

Q1.

Given

L1: strings over $\{0,1\}$ such that they contain even number of 1's

L2: the set of all bit strings (i.e. strings over alphabet $\{0,1\}$) that are divisible by 4

(1) Regular expression corresponding to L1

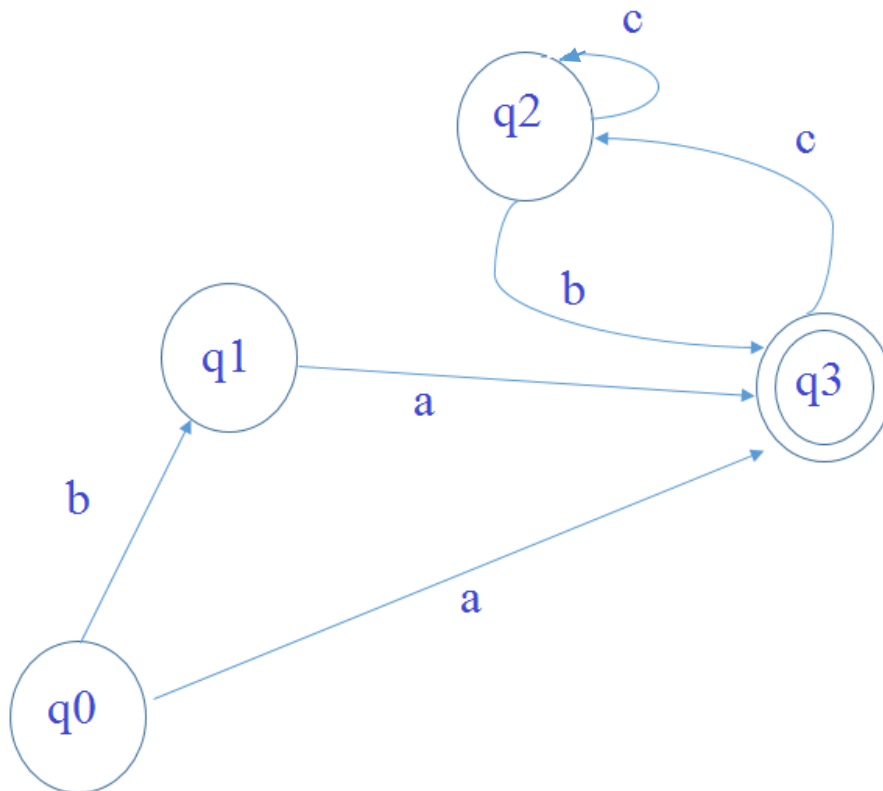
$0^*(10^*10^*)^*$

(2) Regular expression corresponding to L2

