

Q. 17

1)

System program

Application program

1) System software is any computer software which manages and controls computer hardware so application program can execute

1) Application software enables the user to perform specific task

2) example:-

operating system, compiler, linker etc

2) example:-

web browser, excel etc

3) it interacts with hardware

3) it doesn't directly interact with hardware

4) System software or operating system is software that allows computer to boot

4) Application software run inside of or on the top of the operating system and allow to do things like email or word processing

5) low level instructions are written

5) high level instructions are written

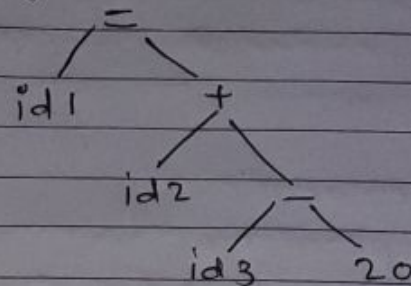
Q. 1)
2)

$$m = y + z - 20$$

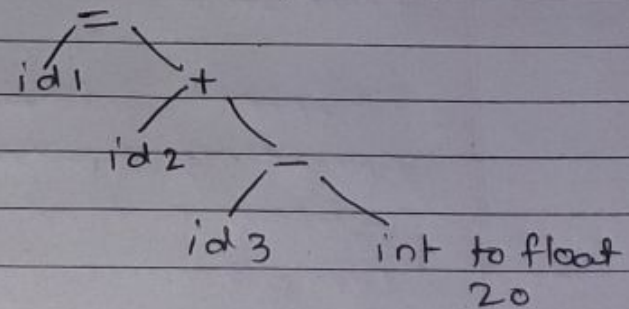
1) Lexical analysis

$$id1 = id2 + id3 - 20$$

2) Syntax analysis



3) Semantic analysis



4) Intermediate code generator

$$t_1 = \text{int to float}(20)$$

$$t_2 = id3 - t_1$$

$$t_3 = id2 + t_2$$

$$id1 = t_3$$

5) Code optimizer

$$t_1 = id3 - 20.0$$

$$id1 = id2 + t_1$$

6) Code generator

LDF R1, id3

SUBF R1, R1, #20.0

LDF R2, id2

ADDF R2, R2, R1

STF id1, R2

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11 $S \rightarrow F$ $S \rightarrow (S-F)$ $F \rightarrow a$

Construct LL(1) parser table

Step 1: Find the first and follow set of the given expression,

 $FIRST(S) = FIRST(F) = \{a, (\}$ $FIRST(F) = \{a \}$ $FOLLOW(S) = \{ \$ \}$ $FOLLOW(F) = \{ - \}$

LL(1) Table:-

Non terminals	Input		Symbols	
	a	-	\$	(
S	$S \rightarrow F$	$S \rightarrow (S-F)$		$S \rightarrow (S-F)$
F	$F \rightarrow a$			

Parse the string (a-a)

Stacks	Input	Output
\$S	(a-a)	$S \rightarrow (S-F)$
\$)S-F((a-a)	$S \rightarrow (S-F)$
\$)S-F	a-a)	$F \rightarrow a$
\$)S-a	a-a)	$F \rightarrow a$
\$)S-	-a)	
\$)S	a)	$S \rightarrow F$
\$)F	a)	$F \rightarrow a$
\$)a	a)	$F \rightarrow a$

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Stack	Input	output
\$))	
\$	accept	