CPSC 323-06 | PROJECT 1 | Programming Assignment 1 | 2 April 2023

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Regular Expressions

<Function Definition> ::= <Function> | <Function> <Function Definitions>

<Parameter List>   ::= <Parameter> | <Parameter> , <Parameter List>

<Parameter>   ::= <IDs > <Keyword>

<Keyword>   ::= integer | boolean | double | float | char | string

<Declaration>   ::= <Keyword > <ID>

<ID>   ::= <Identifier> | <Identifier>, <ID>

<Assign>   ::= <Identifier> = <Expression> ;

 <If>   ::= if (<Condition>) <Statement>
                       | if (<Condition>) <Statement> else   <Statement>

<Return>   ::= return ; | return <Expression> ;

<Print>   ::= put (<Expression>);

<Scan>   ::= get (<IDs>);

<While>   ::= while (<Condition>) <Statement>

<Condition>   ::= <Expression> <Operation>   <Expression>

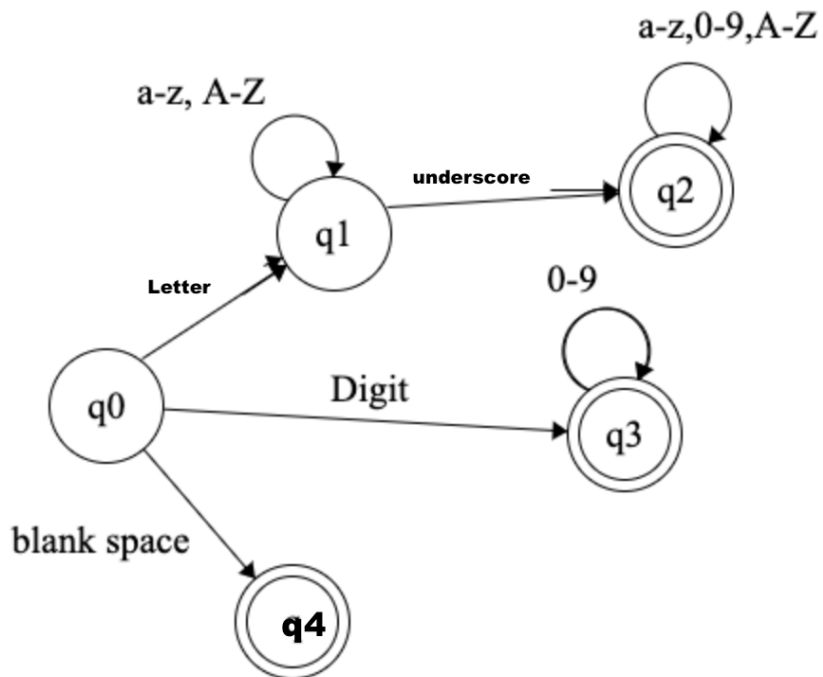<Operation>   ::= == | != | > | < | <= | =>

<Arithmetic>   ::= <Arithmetic> + <Ratio> | <Arithmetic> - <Ratio> | <Ratio>

<Ratio>   ::= <Ratio> * <Number> | <Ratio> / <Number> | <Number>

<Number>   ::= - <Digit> | <Digit>

FSA for Identifiers and Integers

Regular Expression: L(L|D|_)*

Expression must start with at least one L = letter and be followed by at least one D = digit or underscore. "File_2" is accepted while "6_file" is not accepted. "Var1_" is accepted but "_var3" is not accepted.

NFSM

a-z,0-9,A-Z

a-z, A-Z

underscore

q2

q1

Letter

0-9

Digit

q0

q3

blank space

q4

State Table

	Letter	Digit	Underscore
0	0	0,1	{}
1	1	1	1
2	{}	2	{}

DFSM

A-Z, 0-9, a-z

q1

Letter

q0

Digit

q2

underscore

A-Z, 0-9, a-z

q3

0-9