$(0^*1+0^*)(00)^*$

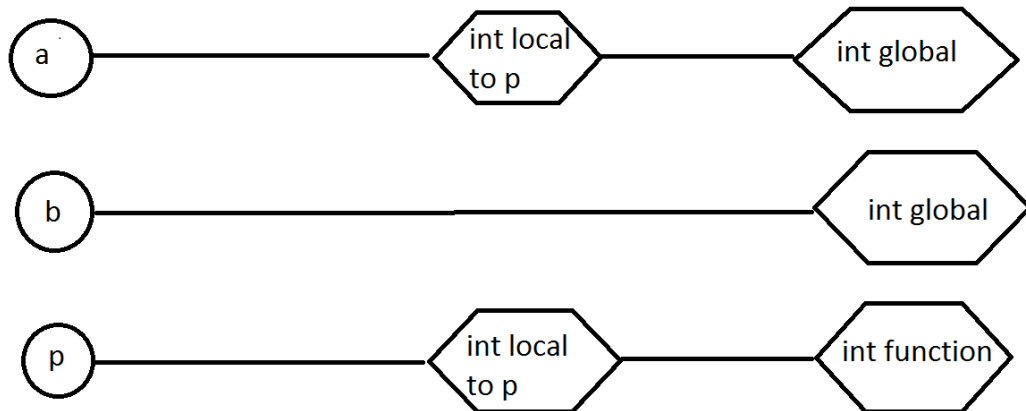
Q.2

Automaton that accepts the regular expression $b?a(c+ b)^*$

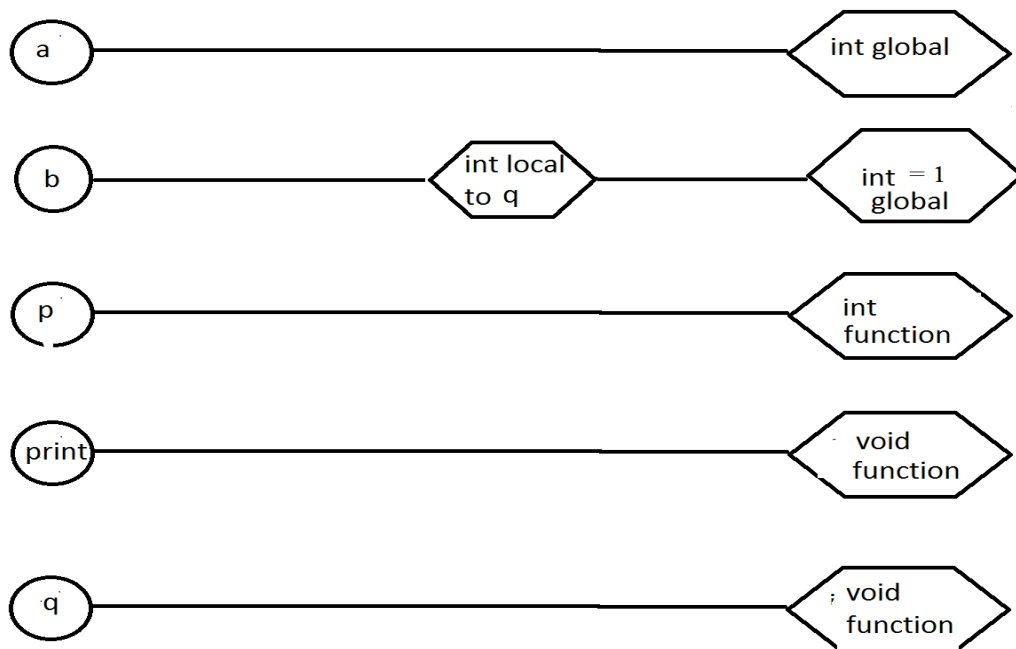


