Quiz-5

Question 1

Time: 00:00:11

What will be the output of the following pseudocode?

```
integer a,b,c,x,y,z,p,q,r;
Set x=5,y=10,z=15;
Set p=10,q=20,r=30;
    a=x+p;
    b=y*q;
    c=r/z;
Print a b c
```

- ○ 15 200 0
- ○ 15 200 20
- ○ 15 200 2
- ○ 15 20 2

```
#include<stdio.h>
int main()
{
    int a,b,c,x,y,z,p,q,r;
    x=5,y=10,z=15;
    p=10,q=20,r=30;
    a=x+p;
    b=y*q;
    c=r/z;
    printf("%d %d %d", a,b,c);
}
```

The code performs simple mathematical calculations on numbers
the value of
a will be a= 5 + 10 = 15
b will be b = 10 x 20 = 200

Question 2

Time: 00:00:04

What will be the output of the following pseudo code when n=3 ?

```
Integer calc(Integer n);

if(n <- 0)

    return 0;

if(n < 1)

    return 1;

Print n

calc(n-1);

Print n

End function calc
```

- ○ 123
- ○ 3210
- ○ 321123
- ○ compiler error

Refer this code for the given pseudo code for better understanding the function calc()

```
#include<stdio.h>

int calc(int n)

{

    if(n <- 0)

    return 0;

    if(n < 1)

    return 1;

    printf("%d ",n);

    calc(n-1);

    printf("%d ",n);

}

int main()

{

    int n=3;

    calc(n);

}
```

In the following code, the second if condition will keep on executing until the value of n will become less than 1, once the value will become zero, all the values of n that are stored in the recursive stack will be printed, hence it will result out in the desired output

Question 3

Time: 00:00:13

What will be the output of the following code ?

```
#include<stdio.h>

int main()

{

    int x=4,y=5,z=6;

    if(x+y>z)

    {

        if(z>y)

        {

            if(y>x)

            {

                printf("%d",x);

            }

        }

    }

    else

    {

        printf("%d",y);

    }
```

- 6
- 4
- 5
- compiler error

As x+y=9 and z=6
So, if(x+y>z) will be executed and as z>y so, if(z>y) will also be true. Now, y is greater than x, hence if(y>x) will be true and the value of x will be printed. Which is 4

Question 4

Time: 00:00:01

What will be the output of the following pseudocode ?

```
#include <stdio.h>

int fun(int x,int y,int z)

{

    if(x>y && y>z)

    {

        return fun(y,x,z);

    }

    if(y>z && z>x)

    {

        return fun(z,y,x);

    }

    if(z>y && z>x)

    {

        return fun(x,y,z);

    }



}
```

```
int main()

{

   int a=10,b=15,c=20;

   a=a+b;

   b=a+c;

   c=b+c;

   fun(a,b,c);

}
```

- ○ 25 20 35
- ○ runtime error
- ○ 10 15 20
- ○ none of the above

The code will through a segmentation error, as there is no base condition for the recursion to stop, and hence it will keep on calling to itself.

Question 5

Time: 00:00:02

What will the output of the following code ?

```
#include<stdio.h>

int fun(int i)

{

    if(i%2==0)

    return i;

    else

    return fun(i-1);



}

int main()

{

   int a=11;

   printf("%d",fun(a));

}
```

- O 0(zero)
- O 10
- O 1
- O none of the above

The first if condition in fun(int n) will be false, as value of i is 11, the compiler will execute the else condition which will make the value of i=10, and in the next call, the if condition will get executed and hence 10 will be printed

Question 6

Time: 00:00:05

What will be the output of the following code

```
#include<stdio.h>

int fun(int i)

{

    if(i==0)

    return 0;

    else if(i%2==0)

    return fun(i-1);

    else

    return fun(i-1);



}

int main()

{

   int a=11;

   printf("%d",fun(a));

}
```

- 10 9 8 7 6 5 4 3 2 1
- 10
- 0(zero)
- 1

In the following code the function fun(), will keep on calling itself, until the value of i will becomes zero, and once the value of i will become zero, the function will return 0, and hence that will be the output

Question 7

Time: 00:00:01

What will be the necessary condition to get the desired element from a given array by using the following algorithms?

```
If LOC = -1 do ITEM NOT FOUND

Do_Something(DATA, N, ITEM,LOC)

initialize Counter set LOC=0, LOW=0, HI= N-1

[Search for item]

Repeat while LOWs HI

    MID = (LOW+HI)/2

IF ITEM = DATA[MID] do

    LOC+MID

    Return LOC

IF ITEM = DATA [MID}

    HI = MID-1

ELSE

    LOW = MID+1
```

- the elements should contain more than one element
- The array should contain more than one element
- The elements is an array should be in the sorted form.
- No pre-condition is required for the algorithm to work

This is the algorithm for binary search, and it is a necessary condition for binary search that the entered data should be in a sorted form

Question 8

Time: 00:00:03

What will be the output of the following C code?

```
#include <stdio.h>

int main()

{

    int x = 12, y = 10, z = 13;

    x+y>z ? printf("%d", z);

}
```

- value of x
- value of y
- value of z
- none of the above

The ternary operator used in the code is not syntactically correct, there should be one more condition after the "?".

