScriptField"
```

```
                end
                set i to i+1
        end
        put "*" &CRLF after text of field "chScriptField"
        get closeDBFile("chap.dbf")
        get closeDBIndexFile("chap.ndx")
end


to handle schedule
        set vchLineNo to 1
        set vknLineNo to 1
        clear text of field "scheduleField"
        while vendrecord <> "end"
                get textline vknLineNo of text of field "knScriptField"
                conditions
                        when it = "c"
                                get textline vchLineNo of text of field "chScriptField"
                                put it &CRLF after text of field "scheduleField"
                                set vchLineNo to vchLineNO+1
                                set vknLineNo to vknLineNO+1
                        when it = "*"
                                 set vendrecord to "end"
                        else
                                put it &CRLF after text of field "scheduleField"
                                set vknLineNo to vknLineNO+1
                end
        end
        put "*" &CRLF after text of field "scheduleField"
end


Button property "com" of page "presentation"
to handle buttonUp
        system svlessonState
        system svid
        system svselectedObj
        system svlastPage                --Last page property from return book

        format number svselectedObj              --saved  coffee state in char
        set sysDateFormat to "mm/dd/yy"
        set vcmd to textline svlessonState of text of field "scheduleField"
        if vcmd is "*" then                --end of objective script
                get openDBFile(svid&".obj")
                while vendRecord <> "end"
                        set vtmp to getDBFieldValue("obj_id")
                        if vtmp is svselectedObj then
                                get setDBFieldValue("status_obj","M")
                                get setDBFieldValue("last_date",sysDate)
                                get writeDBRecord(0)
                                break while
                        end
                        get nextDBRecord()
                        if it < 1 then
                                set vendRecord to "end"
                        end
                end while
                get closeDBFile(svid&".obj")
--*************************************************************
--              request "Process for objective testing is insert here !"
                request "Do you want to learn more ?" with "Yes" or "No"
                conditions
                        when it is "Yes"
                                set svlessonState to 1
                                go to first page
                                send buttonup to button "obj"
```

```
                        when it is "No"
                                set vtmp to "send buttonUp to button obj"
--for start on next time
                                set txtFile to svid&".pnt"                    --Keep student
state inside *.tbk
                                createFile txtFile
                                writeFile vtmp&CRLF to txtFile
                                writeFile svselectedObj&CRLF to txtFile
                                closeFile txtFile

                                get openDBFile ("student.dbf")
                                get createDBIndexFile("student.dbf","std_id",1,0)
                                get findDBKey(svid)
                                get setDBFieldValue("std_ls_st",1)  --set for next
objective
                                get writeDBRecord(0)
                                get closeDBFile("student.dbf")
                                get closeDBIndexFile("student.dbf")

                                set svlessonState to 1
                                go to page "startUp"
                        end conditions
                else
                        if vcmd is not null
                                execute vcmd
                        else
                                request "already learn !"
                                send finalTest
                                set svlessonstate to null
                                go first page
                        end
                end if
end

to handle finalTest
        ask "ต้องการทดสอบความรู้หรือไม่ ?" with Yes  -- if need to test module
        if it is Yes
                go book "lesson\final.tbk"
        end
end

Button property "save_status" of page "presentation"
to handle buttonUp
        system svlessonState
        system svid

        get openDBFile("student.dbf")
        get createDBIndexFile("student.ndx","std_id",1,0)

        get findDBKey(svid)
        get setDBFieldValue("std_ls_st",svlessonState)
        get writeDBRecord(0)

        get closeDBFile("student.dbf")
        get closeDBIndexFile("student.ndx")

        set svlessonState to 1
        go to first page
end
```

Book property "CHxxx.TBK"

```
to handle enterBook
        system svrepeat                 --for repeat lesson
        system svnormalExit
        set svnormalExit to FALSE
        restore menubar
        remove menu "file" at reader
        remove menu "edit" at reader
        remove menu "text" at reader
        remove menu "page" at reader
        remove menu "help" at reader

        add menu "&Page" at reader
                add menuitem "&Forward" to menu "Page" at reader
                add menuitem "&Backward" to menu "Page" at reader
        add menu "&State" at reader
                add menuitem "check&State" to menu "State" at reader
                if svrepeat is TRUE then
                        add menuitem "&Return to main" to menu "State" at reader
                else
                        add menuitem "&Coffee break" to menu "State" at reader
                end
                add menuitem "" to menu "State" at reader
                add menuitem "speed &Up" to menu "State" at reader
                add menuitem "speed &Down" to menu "State" at reader
        add menu "&Tutor" at reader
                add menuitem "&Beginner" to menu "Tutor" at reader
                add menuitem "lesson &History" to menu "Tutor" at reader

        hide field "f1" of this background
        hide field "f2" of this background


        set sysChangeDB to false
        hide scrollBar
        send SizeToPage
        set caption of this book to "Communication today and tomorrow"
        set captionShown of this book to true

        if svrepeat is TRUE then
--              set script of button "saving" of this background to script of button "ret"
of this background
                show button "ret" of this background
                hide group "hist" of this background
                hide button "history" of this background
--              set script of button "history" of this background to null
                deactivate menuitem "lesson History"
        else
--              set script of button "saving" of this background to script of button "
tmpSaving"  of this background
                hide button "ret" of this background
                show button "history" of this background
                show group "hist" of this background
--              set script of button "history" of this background to script of button "
tmpHistory"  of this background
        end

end enterBook


to handle leaveBook
        system svmasterCalling          --main book property
```

```
        system svlessonState
        system svid
        system svselectedObj
        system svnormalExit

        show rectangle "stop" of this background
        set vpara to uniqueName of this page
        set vtmp to " "&svid &"," &svselectedObj &"," &svlessonState
        executeRemote "send saving1 "&vpara&","&svid&","&svselectedObj topic "
control.tbk"
        executeRemote "send saving2 "&vtmp topic "control.tbk"
        if svnormalExit is TRUE
                executeRemote "send saving3"topic "control.tbk"
        end
        hide rectangle "stop" of this background

end

to handle idle
        system svlearnSpeed
        system svtricker

        set svtricker to svtricker+1
        if svtricker is 30 then
                executeRemote "send idle" topic "control.tbk"
                getRemote "learnSpeed()"
                set svlearnSpeed to it
                set svtricker to 1
        end

end

to handle coffeeTimeShow
        request "TIME TO COFFEE NOW !"
        request "อย่าลืมเก็บบทเรียนก่อนครับ"
end

to handle Forward
        send buttonup to focus
end

to handle Backward
        send buttonup to button "prev" of this background
end

to handle Coffeebreak
        send buttonup to button "saving" of this background
end

to handle ReturnToMain
        send buttonup to button "ret" of this background
end

to handle speedUp
        send buttonup to button "up" of this background
end

to handle speedDown
        send buttonup to button "dn" of this background
end

to handle Beginner
        system svbeforeTutor
        set svbeforeTutor to uniqueName of this page
        go book "beginer.tbk"
end
```

```
to handle lessonHistory
        send buttonup to button "history" of this background
end



to handle checkState
        local otherWindowHandle

    linkdll "user"
        int bringWindowToTop(word)
    end

        --make sure the other book is running
        getRemote "sysWindowHandle" application toolbook topic "control.tbk"
        if "ok" is not in syserror
                request strRunToolBookButton()
        end
        set otherWindowHandle to it
        --have to bring the window to the top for the palettes to show
        set sysSuspend to false
        get bringWindowToTop(otherWindowHandle)
        set sysSuspend to true
        pause 1 seconds

        --restore window focus to this dde book
        get bringWindowToTop(sysWindowHandle)

    unlinkdll "user"
end


to handle pause para1,para2
        system svlearnSpeed
        format number para1
        set para1 to (para1*svlearnSpeed/420)
        set para1 to abs(para1)
        if para2 is "secondss" then
                pause para1 seconds
        else
                pause para1
        end
end


