

Quiz-4

Question 1

 Time: 00:00:32

What will be the output of the following pseudocode?

```
integer p, q, r;  
Set p = 4;  
q = 6;  
r = 2;  
p = p + q + r - 7;  
q = p + r - 7;  
if (p > q)  
    Print Hello  
else  
    Print Hi
```

☐ Hello

☐ Hi

☐ Error

☐ Hello Hi

☒ Hello

As we can see that the value of 'p' after solving the expression $p + q + r - 7$ will be 5 and now the value of 'q' will be 0 after solving the expression $p + r - 7$.

Now we can see that the value of $p > q$ so the IF condition will get executed and 'Hello', will be printed

Question 2

 Time: 00:00:06

What will be the output of the following pseudocode if num=4 and element of the array are 1,2,3,4,5?

```
#include <stdio.h>

integer fun (int a[], int num)

    integer x;

    if (num is equal to 1)

        return a[0];

    else

        x = fun (a, num - 1);

        if (x == a[num - 1])

            return x;

        else

            return a[num - 1];

End the function fun ()
```

☐ 1

☐ 3

☐ 4

☐ 5

☒ 4

Question 3

 Time: 00:00:06

What will be the output of the following pseudocode?

```
#include <stdio.h>

int main()
{
    int p = 2, q = 3;

    for (int i = 0; i <= 6; i = i + 2){

        p = p + q + i;

        p = p + q;

        q = p - q;

        printf("%d ",q);

    }
}
```

☐ 30 10 27 70

☐ 5 15 39 99

☐ 13 10 47 70

☐ 13 10 27 70

☒ 5 15 39 99

⌕

The given for loop will be executed 4 times i.e for i= 0, 2, 4, 6. On first iteration the value of p will be 8 and q will be 5 similarly on second, third, and fourth iteration the value of p will be 20, 54, 138, and value of q will be 15, 39, 99. Now that we are printing only the value of b so our output will be 5 15 39 99.

Question 4

 Time: 00:00:03

What will be the output of the following code :

```
#include <stdio.h>

int main()
{
    static float i=3;

    if(--i){
        main();

        printf("%f ",i);
    }
}
```

☐ 0.000000 0.000000

☐ Error

☐ Segmentation fault

☐ 3.0 3.0

☒ 0.000000 0.000000

Since i is a static variable and is stored in the Data Section, all calls to main share the same i.

First main function will call the 2nd main function at i=2.

Second main function will call the 3rd main function at i=1

if condition of 3rd main function is if(0) so, that won't be executed.

As, i is float hence both the 2nd and 3rd main function will print 0.000000.

So, the output is 0.000000 0.000000

Question 5

What will be the output of the following code?

```
#include <stdio.h>

int main()
{
    int get_the_val;

    get_the_val = (100, 256, 3.3);

    printf("%d", get_the_val);

    return 0;
}
```

☒ 3

It will read the last value from the given set of the values and print the int part of the value

Question 6

 Time: 00:00:05

What will be the output of the following pseudocode?

```
#include <stdio.h>

int main()
{
    int i,j;
    for(i=0;i<5;i++)
    {
        for(j=0;j<i;j++)
        {
            printf("%d ",i+j);
        }
        printf("\n");
    }
}
```

☐ 1233454567

☐ 1223334444

☐ 1121231234

☐ Error

☒ 1233454567

when i=0, the inner loop wont be executed

at i=1, the inner loop will print 1

at i=2, the inner loop will print 2 3

at i=3, the inner loop will print 3 4 5

at i=4, the inner loop will print 4 5 6 7

So, the final output,

1

2 3

3 4 5

4 5 6 7

Question 7

 Time: 00:00:03

what will be the output of the following pseudocode?

```
Integer n, rev, rem, orig;  
  
Set n=1331; rev=0;  
  
Set orig=n;  
  
Repeat while n Not Equals 0  
  
    rem=n%10;  
  
    rev=(rev*10)+rem;  
  
    n=n/10;  
  
End while  
  
if(orig is Equal to rev)  
  
    Print Palindrome  
  
else  
  
    Print Not Palindrome  
  
End if
```