Q. 3

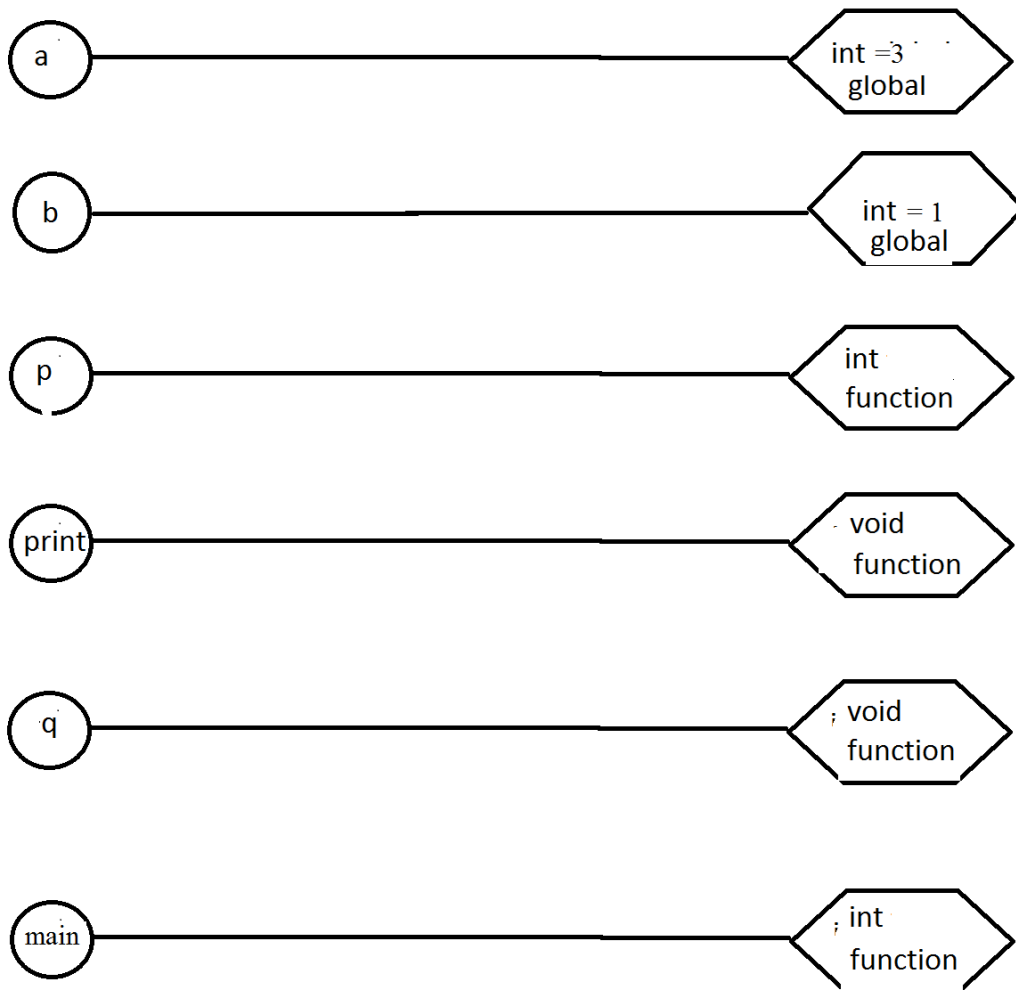
Lexical scope – point 1



Lexical scope – point 2



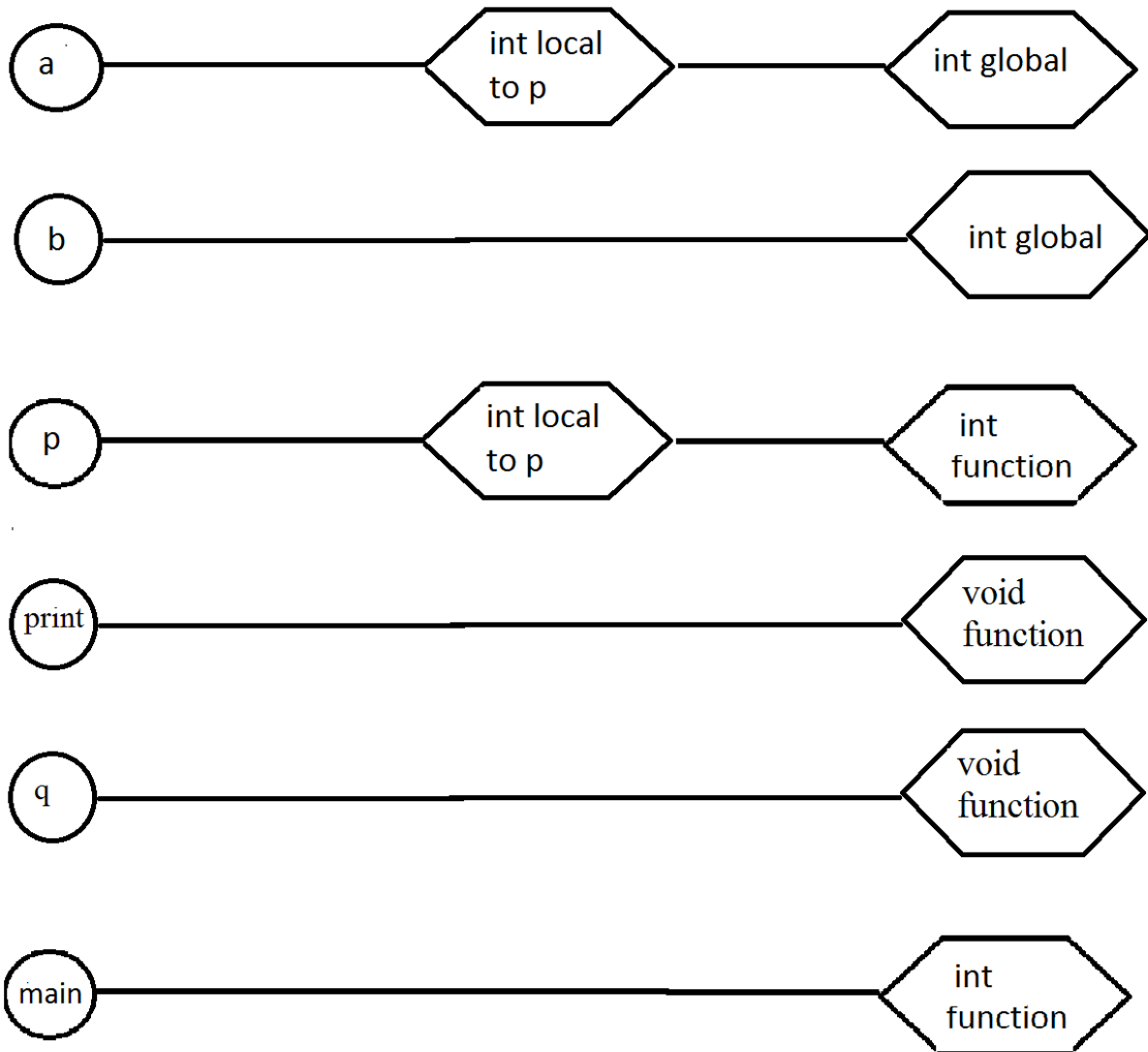