Button property "nex" of background
to handle buttonUp
        system svlearnSpeed

        if this page is not last page then
                show irregularPolygon "arrowRight" of this background
                executeRemote "send trickerDo" topic "control.tbk"
                hide irregularPolygon "arrowRight" of this background
                conditions
                        when svlearnSpeed <=300
                                fxWipe bottom fast to next page
                        when svlearnSpeed >300 and svlearnSpeed < 600
                                fxWipe bottom normal to next page
                        when svlearnSpeed >=600
                                fxWipe bottom slow to next page
                end
        end
end buttonUp
```

Button property "prev" of background

```
to handle buttonUp
        system svlearnSpeed


        if this page is not first page then
                show irregularPolygon "arrowLeft" of this background
                executeRemote "send trickerDo" topic "control.tbk"
                conditions
                        when svlearnSpeed <=300
                                fxWipe right fast to previous page
                        when svlearnSpeed >300 and svlearnSpeed < 600
                                fxWipe right normal to previous page
                        when svlearnSpeed >=600
                                fxWipe right slow to previous page
                end
                hide irregularPolygon "arrowLeft" of this background
        else
                beep 1
        end
end buttonUp
```

Button property "up" of background

```
to handle buttonUp
        show irregularPolygon "arrowUp" of this background
        executeRemote "send speedUp 30" application "toolbook" topic "control.tbk"
        hide irregularPolygon "arrowUp" of this background
end
```

Button property "dn" of background

```
to handle buttonUp
        show irregularPolygon "arrowDown" of this background
        executeRemote "send speedDown 30" application "toolbook" topic "control.tbk"
        hide irregularPolygon "arrowDOwn" of this background
end
```

Button property "saving" of background

```
to handle buttonUp
        system svmasterCalling          --main book property
        system svlessonState
        system svid
        system svselectedObj
        system svnormalExit

        set svnormalExit to TRUE

        show rectangle "stop" of this background
        set vpara to uniqueName of this page
        set vtmp to " "&svid &"," &svselectedObj &"," &svlessonState
        executeRemote "send saving1 "&vpara&","&svid&","&svselectedObj topic "
control.tbk"
        executeRemote "send saving2 "&vtmp topic "control.tbk"
        hide rectangle "stop" of this background

        set svlessonState to 1
        go to svmasterCalling
        pause 1 seconds
        send exit
end
```

Button property "ret" of background

```
to handle buttonUp
        request "return"
        system svrepeat
        system svlessonCaller

        if svrepeat is TRUE then
                set svrepeat to FALSE
                execute "go to "&svlessonCaller
                break
        end

end
```

Button property "tmpSaving" of background

```
to handle buttonUp
        system svmasterCalling          --main book property
        system svlessonState
        system svid
        system svselectedObj
        system svnormalExit
        set svnormalExit to TRUE

        show rectangle "stop" of this background
        set vpara to uniqueName of this page
        set vtmp to " "&svid &"," &svselectedObj &"," &svlessonState
        executeRemote "send saving1 "&vpara&","&svid&","&svselectedObj topic "
control.tbk"
        executeRemote "send saving2 "&vtmp topic "control.tbk"
        hide rectangle "stop" of this background

        set svlessonState to 1
        go to svmasterCalling
        pause 1 seconds
        send exit
end
```

Button property "history" of background

```
to handle buttonUp
        system svrepeat         --case to repeate lesson
        system svid
        system svlessonCaller

        set svrepreat to FALSE

        clear text of field "f1" of this background
        get openDbFile(svid&".chp")
        while endrecord <> "end"
                get getDBFieldValue("status_ch")
                if it is "M" then
                        get getDBFieldValue("ch_id")
                        put it&CRLF after text of field "f1" of this background
                end
                get nextDBRecord()
                if it < 1 then
                        set endrecord to "end"
                end
        end
        get closeDbFile(svid&".chp")

        set vnoLines to textlineCount(text of field "f1" of this background)
```

```
        get openDBFile("chap.dbf")
        get createDBIndexFile("chap.ndx","ch_id",1,0)
        set i to 1
        clear text of field "f2" of this background
        do
                set vchid to textline i of text of field "f1" of this background
                get findDBKey(vchid)
                put getDBFieldValue("ch_cont")&CRLF after text of field "f2" of this
background
                set i to i+1
        until i > vnoLines
        get closeDBFile("chap.dbf")
        get closeDBIndexFile("chap.ndx")

        linkDLL "tbkdlg.dll"
                string dialog(string, string)
                string setValue(string, string, string)
                string getValue(string, string)
        end

        set init to dlgInit of target
        set vtmp to text of field "f2" of this background
        set init to setValue(init,"history",vtmp)  --DLL function
        set retValue to dialog(dlgBox of target, init)

        get getValue(retValue, "history")  --DLL function
        set vlesson to it
        if vlesson is null then
                break                --do nothing
        end
        unlinkDLL "tbkdlg.dll"

        set svrepeat to TRUE
        set svlessonCaller to uniqueName of this page
        set vScript to lessonToRepeat(vlesson)
        execute vScript

end


to get lessonToRepeat vlesson

        get openDBFile ("chap.dbf")
        while TRUE
                get getDBFieldValue("ch_cont")
                if it is vlesson then
                        set vlessonScript to getDBFieldValue("ch_script")
                        return vlessonScript
                        break while
                end
                get nextDBRecord()
                if it < 1 then
                        return null
                        break while
                end
        end
        get closeDBFile("chap.dbf")
end


Button property "tmpHistory" of background
to handle buttonUp
        system svrepeat          --case to repeate lesson
        system svid
        system svlessonCaller
```

```
        set svrepreat to FALSE

        clear text of field "f1" of this background
        get openDbFile(svid&".chp")
        while endrecord <> "end"
                get getDBFieldValue("status_ch")
                if it is "M" then
                        get getDBFieldValue("ch_id")
                        put it&CRLF after text of field "f1" of this background
                end
                get nextDBRecord()
                if it < 1 then
                        set endrecord to "end"
                end
        end
        get closeDbFile(svid&".chp")

        set vnoLines to textlineCount(text of field "f1" of this background)
        get openDBFile("chap.dbf")
        get createDBIndexFile("chap.ndx","ch_id",1,0)
        set i to 1
        clear text of field "f2" of this background
        do
                set vchid to textline i of text of field "f1" of this background
                get findDBKey(vchid)
                put getDBFieldValue("ch_cont")&CRLF after text of field "f2" of this
background
                set i to i+1
        until i > vnoLines
        get closeDBFile("chap.dbf")
        get closeDBIndexFile("chap.ndx")



        linkDLL "tbkdlg.dll"
                string dialog(string, string)
                string setValue(string, string, string)
                string getValue(string, string)
        end

        set init to dlgInit of target
        set vtmp to text of field "f2" of this background
        set init to setValue(init,"history",vtmp)  --DLL function
        set retValue to dialog(dlgBox of target, init)

        get getValue(retValue, "history")  --DLL function
        set vlesson to it
        if vlesson is null then
                break                   --do nothing
        end
        unlinkDLL "tbkdlg.dll"

        set svrepeat to TRUE
        set svlessonCaller to uniqueName of this page
        set vScript to lessonToRepeat(vlesson)
        execute vScript

end


to get lessonToRepeat vlesson

        get openDBFile ("chap.dbf")
        while TRUE
                get getDBFieldValue("ch_cont")
```

```
                if it is vlesson then
                        set vlessonScript to getDBFieldValue("ch_script")
                        return vlessonScript
                        break while
                end
                get nextDBRecord()
                if it < 1 then
                        return null
                        break while
                end
        end
        get closeDBFile("chap.dbf")
end
```

Page property "page xx"

