

CHAPTER I

INTRODUCTION

A prefix code C can be obtained comfortably by collecting words at endpoints of a falling tree. The syntactic monoid $M(C^*)$ of C^* is viewed as the transition monoid of the minimal automaton of C^* derived from the tree representing C .

On the algebraic point of view, Green's relations have played an important role in the development of semigroup theory. Especially, a coordinate system for a \mathcal{D} -class and \mathcal{D} -representation provide the basic tools for investigating the local structure of semigroups.

The purpose of this thesis is to construct, for any given positive integer n , a prefix code whose syntactic monoid $M(C^*)$ has exactly n nonzero \mathcal{D} -classes.

In Chapter II, we introduce notations, definitions and proofs of auxiliary theorems used throughout this thesis.

In Chapter III, we prove that the code C constructed by K. Jantarakhajorn [2] provides syntactic monoid $M(C^*)$ which is an inverse semigroup containing exactly two nonzero \mathcal{D} -classes.

In Chapter IV, for any given $n \geq 3$, we construct a finite inverse prefix code C via P. Udomkavanich's algorithm [5] whose syntactic monoid $M(C^*)$ has exactly n nonzero \mathcal{D} -classes.