Lexical scope – point 3



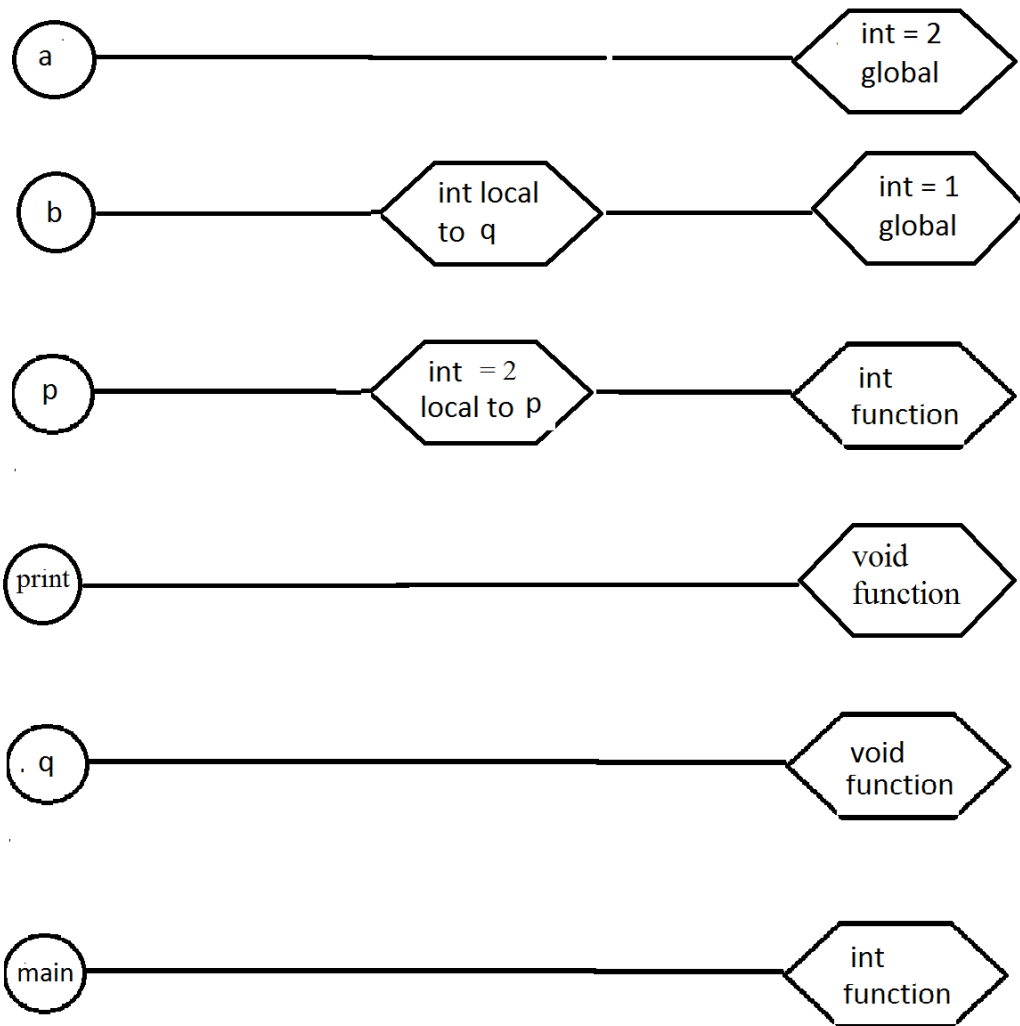
Lexical scope – output

3
1

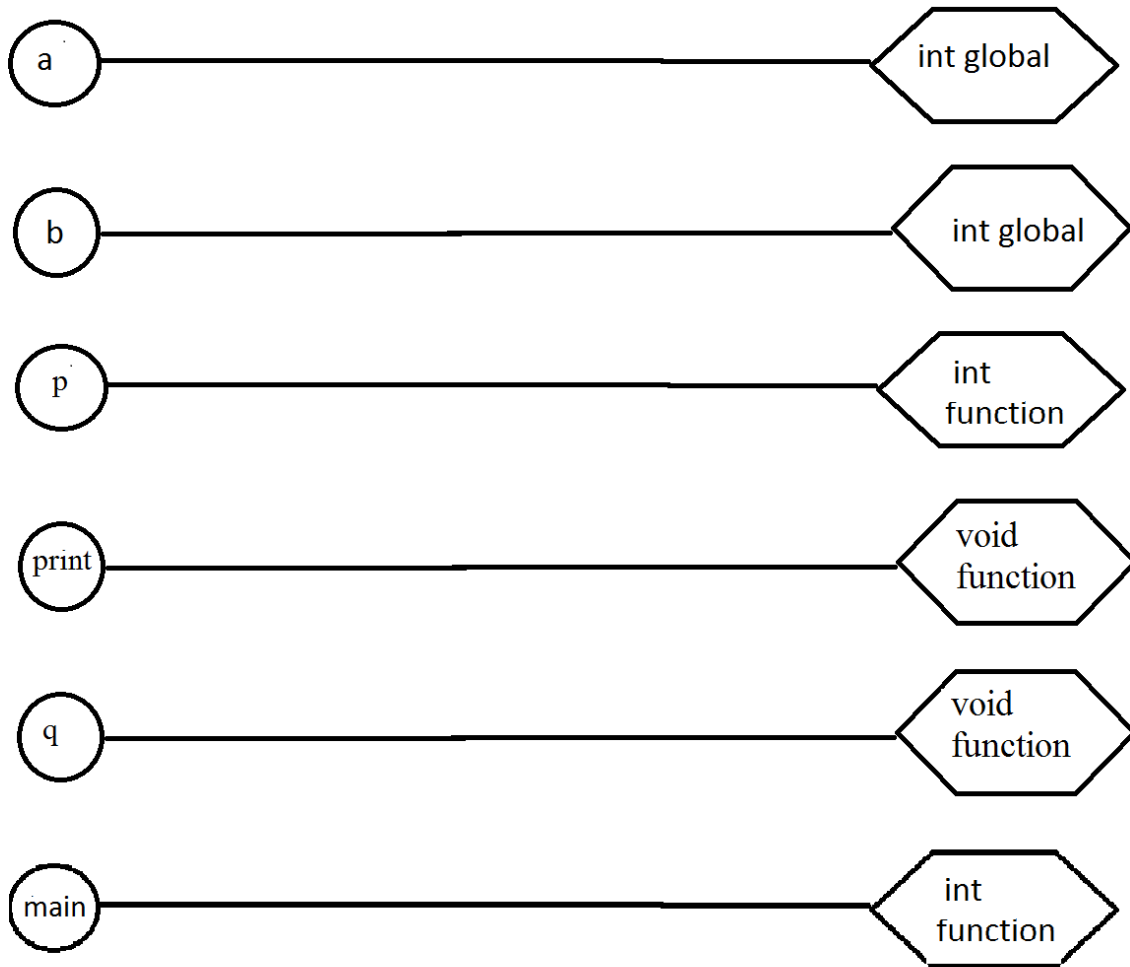
Dynamic scope – point 1