```
to handle enterPage
        system svstate
        set svstate to 0
        send leavePage
        show button "advance"
        set focus to button "advance"
        show field "1"
end

to handle leavePage
        step i from 1 to 5
                hide field i
        end
        hide group "tel"
        hide group "teletex"
        hide group "computer"
end
```

Button property "advance" of page xx

```
to handle buttonUp
        system  svstate
        show irregularpolygon "arrowRight" of this background
        set svstate to svstate+1
        conditions
                when svstate =1
                        hide field "1"
                        show group "tel"
                        send pause 50
                        show group "teletex"
                        send pause 50
                        show group "computer"
                        send pause 50
                        show field "2"
                        send pause 2,secondss
                        executeRemote "send trickerDo" topic "control.tbk"
                when svstate =2
                        hide field "2"
                        send pause 50
                        show field "3"
                        send pause 70
                        show field "4"
                        send pause 1,secondss
                        executeRemote "send trickerDo" topic "control.tbk"
                when svstate =3
                        hide field "4"
                        hide field "3"
                        send pause 50
                        show field "5"
                        send pause 1,secondss
```

```
            else
                send buttonup to button "nex" of this background
        end
        hide irregularpolygon "arrowRight" of this background
end
```

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Group property of "Dtel"

```
to handle buttonUp
        send process1buttonup "dtel",-200,-60
end


to handle buttonStillDown vloc
        send processButtonStillDown vloc
end


to handle leaveButton
        send processLeaveButton
end
```

Page property of book "Train02.tbk"

```
to handle enterPage
        system svcount
        system svindex
        system svchoice1
        system svchoice2
        system svp1,svp2,svp3,svp4,svp5,svp6,svp7,svp8
        system svp9,svp10,svp11,svp12,svp13,svp14,svp15,svp16
        system svpext1,svpext2,svpext3,svpext4,svpext5,svpext6,svpext7,svpext8
        system svpext9,svpext10,svpext11,svpext12,svpext13,svpext14,svpext15,svpext16
        system svdev1,svdev2,svdev3,svdev4,svdev5,svdev6,svdev7,svdev8
        system svdev9,svdev10,svdev11,svdev12,svdev13,svdev14,svdev15,svdev16
        system
svdevext1,svdevext2,svdevext3,svdevext4,svdevext5,svdevext6,svdevext7,svdevext8
        system
svdevext9,svdevext10,svdevext11,svdevext12,svdevext13,svdevext14,svdevext15,svdevext16

        system svmark

        hide scrollbar
        send sizetopage
        hide field "anskey"

        set svp1 to NULL
        set svp2 to NULL
        set svp3 to NULL
        set svp4 to NULL
        set svp5 to NULL
        set svp6 to NULL
        set svp7 to NULL
        set svp8 to NULL
        set svp9 to NULL
        set svp10 to NULL
        set svp11 to NULL
        set svp12 to NULL
        set svp13 to NULL
        set svp14 to NULL
        set svp15 to NULL
        set svp16 to NULL

        set svdev1 to NULL
        set svdev2 to NULL
```

```
        set svdev3 to NULL
        set svdev4 to NULL
        set svdev5 to NULL
        set svdev6 to NULL
        set svdev7 to NULL
        set svdev8 to NULL
        set svdev9 to NULL
        set svdev10 to NULL
        set svdev11 to NULL
        set svdev12 to NULL
        set svdev13 to NULL
        set svdev14 to NULL
        set svdev15 to NULL
        set svdev16 to NULL

        set svdevext1 to NULL
        set svdevext2 to NULL
        set svdevext3 to NULL
        set svdevext4 to NULL
        set svdevext5 to NULL
        set svdevext6 to NULL
        set svdevext7 to NULL
        set svdevext8 to NULL
        set svdevext9 to NULL
        set svdevext10 to NULL
        set svdevext11 to NULL
        set svdevext12 to NULL
        set svdevext13 to NULL
        set svdevext14 to NULL
        set svdevext15 to NULL
        set svdevext16 to NULL


        set svpext1 to NULL
        set svpext2 to NULL
        set svpext3 to NULL
        set svpext4 to NULL
        set svpext5 to NULL
        set svpext6 to NULL
        set svpext7 to NULL
        set svpext8 to NULL
        set svpext9 to NULL
        set svpext10 to NULL
        set svpext11 to NULL
        set svpext12 to NULL
        set svpext13 to NULL
        set svpext14 to NULL
        set svpext15 to NULL
        set svpext16 to NULL

        set svchoice1 to "not select1"
        set svchoice2 to "not select2"
        set svindex to 1
        set svcount to 1
end

to handle selectChoice vid,vtype,vdetected  -- eg. uniqueName,tel, not_selected
        system svchoice1,svuniqueName1
        system svchoice2,svuniqueName2
        system svindex

        pause 1 seconds
        if vdetected is not TRUE then
                if vid is svuniqueName1 then
```

```
                set svchoice1 to "not select1"
                set svindex to 1
            end
            if vid is svuniqueName2 then
                set svchoice2 to "not select2"
                set svindex to 2
            end

            break
        end

        if svindex =1 then
            set svchoice1 to vtype
            set svuniqueName1 to vid
            set svindex to 2
        else
            set svchoice2 to vtype
            set svuniqueName2 to vid
            set svindex to 1
        end

        if (svchoice1 is not "not select1") and (svchoice2 is not "not select2")

            conditions
                when svchoice1 is "ATEL"
                    send ATELChoice
                when svchoice1 is "DTEL"
                    send DTELChoice
                when svchoice1 is "ATELR"
                    send ATELRChoice
                when svchoice1 is "VTXR"
                    send VTXRChoice
                when svchoice1 is "FAX3"
                    send FAX3Choice
                when svchoice1 is "FAX3R"
                    send FAX3RChoice
                when svchoice1 is "FAX4"
                    send FAX4Choice
                when svchoice1 is "FAX4/3"
                    send FAX43Choice
                when svchoice1 is "HOST21R"
                    send HOST21RChoice
                when svchoice1 is "X25R"
                    send X25RChoice
                when svchoice1 is "VTXCENTER"
                    send VTXCENTERChoice
                when svchoice1 is "VTX64"
                    send VTX64Choice
                when svchoice1 is "X21"
                    send X21Choice
                when svchoice1 is "X25"
                    send X25Choice
                else
                    request textline 1 of text of field "anskey"
            end
            -- clear call selection
            send buttonup to svuniqueName1
            send buttonup to svuniqueName2
            set svindex to 1
        end
end

to handle ATELChoice
        system svchoice2
        conditions
```

```
                when svchoice2 is "ATEL"
                        set vans to 3
                when svchoice2 is "ATELR"
                        set vans to 5
                when svchoice2 is "VTXR"
                when svchoice2 is "FAX3"
                when svchoice2 is "FAX3R"
                when svchoice2 is "FAX4"
                when svchoice2 is "FAX4/3"
                when svchoice2 is "HOST21R"
                when svchoice2 is "X25R"
                when svchoice2 is "VTXCENTER"
                when svchoice2 is "VTX64"
                when svchoice2 is "X21"
                when svchoice2 is "X25"
                        set vans to 7
                when svchoice2 is "DTEL"
                        set vans to 9
                else
                        set vans to 1  -- request for comments
        end
        request textline vans of text of field "anskey"
end

to handle DTELChoice
        system svchoice2
        conditions
                when svchoice2 is "DTEL"
                        set vans to 12
                when svchoice2 is "VTXR"
                when svchoice2 is "FAX3"
                when svchoice2 is "FAX3R"
                when svchoice2 is "FAX4"
                when svchoice2 is "FAX4/3"
                when svchoice2 is "HOST21R"
                when svchoice2 is "X25R"
                when svchoice2 is "VTXCENTER"
                when svchoice2 is "VTX64"
                when svchoice2 is "X21"
                when svchoice2 is "X25"
                        set vans to 14
                when svchoice2 is "ATELR"
                        set vans to 16
                when svchoice2 is "ATEL"
                        set vans to 9
                else
                        set vans to 1  -- request for comments
        end
        request textline vans of text of field "anskey"
end

to handle FAX4Choice
        system svchoice2
        conditions
                when svchoice2 is "FAX4"
                        set vans to 40
                when svchoice2 is "VTXR"
                when svchoice2 is "ATELR"
                when svchoice2 is "FAX3R"
                when svchoice2 is "HOST21R"
                when svchoice2 is "X25R"
                when svchoice2 is "VTXCENTER"
                        set vans to 42
                when svchoice2 is "FAX4/3"
```

