Question no. 1

(a) int abc (3)

1st Iteration if (3==0) x

Else

return (abc(3/3+1)+n-1);

return (abc(2)+3-1)

2nd Iteration if (2==0) x

else

return (abc(0+1)+2-1)

return (abc(1)+2-1)

3rd Iteration if (1==0) x

else

return (abc(0+1)+1-1)

return (abc(1)+0)

4th Iteration if (1==0) x

else

return (abc(0+1)+1-1)

return (abc(1)+0)

This function is not good recursive function because it is not achieving its base case while the code run again and again and loop will not terminate as 1 is add in it.

Question no. 2

$n = 3$ $\quad A = \{3, 4, 5, 6, 7, 8, 9, 10, 11\}$

Binary Search Code:

Dry Run:-

start, mid, end

$A = \{3, 4, 5, 6, 7, 8, 9, 10, 11\}$

indexes: 0 1 2 3 4 5 6 7 8

$mid = \frac{0+8}{2} = 4$

1st Iteration:-

If $a[mid] < 3$ False

else If $a[mid] > 3$ True

$end = mid - 1$

$end = 3$

2nd Iteration:-

~~If~~ ~~else~~ $mid = \frac{0+3}{2} = 1$

start, mid, end

$A = \{3, 4, 5, 6\}$

indexes: 0 1 2 3

If $a[mid] < 3$ False

else if $a[mid] > 3$ True

$end = mid - 1$

$end = 0$

3rd Iteration

mid = $\frac{0+0}{2}$ = 0

if a[mid] < 3 False

else if a[mid] > 3' False

else

return mid

So, find the element 3 on index 0.

Whose running time is log(n).