Dynamic scope – point 2



Dynamic scope – point 3



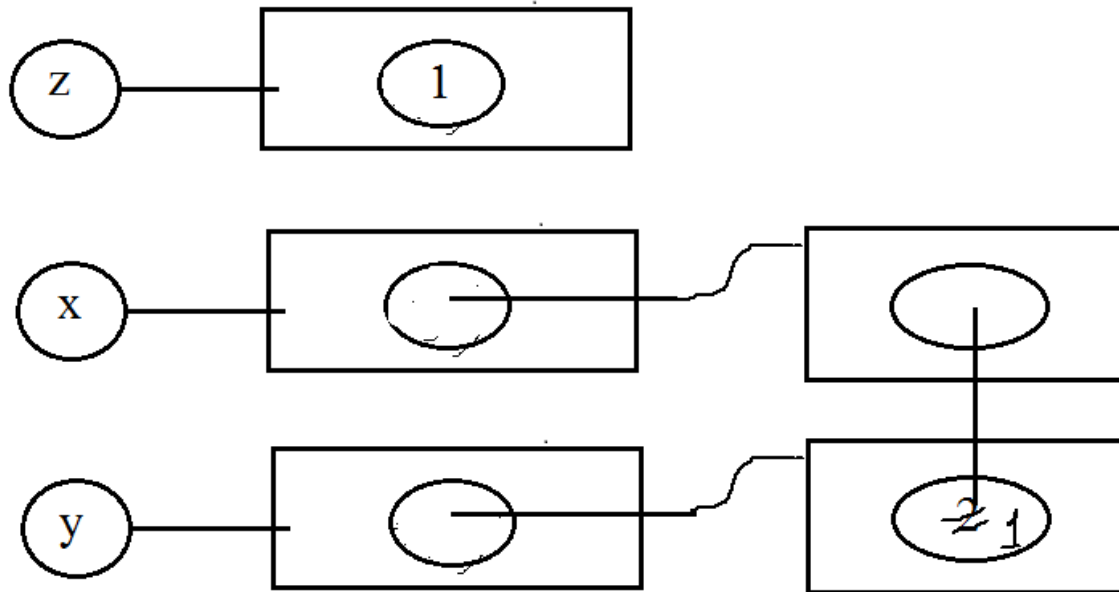
Output :

3

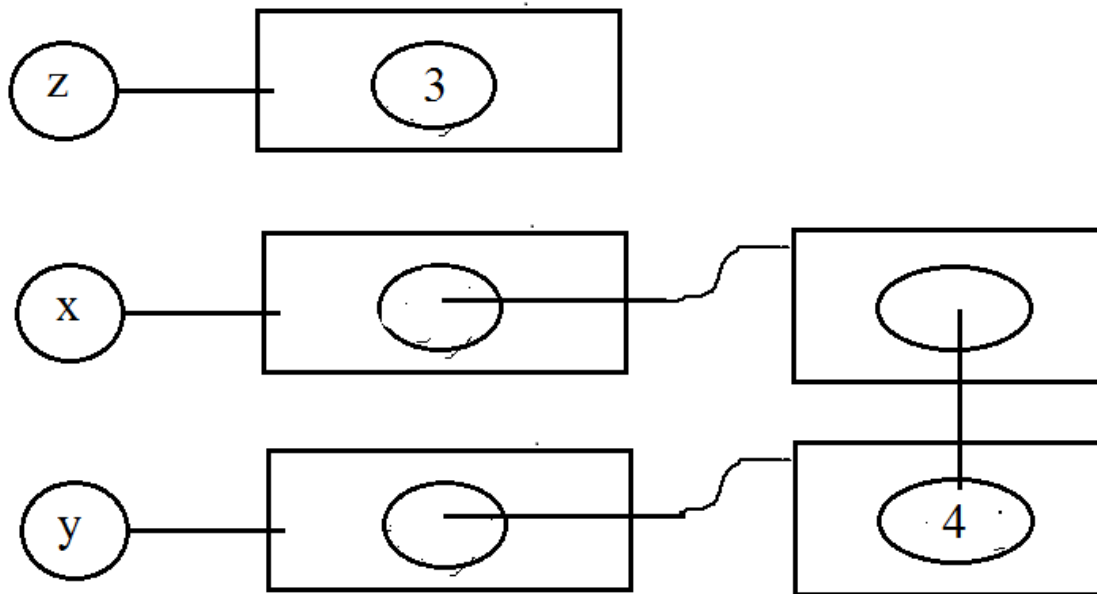
4

Q.4.