```
                set vans to 44
            when svchoice2 is "VTX64"
            when svchoice2 is "X21"
            when svchoice2 is "X25"
                set vans to 46
            when svchoice2 is "DTEL"
                set vans to 14
            when svchoice2 is "ATEL"
                set vans to 7
            when svchoice2 is "FAX3"
                set vans to 33
            else
                set vans to 1  -- request for comments
    end
    request textline vans of text of field "anskey"
end

to handle FAX43Choice
    system svchoice2
    conditions
            when svchoice2 is "FAX4/3"
                set vans to 49
            when svchoice2 is "ATELR"
            when svchoice2 is "VTXR"
            when svchoice2 is "HOST21R"
            when svchoice2 is "X25R"
            when svchoice2 is "VTXCENTER"
            when svchoice2 is "VTX64"
            when svchoice2 is "X21"
            when svchoice2 is "X25"
                set vans to 51
            when svchoice2 is "DTEL"
                set vans to 14
            when svchoice2 is "ATEL"
                set vans to 7
            when svchoice2 is "FAX3"
            when svchoice2 is "FAX3R"
                set vans to 35
            when svchoice2 is "FAX4"
                set vans to 44
            else
                set vans to 1  -- request for comments
    end
    request textline vans of text of field "anskey"
end

.....

to handle VTX64Choice
    system svchoice2
    conditions
            when svchoice2 is "VTXR"
            when svchoice2 is "VTX64"
                set vans to 54
            when svchoice2 is "ATELR"
            when svchoice2 is "FAX3R"
            when svchoice2 is "HOST21R"
            when svchoice2 is "X25R"
                set vans to 56
            when svchoice2 is "VTXCENTER"
                set vans to 58
            when svchoice2 is "X21"
            when svchoice2 is "X25"
                set vans to 62
            when svchoice2 is "FAX3"
```

```
                set vans to 35
            when svchoice2 is "FAX4"
                set vans to 46
            when svchoice2 is "FAX4/3"
                set vans to 51
            when svchoice2 is "DTEL"
                set vans to 14
            when svchoice2 is "ATEL"
                set vans to 7
            else
                set vans to 1  -- request for comments
        end
        request textline vans of text of field "anskey"
end

to handle X21Choice
        system svchoice2
        conditions
            when svchoice2 is "X21"
                set vans to 65
            when svchoice2 is "VTXR"
            when svchoice2 is "ATEL"
            when svchoice2 is "FAX3R"
                set vans to 67
            when svchoice2 is "HOST21R"
                set vans to 69
            when svchoice2 is "X25R"
            when svchoice2 is "X25"
                set vans to 71
            when svchoice2 is "VTXCENTER"
                set vans to 73
            when svchoice2 is "ATELR"
                set vans to 7
            when svchoice2 is "FAX3"
                set vans to 37
            when svchoice2 is "FAX4"
                set vans to 46
            when svchoice2 is "FAX4/3"
                set vans to 51
            when svchoice2 is "VTX64"
                set vans to 62
            when svchoice2 is "DTEL"
                set vans to 14
            else
                set vans to 1  -- request for comments
        end
        request textline vans of text of field "anskey"
end

to handle ATELRChoice
        system svchoice2
        conditions
            when svchoice2 is "ATELR"
                set vans to 94
            when svchoice2 is "FAX3R"
                set vans to 96
            when svchoice2 is "HOST21R"
            when svchoice2 is "X25R"
            when svchoice2 is "VTXCENTER"
                set vans to 98
            when svchoice2 is "ATEL"
                set vans to 5
            when svchoice2 is "VTXR"
                set vans to 87
```

```
                when svchoice2 is "FAX3"
                        set vans to 23
                when svchoice2 is "FAX4"
                        set vans to 42
                when svchoice2 is "FAX4/3"
                        set vans to 51
                when svchoice2 is "VTX64"
                        set vans to 56
                when svchoice2 is "X21"
                        set vans to 67
                when svchoice2 is "X25"
                        set vans to 78
                when svchoice2 is "DTEL"
                        set vans to 16
                else
                        set vans to 1  -- request for comments
        end
        request textline vans of text of field "anskey"
end


to handle FAX3RChoice
        system svchoice2
        conditions
                when svchoice2 is "FAX3R"
                        set vans to 101
                when svchoice2 is "HOST21R"
                when svchoice2 is "X25R"
                        set vans to 103
                when svchoice2 is "VTXCENTER"
                        set vans to 105
                when svchoice2 is "ATEL"
                        set vans to 7
                when svchoice2 is "ATELR"
                        set vans to 96
                when svchoice2 is "VTXR"
                        set vans to 87
                when svchoice2 is "FAX3"
                        set vans to 25
                when svchoice2 is "FAX4"
                        set vans to 42
                when svchoice2 is "FAX4/3"
                        set vans to 35
                when svchoice2 is "VTX64"
                        set vans to 56
                when svchoice2 is "X21"
                        set vans to 67
                when svchoice2 is "X25"
                        set vans to 78
                when svchoice2 is "DTEL"
                        set vans to 14
                else
                        set vans to 1  -- request for comments
        end
        request textline vans of text of field "anskey"
end


--*******************
-- common process

to handle processButtonStillDown vloc
        system svcount
        system svcopy
        system svx,svy
```

```
        set svx to item 1 of vloc -120
        set svy to item 2 of vloc -120

        set svcount to svcount + 1
        if svcount < 6 then
                set svcopy to false
        end
        if svcount = 7 then
                move rectangle bound1 to svx,svy
                show rectangle bound1
                set svcopy to TRUE
        end
        if svcount > 15 then
                set svcount to 6
        end

end


to get distance posx1,posy1,posx2,posy2
        return sqrt ((posx1-posx2)^2 + (posy1-posy2)^2)
end


to handle ProcessLeaveButton
        system svcount
        set svcount to 1
end

to handle selectCheck objName
        set vselected to rectangle "boundselect" of  objName
        if fillcolor of vselected is  GREEN
                set fillcolor of vselected to GREEN
                send selectChoice objName,svtype,"FALSE"
        end
end


-- end common process
--*******************


-- start block of process1
-- to copy device that can be connected direct to S-reference and
-- no more extend device.

to handle process1ButtonUp devtype,offsetx,offsety
        system svtype
        set svtype to devtype     -- master device selection
        set vtype to devtype&2  -- copied devices
        system svcopy
        system  svx, svy
        system svmark
        system svdev1,svdev2,svdev3,svdev4,svdev5,svdev6,svdev7,svdev8
        system svdev9,svdev10,svdev11,svdev12,svdev13,svdev14,svdev15,svdev16


        hide rectangle bound1
        if svcopy is TRUE then
                send findLocation
                if svx is NULL
                        request "No free terminal block."
                else
                        select group vtype
                        send copy
                        send paste
```

