

National University of Computer and Emerging Sciences



Assignment 1

Lexical Analyzer

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Regular Definition

Token \rightarrow Identifier | Integer | String | Comment | RO | IO

Identifier \rightarrow (Und | Letter) AlphaNumeric*

Integer \rightarrow Digit ⁺

String \rightarrow Quotation (Character)* Quotation

Comment \rightarrow ; (Character)*

IO \rightarrow << | >>

RO \rightarrow = | <> | < | <= | > | >=

Digit \rightarrow 0 | 1 | ... | 9

Character \rightarrow AlphaNumeric | IO | RO | SpecialChar | Quotation | ArithmeticOP

Quotation \rightarrow `

AlphaNumeric \rightarrow (Und | Letter | Integer)

Letter \rightarrow A|B|C|...|Z | a|b|c|...|z

ArithmeticOP \rightarrow + | - | * | / | %

Special Char \rightarrow | | ; | : | ` | (|) | @

Und \rightarrow _

CFG

Program → D Program | ^

D → Code | Function | Koment

Code → Statement Code | If Code | While Code | ^

Statement → Stmt Comment

Stmt → Variable | Input | Output | Return

Koment → Comment | ^

Function → kaam ID @ **FuncT** (**PL**) karo Koment **Code** kaam khatam Koment

FuncT → khali | adad

PL → ID @ adad **MPL** | ^

MPL → | PL | ^

Variable → rakho ID **Type** **R**

Type → @ adad | ^

R → := Val | ^

Val → ID | Integer | Exp | chalao ID (**PLF**)

PLF → ID MPLF | Integer MPLF | ^

MPLF → | PLF | ^

Input → lo **InputMsg** >> ID

InputMsg → ^ | << **String**

Output → dekhao << OutVal MoreOut

MoreOut → << OutVal MoreOut | ^

OutVal → String | Val

Return → wapis bhajjo **Val**

IF → agar (**Condition**) to phir karo Koment **Code** **WG** **WP** bas karo Koment

WG → warna agar **Condition** to phir Koment **Code** | ^

WP → warna phir Koment **Code** | ^

Condition → Exp RO Exp

Exp -> T - Exp | T + Exp | T

T-> L % T | L / T | L * T | L

L-> ID | Integer | (Exp)

While → jab tak (Condition) karo Koment **Code** bas karo Koment