Box circle diagram after line 11 ->



Box circle diagram after line 15 ->



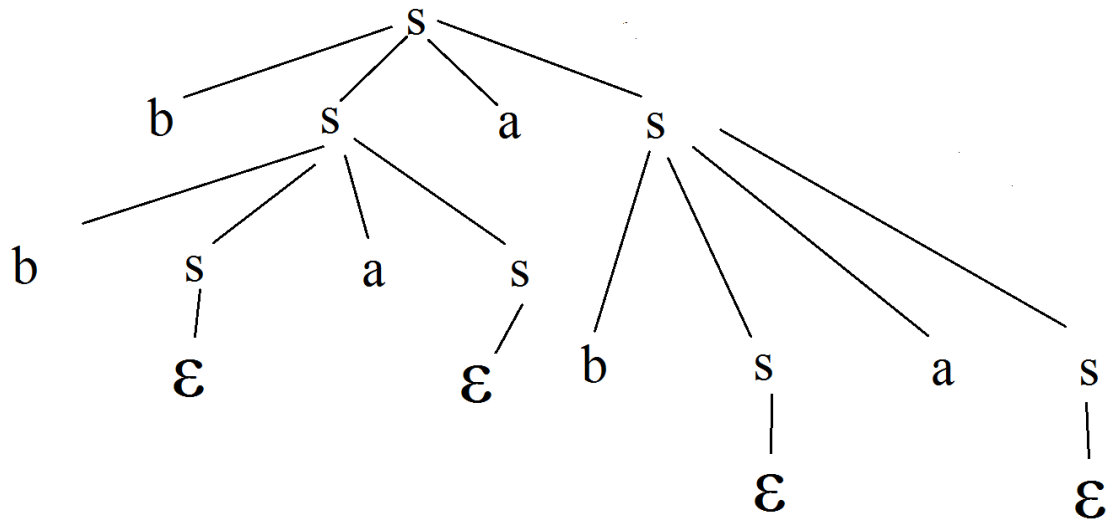
Program Prints ->

1
1
3

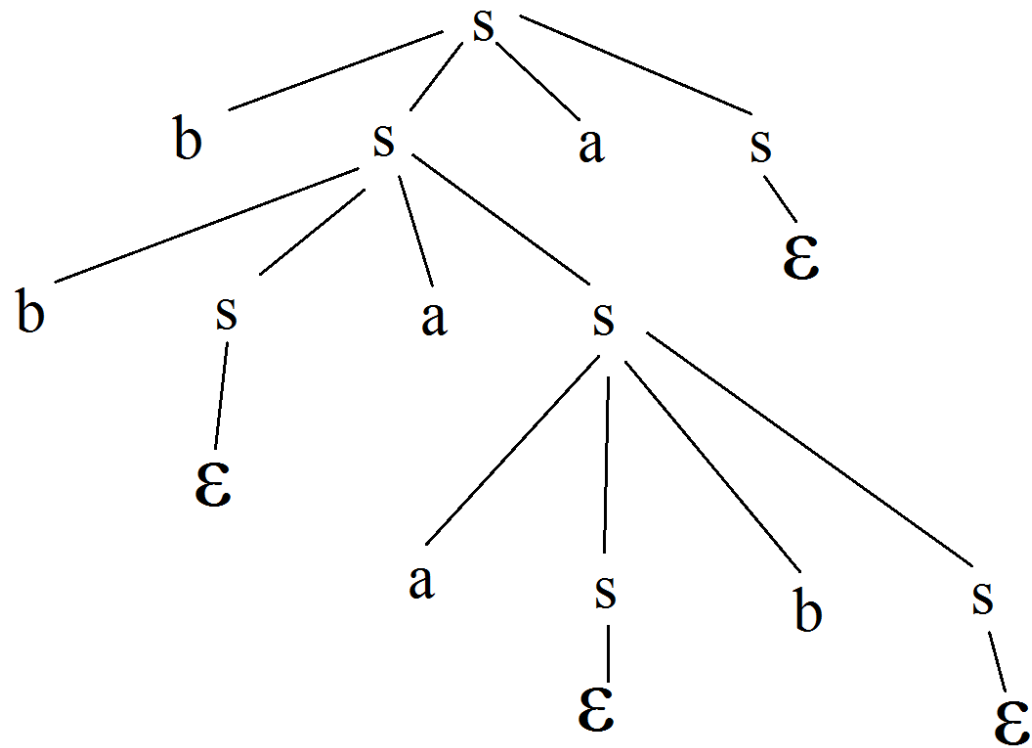
Q5.

From following two parse trees it's proved that G is ambiguous.

Parse Tree 1 ->



Parse Tree 2 ->



Q 6.

Output:

Call by value:

1 2 1 0

2 1 0

Call by reference:

1 2 1 0

2 0 0

Call by name:

0 2 1 2

0 1 2