```
                move selection to svx+offsetx,svy+offsety
                set vtmp to uniqueName of selection
                conditions
                        when svmark is p1
                                set svdev1 to vtmp
                        when svmark is p2
                                set svdev2 to vtmp
                        when svmark is p3
                                set svdev3 to vtmp
                        when svmark is p4
                                set svdev4 to vtmp
                        when svmark is p5
                                set svdev5 to vtmp
                        when svmark is p6
                                set svdev6 to vtmp
                        when svmark is p7
                                set svdev7 to vtmp
                        when svmark is p8
                                set svdev8 to vtmp
                        when svmark is p9
                                set svdev9 to vtmp
                        when svmark is p10
                                set svdev10 to vtmp
                        when svmark is p11
                                set svdev11 to vtmp
                        when svmark is p12
                                set svdev12 to vtmp
                        when svmark is p13
                                set svdev13 to vtmp
                        when svmark is p14
                                set svdev14 to vtmp
                        when svmark is p15
                                set svdev15 to vtmp
                        when svmark is p16
                                set svdev16 to vtmp
                        else
                end

        end
    end
end

to handle findLocation
    system svtype
    system svx, svy
    system svp1,svp2,svp3,svp4,svp5,svp6,svp7,svp8
    system svp9,svp10,svp11,svp12,svp13,svp14,svp15,svp16
    system svmark

    set svx to item 1 of position of rectangle bound1
    set svy to item 2 of position of rectangle bound1
    move rectangle bound1 to svx,svy
    step i from 1 to 16
        set vpostmp1 to position of rectangle "bound1"
        set vp to p&i
        set vpostmp2 to position of ellipse vp

        get distance (item 1 of vpostmp1,item 2 of vpostmp1,\
                                        item 1 of vpostmp2,item 2 of vpostmp2)
        set vtmp to it

        conditions
            when i is 1
                set vrang1 to vtmp
            when i is 2
```

```
                    set vrang2 to vtmp
                when i is 3
                    set vrang3 to vtmp
                when i is 4
                    set vrang4 to vtmp
                when i is 5
                    set vrang5 to vtmp
                when i is 6
                    set vrang6 to vtmp
                when i is 7
                    set vrang7 to vtmp
                when i is 8
                    set vrang8 to vtmp
                when i is 8
                    set vrang8 to vtmp
                when i is 9
                    set vrang9 to vtmp
                when i is 10
                    set vrang10 to vtmp
                when i is 11
                    set vrang11 to vtmp
                when i is 12
                    set vrang12 to vtmp
                when i is 13
                    set vrang13 to vtmp
                when i is 14
                    set vrang14 to vtmp
                when i is 15
                    set vrang15 to vtmp
                when i is 16
                    set vrang16 to vtmp
                else
        end
end

set svmark to NULL
set vtmp to 9999999                -- adjeust offset

if svp1 is NULL
        set vtmp to vrang1
        set svmark to p1
end
if (vtmp > vrang2) and (svp2 is NULL)
        set vtmp to vrang2
        set svmark to p2
end
if (vtmp > vrang3) and (svp3 is NULL)
        set vtmp to vrang3
        set svmark to p3
end
if (vtmp > vrang4) and (svp4 is NULL)
        set vtmp to vrang4
        set svmark to p4
end
if (vtmp > vrang5) and (svp5 is NULL)
        set vtmp to vrang5
        set svmark to p5
end
if (vtmp > vrang6) and (svp6 is NULL)
        set vtmp to vrang6
        set svmark to p6
end
if (vtmp > vrang7) and (svp7 is NULL)
        set vtmp to vrang7
        set svmark to p7
end
```

```
if (vtmp > vrang8) and (svp8 is NULL)
        set vtmp to vrang8
        set svmark to p8
end
if (vtmp > vrang9) and (svp9 is NULL)
        set vtmp to vrang9
        set svmark to p9
end
if (vtmp > vrang10) and (svp10 is NULL)
        set vtmp to vrang10
        set svmark to p10
end
if (vtmp > vrang11) and (svp11 is NULL)
        set vtmp to vrang11
        set svmark to p11
end
if (vtmp > vrang12) and (svp12 is NULL)
        set vtmp to vrang12
        set svmark to p12
end
if (vtmp > vrang13) and (svp13 is NULL)
        set vtmp to vrang13
        set svmark to p13
end
if (vtmp > vrang14) and (svp14 is NULL)
        set vtmp to vrang14
        set svmark to p14
end
if (vtmp > vrang15) and (svp15 is NULL)
        set vtmp to vrang15
        set svmark to p15
end
if (vtmp > vrang16) and (svp16 is NULL)
        set vtmp to vrang16
        set svmark to p16
end


if svmark is NULL
        set svx to NULL                    -- make to null location
        set svy to NULL
else
        conditions
                when svmark is p1
                        set svp1 to svtype
                when svmark is p2
                        set svp2 to svtype
                when svmark is p3
                        set svp3 to svtype
                when svmark is p4
                        set svp4 to svtype
                when svmark is p5
                        set svp5 to svtype
                when svmark is p6
                        set svp6 to svtype
                when svmark is p7
                        set svp7 to svtype
                when svmark is p8
                        set svp8 to svtype
                when svmark is p9
                        set svp9 to svtype
                when svmark is p10
                        set svp10 to svtype
                when svmark is p11
                        set svp11 to svtype
                when svmark is p12
```

```
                        set svp12 to svtype
                    when svmark is p13
                        set svp13 to svtype
                    when svmark is p14
                        set svp14 to svtype
                    when svmark is p15
                        set svp15 to svtype
                    when svmark is p16
                        set svp16 to svtype
                    else
                end
                set svx to item 1 of position of ellipse svmark - 100
                set svy to item 2 of position of ellipse svmark - 50
        end
end

-- end block of process1
--*****************************

-- start block of process2

to handle process2ButtonUp devtype,objname
        system svtype
        set svtype to devtype

        hide rectangle bound1
        set vselected to rectangle "boundselect" of  objname
        if fillcolor of vselected is not GREEN then
                set fillcolor of vselected to GREEN
                send selectChoice objname,svtype,"TRUE"
        else
                set fillcolor of vselected to WHITE
                send selectChoice objname,svtype,"FALSE"
        end

end



to handle process2RightButtonUp devtype,objname
        system svtype
        set svtype to devtype

        system svp1,svp2,svp3,svp4,svp5,svp6,svp7,svp8
        system svp9,svp10,svp11,svp12,svp13,svp14,svp15,svp16
        system svdev1,svdev2,svdev3,svdev4,svdev5,svdev6,svdev7,svdev8
        system svdev9,svdev10,svdev11,svdev12,svdev13,svdev14,svdev15,svdev16


        set vorgin to "group id 2541 of page id 0" -- to protected origin clear
        if vorgin is not objname
                conditions
                    when svdev1 is objname
                        set svp1 to NULL
                    when svdev2 is objname
                        set svp2 to NULL
                    when svdev3 is objname
                        set svp3 to NULL
                    when svdev4 is objname
                        set svp4 to NULL
                    when svdev5 is objname
                        set svp5 to NULL
```

```
                        when svdev6 is objname
                                set svp6 to NULL
                        when svdev7 is objname
                                set svp7 to NULL
                        when svdev8 is objname
                                set svp8 to NULL
                        when svdev9 is objname
                                set svp9 to NULL
                        when svdev10 is objname
                                set svp10 to NULL
                        when svdev11 is objname
                                set svp11 to NULL
                        when svdev12 is objname
                                set svp12 to NULL
                        when svdev13 is objname
                                set svp13 to NULL
                        when svdev14 is objname
                                set svp14 to NULL
                        when svdev15 is objname
                                set svp15 to NULL
                        when svdev16 is objname
                                set svp16 to NULL
                        else
                end


                send selectCheck objName

                select objname
                send clear
        end
end

-- end block of process2
--*******************************

-- start block of process3  ( for such as TAab ....)


