
# Green University of Bangladesh

## Department of Computer Science and Engineering(CSE)

## Semester: (Summer, Year:2021), B.Sc. in CSE (Day)

Midterm Exam Fall 2021

Course Title: Compiler
Course Code: CSE 305 Section:193D

**Student Details**

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| Status |
|---|
| Marks: ..... Signature:..... |
| Comments:..... Date:..... |
| ... |

## Ans to the Q.no: 1 (a)

S is to to have one b

A is to have two b's

B is to have 3/more b's

## ~~Ans to the Q.no: 7 (b)~~

CFG:

$S \rightarrow aS \mid bA$

$A \rightarrow aA \mid bB$

$B \rightarrow aB \mid bB \mid Ba \mid Bb \mid b$

## Ans to the Q.no: 1 (b)

X is to have $(a+b)^*$

S is to start and end with the same symbol

CFG:

$S \rightarrow aXa \mid bXb$

$X \rightarrow aX \mid bx \mid \lambda$

## Ans to the Q.no: 1 (c)

w is for (a+b) just a single symbol

s is to have odd length and middle symbol b

CFG

$S \rightarrow wSw \mid b$

$w \rightarrow a \mid b$

# Ans to the Q.no: 2

Given,

Position = initial + rate * 80.5

| S/n | V/N | V/T |
|---|---|---|
| 1 | position | float |
| 2 | initial | float |
| 3 | Rate | float |

↓

Lexical Analyzer

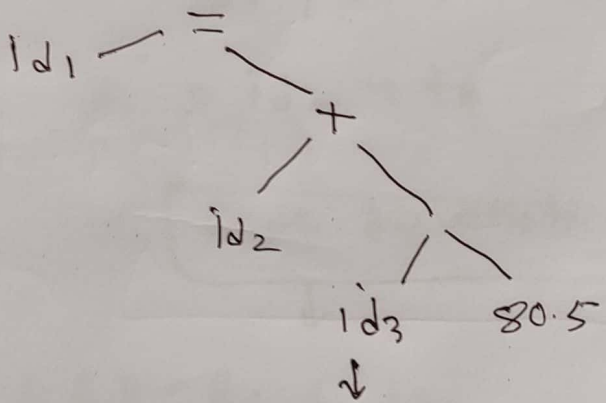
↓

<id,1><=><id,2><+><N,3>< * ><80.5>

↓

Syntax Analyzer

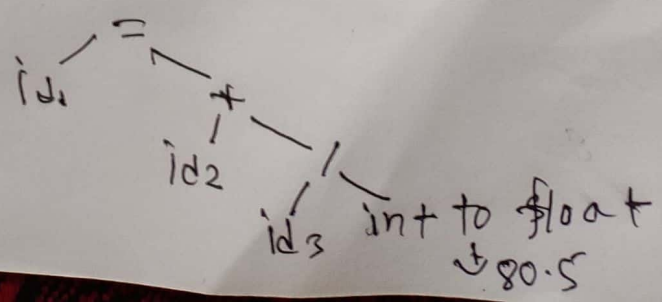
↓




↓

Sematic Analyzer

↓



↓

intermediate code generator

↓

$t_1 = \text{int to float}(80.5)$

$t_2 = id_3 / t_1$

$t_3 = id_2 + t_2$

$id_3 = t_3$

↓

code optimizer

↓

$t_1 = id_3 / 80.5$

$id_1 = id_2 + t_2$

↓

code generator

↓

```
LDF  R2, id3
MULF R1, R2, #80.5
LDF  R1, id2
ADDF R1, R1, R2
```

## Ans to the Q.NO:4

Given,

String = 9-5+2

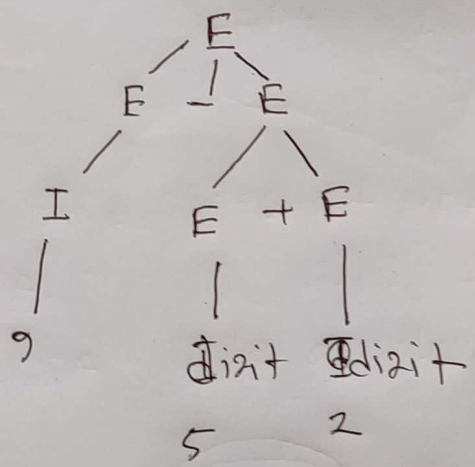
Grammer G:

List → List + digit | list - digit | digit

~~digit → 0|1|2|3|4|~~

digit → 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9

Leftmost derivation:




E → E - E

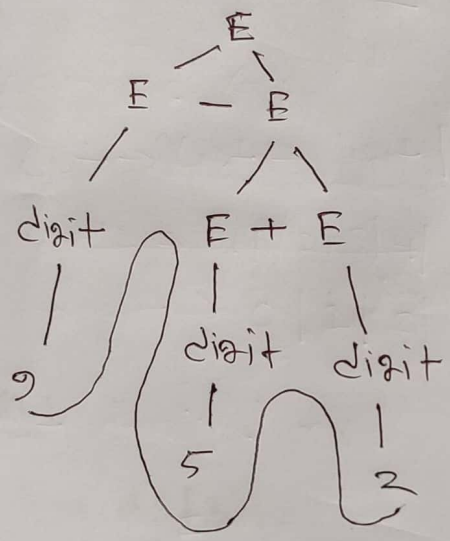
→ E - E + E

→ 9 - 5 + 2

"9-5+2"

Rightmost derivation:

Parse tree:




"9-5+2"

Derivation:

E → E - E

→ E - E + E

→ digit - digit + digit

→ 9 - 5 + 2

## Ans to the Q.no:3

A program can contain some errors.

lexical phase error:

Printf("Hellow world"); $

it is a lexical error as appears at the end that is not valid.

Error Recovery: Panic mode recovery

Syntactic phase errors:

```
switch (ch)
{

}
```

keyword switch is unidentified keyword

Error Recovery: Panic mode recovery

Semantic phase error:

```
int a[10], b;

a = b;
```

error a $b.