Question 9

Time: 00:00:02

What will be the output of the following C code?

```
Set a=3; b=5;c=1;

a=a+b+c/2;

b=a+b/2;

if(a>b)

    Print Prime Mock

else

    Printf Prime Video
```

- Prime Video
- Prime Mock
- Error
- None of the above

On executing the following code, the value of
a will be - 3+5+1/2 = 8
b will be - 8+5/2 = 10
now, since a<b
Prime Video will be printed

Question 10

Time: 00:00:01

Consider the following given code and predict its output.

```
main()

int num[ ]={1,4,8,12,16};

int *a,*b;

int i;

    a=num;

    b=num+2;

    i=*a++;

    printf("%d, %d, %d\n",i,*a,*b);
```

- 1,4,8
- 4,1,8
- 2,1,8
- 4,4,8

When we have stored num in 'a' it means that we have stored num[0] i.e. 1 in 'a' and when we have stored num+2 in 'b', it means that we have stored num[2] i.e. 8 in 'b'.

Now in 'i', 1 will get stored and then a will get incremented. Now 'a'= num +1 i.e a++ so 4 will get stored in it and its previous value which is 1 will get overwritten

PSeudoCode quiz - 5

1) ① initialize variables:-

- x=5, y=10, z=15
- p=10, q=10, r=30

② Compute a:

a = x+p = 5+10 = 15

③ compute b:

b = y*q = 10*20 = 200

④ compute c:

c = r/z = 30/15 = 2

⑤ print(a, b, c) = 15, 200, 2

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2) Steps for n=3:-

i) if (n<=0): 3<=0 is false
if (n<1): 3<1 is false
print 3 (output)
calc(2) (recursive call)

ii) if (n<=0): 2<=0 is false ← (n=2)
if (n<1): 2<1 is false
print 2 (output)
calc(1) (recursive call)

iii) n=1:
if (n<=0): 1<=0 is false
if (n<1): 1<1 is false
print 1 (output)
calc(0) (recursive call)

iv) n=0:
if (n<=0): 0<=0 is true
Return 0.

v) Unwinding Recursion:
- After calc(0), the n=1 continues:
  Print 1
- n=2 continues:
  print 2
- n=3 continues:
  Print 3

Output:- 3 2 1 1 2 3.

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3) i) Initialize variable:

$x = 4$

$y = 5$

$z = 6$

ii) First condition ($x+y > z$):

$4+5 > 6 \rightarrow 9 > 6 \rightarrow$ True

iii) Second condition ($z > y$):

$6 > 5 \rightarrow$ True

iv) Third condition ($y > x$):

$5 > 4 \rightarrow$ True

print(4)

v) No else Execution: else is skipped

4) ~~Steps:-~~

i) First call (3, 2, 1):

if (3 > 2 && 2 > 1) → True

call fun (2, 3, 1):

ii) Second Call (2, 3, 1):

if (2, 3) && 3 > 1) → False

if (3 > 1) && 1 > 2) → False

if (1 > 3) && 1 > 2) → False.

No condition matched, there's no Base case → Retain Statement which result in infinite recursion.

output:- undefined Behaviour

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(ii)
- initialize : a = 10, b = 15, c = 20
- First operation (a = a+b):
  a = 10 + 15 = 25
- Second operation (b = a+c):
  b = 25 + 20 = 45
- Third operation (c = b+c):
  c = 45 + 20 = 65
- Function Call (fun(a,b,c)):
  fun is called with args 25, 45, 65
- def of fun is not provided behaviour is undefined.

Output:- runtime error.

5) Steps:-

i) initial call (fun(11) from main):
  i = 11 (odd)
  11 % 2 == 1 → else block executed
  fun(10)

ii) Second call (fun(10))
  i = 10 (even)
  10 % 2 == 0 → if block executed
  Return 10.

iii) Unwinding Recursion:
  fun(10) returns 10 to fun(11)

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First call return 2 to caller.

output:- print(10)

6) if (x2 == 0 -> !(i%2) == 0)

return 0 when i = 0

- For odd i, recurse with i-1
- for even i, also recurse with i-1.
- output would always be 0.

output:- Compilation error due to undefined variable x2

7) Output:- The elements in the array should be in the sorted form.

8) Steps:-

i) Evaluate condition (x + y > z):

Compute x * y : 12 * 10 = 120
Compare 120 > 13 : True, execute printf statements.

ii) printf("%d", 2) -> print(12)

iii) Correct Syntax

x+y>z ? printf("%d", 2) : printf("else case")

Where ternary operator requires else clause. Code is incomplete & will result in

Compilation error due to missing library

9) Initialize: a = 2, b = 5, c = 1

- First operation (a = a + b + c / 2);

  ∴ a = 2 + 5 + 0 = 7 (c / 2 = 1 / 2 = 0)

- Second operation (b = a + b / 2);

  ∴ b / 2 = 5 / 2 = 2
  b = 8 + 2 = 10

- Condition if (a > b):
  8 > 10 is false, execute block else

- Print "Prime video"

10) • Array initialization:
  num[ ] = {1, 4, 8, 12, 16}

- a = num; → a point to first element (num = 1)
  b = num + 2; → b point to the 3rd element (2] = 8).

- "a + +";

- Incorrect printf usage:
  printf ("%d, %d, %d in", a, b);

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Output — code will not compile due to syntax errors.