to handle process3RightButtonUp devtype,objname
        system svtype
        set svtype to devtype

        system svp1,svp2,svp3,svp4,svp5,svp6,svp7,svp8
        system svp9,svp10,svp11,svp12,svp13,svp14,svp15,svp16
        system svpext1,svpext2,svpext3,svpext4,svpext5,svpext6,svpext7,svpext8
        system svpext9,svpext10,svpext11,svpext12,svpext13,svpext14,svpext15,svpext16

        system svdev1,svdev2,svdev3,svdev4,svdev5,svdev6,svdev7,svdev8
        system svdev9,svdev10,svdev11,svdev12,svdev13,svdev14,svdev15,svdev16
        system
svdevext1,svdevext2,svdevext3,svdevext4,svdevext5,svdevext6,svdevext7,svdevext8
        system
svdevext9,svdevext10,svdevext11,svdevext12,svdevext13,svdevext14,svdevext15,svdevext16

        set olduniqueName to objname

        set vorgin to "group id 2541 of page id 0" -- to protected origin clear
        if vorgin is not objname

                conditions
                        when svdev1 is objname
                                set svp1 to NULL
                                if svdevext1 is not NULL
                                        send selectCheck svdevext1
                                        select svdevext1
```

```
                send clear
                set svpext1 to NULL
                set svdevext1 to NULL
        end
when svdev2 is objname
        set svp2 to NULL
        if svdevext2 is not NULL
                send selectCheck svdevext2
                select svdevext2
                send clear
                set svpext2 to NULL
                set svdevext2 to NULL
        end
when svdev3 is objname
        set svp3 to NULL
        if svdevext3 is not NULL
                send selectCheck svdevext3
                select svdevext3
                send clear
                set svpext3 to NULL
                set svdevext3 to NULL
        end
when svdev4 is objname
        set svp4 to NULL
        if svdevext4 is not NULL
                send selectCheck svdevext4
                select svdevext4
                send clear
                set svpext4 to NULL
                set svdevext4 to NULL
        end
when svdev5 is objname
        set svp5 to NULL
        if svdevext5 is not NULL
                send selectCheck svdevext5
                select svdevext5
                send clear
                set svpext5 to NULL
                set svdevext5 to NULL
        end
when svdev6 is objname
        set svp6 to NULL
        if svdevext6 is not NULL
                send selectCheck svdevext6
                select svdevext6
                send clear
                set svpext6 to NULL
                set svdevext6 to NULL
        end
when svdev7 is objname
        set svp7 to NULL
        if svdevext7 is not NULL
                send selectCheck svdevext7
                select svdevext7
                send clear
                set svpext7 to NULL
                set svdevext7 to NULL
        end
when svdev8 is objname
        set svp8 to NULL
        if svdevext8 is not NULL
                send selectCheck svdevext8
                select svdevext8
                send clear
                set svpext8 to NULL
                set svdevext8 to NULL
```

```
        end
when svdev9 is objname
        set svp9 to NULL
        if svdevext9 is not NULL
                send selectCheck svdevext9
                select svdevext9
                send clear
                set svpext9 to NULL
                set svdevext9 to NULL
        end
when svdev10 is objname
        set svp10 to NULL
        if svdevext10 is not NULL
                send selectCheck svdevext10
                select svdevext10
                send clear
                set svpext10 to NULL
                set svdevext10 to NULL
        end
when svdev11 is objname
        set svp11 to NULL
        if svdevext11 is not NULL
                send selectCheck svdevext11
                select svdevext11
                send clear
                set svpext11 to NULL
                set svdevext11 to NULL
        end
when svdev12 is objname
        set svp12 to NULL
        if svdevext12 is not NULL
                send selectCheck svdevext12
                select svdevext12
                send clear
                set svpext12 to NULL
                set svdevext12 to NULL
        end
when svdev13 is objname
        set svp13 to NULL
        if svdevext13 is not NULL
                send selectCheck svdevext13
                select svdevext13
                send clear
                set svpext13 to NULL
                set svdevext13 to NULL
        end
when svdev14 is objname
        set svp14 to NULL
        if svdevext14 is not NULL
                send selectCheck svdevext14
                select svdevext14
                send clear
                set svpext14 to NULL
                set svdevext14 to NULL
        end
when svdev15 is objname
        set svp15 to NULL
        if svdevext15 is not NULL
                send selectCheck svdevext15
                select svdevext15
                send clear
                set svpext15 to NULL
                set svdevext15 to NULL
        end
when svdev16 is objname
        set svp16 to NULL
```

```
                                if svdevext16 is not NULL
                                        send selectCheck svdevext16
                                        select svdevext16
                                        send clear
                                        set svpext16 to NULL
                                        set svdevext16 to NULL
                                end
                        else
                end


                select olduniqueName
                send clear
        end
end
-- end block of process3
--************************


-- start block of process1Ext

to handle process1ExtButtonUp devtype,offsetx,offsety
        system svtype
        set svtype to devtype     -- master device selection
        set vtype to devtype&2  -- copied devices
        system svcopy
        system  svx, svy
        system svmark
        system svdev1,svdev2,svdev3,svdev4,svdev5,svdev6,svdev7,svdev8
        system svdev9,svdev10,svdev11,svdev12,svdev13,svdev14,svdev15,svdev16
        system
svdevext1,svdevext2,svdevext3,svdevext4,svdevext5,svdevext6,svdevext7,svdevext8
        system
svdevext9,svdevext10,svdevext11,svdevext12,svdevext13,svdevext14,svdevext15,svdevext16


        hide rectangle bound1
        if svcopy is TRUE then
                send extFindLocation
                if svx is NULL
                        request "Should connect TA before this device."
                else
                        select group vtype
                        send copy
                        send paste
                        move selection to svx+offsetx,svy+offsety
                        set vtmp to uniqueName of selection
                        conditions
                                when svmark is p1
                                        set svdevext1 to vtmp
                                when svmark is p2
                                        set svdevext2 to vtmp
                                when svmark is p3
                                        set svdevext3 to vtmp
                                when svmark is p4
                                        set svdevext4 to vtmp
                                when svmark is p5
                                        set svdevext5 to vtmp
                                when svmark is p6
                                        set svdevext6 to vtmp
                                when svmark is p7
                                        set svdevext7 to vtmp
                                when svmark is p8
                                        set svdevext8 to vtmp
                                when svmark is p9
                                        set svdevext9 to vtmp
```

```
                        when svmark is p10
                                set svdevext10 to vtmp
                        when svmark is p11
                                set svdevext11 to vtmp
                        when svmark is p12
                                set svdevext12 to vtmp
                        when svmark is p13
                                set svdevext13 to vtmp
                        when svmark is p14
                                set svdevext14 to vtmp
                        when svmark is p15
                                set svdevext15 to vtmp
                        when svmark is p16
                                set svdevext16 to vtmp
                        else
                    end

                end
        end
end


to handle ExtFindLocation
        system svtype
        system svx, svy
        system svp1,svp2,svp3,svp4,svp5,svp6,svp7,svp8
        system svp9,svp10,svp11,svp12,svp13,svp14,svp15,svp16
        system svpext1,svpext2,svpext3,svpext4,svpext5,svpext6,svpext7,svpext8
        system svpext9,svpext10,svpext11,svpext12,svpext13,svpext14,svpext15,svpext16
        system
svdevext1,svdevext2,svdevext3,svdevext4,svdevext5,svdevext6,svdevext7,svdevext8
        system
svdevext9,svdevext10,svdevext11,svdevext12,svdevext13,svdevext14,svdevext15,svdevext16

        system svmark

        set svx to item 1 of position of rectangle bound1
        set svy to item 2 of position of rectangle bound1
        move rectangle bound1 to svx,svy
        step i from 1 to 16
                set vpostmp1 to position of rectangle "bound1"
                set vp to p&i
                set vpostmp2 to position of ellipse vp

                get distance (item 1 of vpostmp1,item 2 of vpostmp1,\
                                                item 1 of vpostmp2,item 2 of vpostmp2)
                set vtmp to it

                conditions
                    when i is 1
                            set vrang1 to vtmp
                    when i is 2
                            set vrang2 to vtmp
                    when i is 3
                            set vrang3 to vtmp
                    when i is 4
                            set vrang4 to vtmp
                    when i is 5
                            set vrang5 to vtmp
                    when i is 6
                            set vrang6 to vtmp
                    when i is 7
                            set vrang7 to vtmp
                    when i is 8
                            set vrang8 to vtmp
                    when i is 8
```

```
                    set vrang8 to vtmp
                when i is 9
                    set vrang9 to vtmp
                when i is 10
                    set vrang10 to vtmp
                when i is 11
                    set vrang11 to vtmp
                when i is 12
                    set vrang12 to vtmp
                when i is 13
                    set vrang13 to vtmp
                when i is 14
                    set vrang14 to vtmp
                when i is 15
                    set vrang15 to vtmp
                when i is 16
                    set vrang16 to vtmp
                else
        end
end


conditions
        when svtype is "ate1"
                set vinterDev to "TAab"
        when svtype is "Fax3"
                set vinterDev to "TAab"
        when svtype is "x25"
                set vinterDev to "TAx25"
        when svtype is "x21"
                set vinterDev to "TAx21"
        else
                set vinterDev to "not selected"
end

set svmark to NULL
set vtmp to 9999999                -- adjeust offset

if (svp1 is vinterDev) and (svpext1 is NULL)
        set vtmp to vrang1
        set svmark to p1
end

if (vtmp >= vrang2) and (svp2 is vinterDev) and (svpext2 is NULL)
        set vtmp to vrang2
        set svmark to p2
end
if (vtmp >= vrang3) and (svp3 is vinterDev) and (svpext3 is NULL)
        set vtmp to vrang3
        set svmark to p3
end
if (vtmp >= vrang4) and (svp4 is vinterDev) and (svpext4 is NULL)
        set vtmp to vrang4
        set svmark to p4
end
if (vtmp >= vrang5) and (svp5 is vinterDev) and (svpext5 is NULL)
        set vtmp to vrang5
        set svmark to p5
end
if (vtmp >= vrang6) and (svp6 is vinterDev) and (svpext6 is NULL)
        set vtmp to vrang6
        set svmark to p6
end
if (vtmp >= vrang7) and (svp7 is vinterDev) and (svpext7 is NULL)
        set vtmp to vrang7
        set svmark to p7
```

```
end
if (vtmp >= vrang8) and (svp8 is vinterDev) and (svpext8 is NULL)
        set vtmp to vrang8
        set svmark to p8
end
if (vtmp >= vrang9) and (svp9 is vinterDev) and (svpext9 is NULL)
        set vtmp to vrang9
        set svmark to p9
end
if (vtmp >= vrang10) and (svp10 is vinterDev) and (svpext10 is NULL)
        set vtmp to vrang10
        set svmark to p10
end
if (vtmp >= vrang11) and (svp11 is vinterDev) and (svpext11 is NULL)
        set vtmp to vrang11
        set svmark to p11
end
if (vtmp >= vrang12) and (svp12 is vinterDev) and (svpext12 is NULL)
        set vtmp to vrang12
        set svmark to p12
end
if (vtmp >= vrang13) and (svp13 is vinterDev) and (svpext13 is NULL)
        set vtmp to vrang13
        set svmark to p13
end
if (vtmp >= vrang14) and (svp14 is vinterDev) and (svpext14 is NULL)
        set vtmp to vrang14
        set svmark to p14
end
if (vtmp >= vrang15) and (svp15 is vinterDev) and (svpext15 is NULL)
        set vtmp to vrang15
        set svmark to p15
end
if (vtmp >= vrang16) and (svp16 is vinterDev) and (svpext16 is NULL)
        set vtmp to vrang16
        set svmark to p16
end
if svmark is NULL
        set svx to NULL                    -- make to null location
        set svy to NULL
else
        conditions
                when svmark is p1
                        set svpext1 to svtype
                when svmark is p2
                        set svpext2 to svtype
                when svmark is p3
                        set svpext3 to svtype
                when svmark is p4
                        set svpext4 to svtype
                when svmark is p5
                        set svpext5 to svtype
                when svmark is p6
                        set svpext6 to svtype
                when svmark is p7
                        set svpext7 to svtype
                when svmark is p8
                        set svpext8 to svtype
                when svmark is p9
                        set svpext9 to svtype
                when svmark is p10
                        set svpext10 to svtype
                when svmark is p11
                        set svpext11 to svtype
                when svmark is p12
                        set svpext12 to svtype
```

```
                when svmark is p13
                        set svpext13 to svtype
                when svmark is p14
                        set svpext14 to svtype
                when svmark is p15
                        set svpext15 to svtype
                when svmark is p16
                        set svpext16 to svtype
                else
            end
            set svx to item 1 of position of ellipse svmark - 100
            set svy to item 2 of position of ellipse svmark - 50
        end
end

-- end block of process1Ext
--***************

-- start block of process2Ext

to handle process2ExtRightButtonUp devtype,objName
        system svtype
        set svtype to devtype

        system svpext1,svpext2,svpext3,svpext4,svpext5,svpext6,svpext7,svpext8
        system svpext9,svpext10,svpext11,svpext12,svpext13,svpext14,svpext15,svpext16
        system
svdevext1,svdevext2,svdevext3,svdevext4,svdevext5,svdevext6,svdevext7,svdevext8
        system
svdevext9,svdevext10,svdevext11,svdevext12,svdevext13,svdevext14,svdevext15,svdevext16
        set vorgin to "group id 2541 of page id 0" -- to protected origin clear
        if vorgin is not objName
                conditions
                        when svdevext1 is objName
                                set svpext1 to NULL
                                set svdevext1 to NULL
                        when svdevext2 is objName
                                set svpext2 to NULL
                                set svdevext2 to NULL
                        when svdevext3 is objName
                                set svpext3 to NULL
                                set svdevext3 to NULL
                        when svdevext4 is objName
                                set svpext4 to NULL
                                set svdevext4 to NULL
                        when svdevext5 is objName
                                set svpext5 to NULL
                                set svdevext5 to NULL
                        when svdevext6 is objName
                                set svpext6 to NULL
                                set svdevext6 to NULL
                        when svdevext7 is objName
                                set svpext7 to NULL
                                set svdevext7 to NULL
                        when svdevext8 is objName
                                set svpext8 to NULL
                                set svdevext8 to NULL
                        when svdevext9 is objName
                                set svpext9 to NULL
                                set svdevext9 to NULL
                        when svdevext10 is objName
                                set svpext10 to NULL
                                set svdevext10 to NULL
                        when svdevext11 is objName
                                set svpext11 to NULL
```

```
                        set svdevext11 to NULL
                    when svdevext12 is objName
                        set svpext12 to NULL
                        set svdevext12 to NULL
                    when svdevext13 is objName
                        set svpext13 to NULL
                        set svdevext13 to NULL
                    when svdevext14 is objName
                        set svpext14 to NULL
                        set svdevext14 to NULL
                    when svdevext15 is objName
                        set svpext15 to NULL
                        set svdevext15 to NULL
                    when svdevext16 is objName
                        set svpext16 to NULL
                        set svdevext16 to NULL
                    else
                end

                send selectCheck objName

                select objName
                send clear
        end
end

-- end block of process2Ext
```

Question: ในกรณีของBasic access สัญญาน synchronisation จะส่งด้วยอัตราเร็วเท่าไหร ?

Answer: 16 kbit/s

Page property of Fill in blank answer

```
to handle enterPage
        send leavePage
        set focus to field "answerField"
end


to handle leavePage
        hide group "wrong"
        hide group "correct"
        hide field "ansWrong"
        clear text of field "answerField"
end
```

Field property "answerField" of fill in blank

```
to handle enterField
        system svstateAns
        set svstateAns to 1
        clear text of field "answerField"
        hide group "wrong"
        hide group "correct"
        hide field "ansWrong"  -- explain field for wrong answer
end


to handle keyDown key
        system svstateAns
        local vanswer
        set vanswer to "16"

        if key is keyback
                set temp to charCount(text of field "answerField")
                if temp > 0
                        clear char temp of text of field "answerField"
                else
                        beep 1
                end
        end

        if key is keyEnter then
                set vtemp to text of field "answerField"
                if vtemp is vanswer and svstateAns =1 then
                        show group "correct"
                        pause 100
                        request "ถูกต้อง"                    -- right answer
                else
                        show group "wrong"
                        beep 1
                        pause 100
                        show field "AnsWrong"
                end
                if svstateAns > 1
                        hide field "AnsWrong"
                end
                set focus to button "nex" of this background
                set svstateAns to svstateAns+1
        end
end
```

Button property "nex" of background

```
to handle buttonUp
        go to next page
end
```

Question: Four-wire line ใช้กับการเชื่อมต่อแบบใด ?

Answer: primary rate access (checked mark on button "b2")

Page property of multiple choice with one correct answer

```
to handle enterPage
        send leavePage
        set focus to button "b1"
end

to handle leavePage
        set checked of button "b1" to false
        set checked of button "b2" to false
        hide group "mark1"
        hide group "mark2"
        hide field "ansWrong"
        hide group "wrong"
        hide group "correct"
end
```

Button property "b1" of multiple choice with one correct answer

```
to handle buttonUp
        send keyup
end

to handle keyUp key
        if checked of button "b1" is true
                set checked of button "b2" to false
                hide group "mark2"
                show group "mark1"
        else
                hide group "mark1"
        end
end
```

Button property "conferm" of multiple choice with one correct answer

```
to handle buttonUp
        send clearing
        conditions
                when checked of button "b1" is true
                        beep 1
                        show group "wrong"
                        pause 50
                        show field "ansWrong"
                        set focus to button "nex" of this background
                when checked of button "b2" is true
                        show group "correct"
                        pause 50
                        request "ถูกต้อง"
                        set focus to button "nex" of this background
                else
                        beep 1
```

```
                    set focus to button "b1"
        end
end

to handle clearing
--      copy from leavePage but not checked to false
end
```

Question: อุปกรณ์ VAS (Value Added Service) ถูกนำมาเป็นตัวเชื่อมระบบ เพื่ออะไร ?

Choice: สามารถเชื่อมต่อบริการต่างๆผ่านโครงข่ายแตกต่างกันได้ **<correct answer>**

สามารถเชื่อมต่อเข้าโครงข่าย PSPDN (packet network)

สามารถให้บริการ mail box ได้ **<correct answer>**

สามารถเชื่อมต่อไปยังโครงข่าย Teletex ได้ **<correct answer>**

สามารถเชื่อมต่อไปยังโครงข่าย B-ISDN ได้

Page property of multiple choice with multi-answer

```
to handle enterPage
        send leavePage
        set focus to button "b1"
end

to handle leavePage
        set checked of button "b1" to false
        set checked of button "b2" to false
        set checked of button "b3" to false
        set checked of button "b4" to false
        set checked of button "b5" to false
        hide group "mark1"
        hide group "mark2"
        hide group "mark3"
        hide group "mark4"
        hide group "mark5"
        hide field "ansWrong"
        hide group "wrong"
        hide group "correct"
end
```

Button property "b1" สามารถเชื่อมต่อบริการต่างๆผ่านโครงข่ายแตกต่างกันได้

```
to handle buttonUp
        send keyup
end

to handle keyUp key
        if checked of button "b1" is true
                show group "mark1"
        else
                hide group "mark1"
        end
end
```

Button property "confirm" of multiple choice with multi-answer

```
to handle buttonUp
        send clearing
        conditions
                when checked of button "b1" is true and \
                        checked of button "b3" is true and \
                        checked of button "b4" is true and \
                        checked of button "b2" is false and \
                        checked of button "b5" is false
                        show group "correct"
                        pause 50
                        request "ถูกต้อง"
                        set focus to button "nex" of this background
                when checked of button "b2" is true
                when checked of button "b5" is true
                        beep 1
                        show group "wrong"
                        pause 50
                        show field "ansWrong"
                        set focus to button "nex" of this background
                when checked of button "b1" is true
                when checked of button "b3" is true
                when checked of button "b4" is true,
                        request "คำตอบถูกต้องบางส่วน"
                else
                        beep 1
                        set focus to button "b1"
        end
end

to handle clearing
        hide field "ansWrong"
        hide group "wrong"
        hide group "correct"
end
```

ภาคผนวก ค.

แบบสอบถามเพื่อการวิเคราะห์

แบบสอบถามเพื่อการวิเคราะห์

ระบบคอมพิวเตอร์ช่วยสอนหลักสูตร Data services and ISDN

ชื่อ..... **สังกัด**..... **ตำแหน่ง**.....

เลือกหมายเลขที่ท่าคิดว่ามีความสัมพันธ์กับหัวข้อ โดยกาเครื่องหมาย X ทับ

	มากสุด				น้อยสุด
1. ความคุ้นเคยกับการใช้คอมพิวเตอร์	1	2	3	4	5
2. ความคุ้นเคยกับการใช้โปรแกรม MS windows	1	2	3	4	5
3. เคยเข้าอบรมหลักสูตรที่เกี่ยวข้อง ISDN มาก่อน	YES		NO		
4. ก่อนเข้ารับการอบรมในหลักสูตรนี้มีความเข้าใจในหัวข้อ ISDN	1	2	3	4	5
5. เมื่อได้ศึกษาโปรแกรมนี้แล้วมีความเข้าใจในหัวข้อ ISDN	1	2	3	4	5
6. ความสอดคล้องของลำดับการนำเสนอบทเรียน	1	2	3	4	5
7. ระยะเวลาในการนำเสนอ	1	2	3	4	5
8. ความรู้สึกต่อการทำงานของโปรแกรม	1	2	3	4	5
9. ในหน้าที่งานมีความเกี่ยวข้องกับ ISDN ในระดับ	1	2	3	4	5

อธิบายหัวข้อต่อไปนี้พอสังเขป

10. หัวข้อใดบ้างที่ยังไม่ค่อยเข้าใจ ?

.....

.....

11. หัวข้อใดบ้างที่ยังไม่เหมาะสม เพราะอะไร ?

.....

.....

12. ให้เปรียบเทียบการนำเสนอแบบปรกติและแบบใช้คอมพิวเตอร์ช่วย

.....

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13. ข้อเสนอแนะเพิ่มเติม

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ประวัติผู้เขียน

นาย ต้อง ศรีคชา เกิดวันที่ 9 ธันวาคม พ.ศ. 2505 ที่รพ.จุฬาฯ กรุงเทพฯ สำเร็จการศึกษาปริญญาตรีวิศวกรรมศาสตร์บัณฑิต สาขาไฟฟ้า ภาควิชาวิศวกรรมไฟฟ้า คณะวิศวกรรมศาสตร์สถาบันเทคโนโลยีพระจอมเกล้า วิทยาเขตพระนครเหนือ ในปีการศึกษา 2529 และเข้าศึกษาต่อในหลักสูตร วิทยาศาสตร์มหาบัณฑิต สาขาวิชาวิทยาศาสตร์คอมพิวเตอร์ จุฬาลงกรณ์มหาวิทยาลัยเมื่อ พ.ศ. 2536 ปัจจุบัน ดำรงตำแหน่งหัวหน้าหน่วยพัฒนาระบบงาน ฝ่ายพัฒนาทรัพยากรบุคคลองค์การโทรศัพท์แห่งประเทศไทย