☐ Not Palindrome

☐ Run Time Error

☐ Palindrome

☐ Compile Time Error

☒ Palindrome

```

#include<stdio.h>

int main()
{
    int n=1331,rev,rem,orig;

    orig=n;

    rev=0;

    while(n != 0)
    {
        rem=n%10;

        rev=(rev*10)+rem;

        n=n/10;
    }

    if(orig == rev)

        printf(" Palindrome ");

    else

        printf("Not Palindrome ");
}

```

The above code will test that whether the entered number is an palindrome or not

Question 8

 Time: 00:00:03

What will be the output of the pseudocode?

```
#include <stdio.h>

int main()
{
    static int val = 5.2;
    printf("%d ",val--);

    if(1.25)
        main();
}
```

☐ 1.5

☐ 5.2

☐ 4.2

☐ Infinite loop

☒ Infinite loop

This code will get stuck in the infinite loop as IF condition will always be true

Question 9

🕒 Time: 00:00:05

What will be the output of the following pseudo code?

```
#include <stdio.h>

int main()
{
    int a=97,b=97,c=98;

    if(a>b && a>c)
    {
        printf("%d ",a);
    }

    if(b>a && b>c)
    {
        printf("%d ",b);
    }

    if(c>a && c>b)
    {
        printf("%d ",c);
    }
}
```

☐ 98

☐ c

☐ b

☐ 97

☒ 98

We are finding the greatest number in this pseudo code

Question 10

 Time: 00:00:04

What will be the output of the following pseudocode?

```
integer a,b  
  
Set a=2; b=90  
  
while(b>9)  
    a = b%2 + a  
    if( a%2 != 0)  
        Print a  
    else  
        Print b  
    b = b/2  
End while
```

☐ 3 90 11 3

☐ 11 3 3 90

☐ 90 3 3 11

☐ 3 3 90 11

☒ 90 3 3 11

Step 1 - $a=0+2=2$, print 90, $b=45$

Step 2 - $a=1+2=3$, print 3, $b=22$

Step 3 - $a=0+3=3$, print 3, $b=11$

Step 4 - $a=1+3=4$, print 11, $b=5$

Pseudocode Quiz-4

1) Pseudocode Execution:-

(i) Initialize Variables: $p=4, q=6, r=2$

(ii) update p:

$$p = p + q + r - 7 = 4 + 6 + 2 - 7 = 5$$

(iii) update q:

$$q = p + r - 7 = 5 + 2 - 7 = 0$$

(iv) check condition ($p > q$):

- Compare $p=5$ and $q=0$
- Since $5 > 0$, condition is true.

(v) output: - if block executed, printing "Hello"

2) Given: - Array $a: [1, 2, 3, 4, 5]$
 initial call: $\text{fun}(a, 4)$ (Since $n=4$)

(1) First call ($\text{function}(a, 4)$)

- Recursively call $\text{fun}(a, 3)$ & stored in result of x

(2) Second call ($\text{fun}(a, 3)$):

- Recursively call $\text{fun}(a, 2)$ & store result in x

(3) Third call ($\text{fun}(a, 2)$):

• Recursively, call $\text{fun}(a, 1)$ & store result in x .

4. Base Case ($\text{fun}(a, 1)$):

• $\text{num} = 1$, so return $a[0] = 1$

5. Unwinding Recursion:-

• Third call ($\text{fun}(a, 2)$):

$$x = 1$$

Compare x with $a[1] = 2$:

Since $1 \neq 2$, return $a[1] = 2$

• Second call ($\text{fun}(a, 3)$):

$$x = 2$$

Compare x with $a[2] = 3$:

Since $2 \neq 3$, return $a[2] = 3$

• First call ($\text{fun}(a, 4)$):

$$x = 3$$

Compare x with $a[3] = 4$:

Since $3 \neq 4$, return $a[3] = \underline{\underline{4}}$

• Output:- 4

3) • initial values: $p = 2, q = 3$

$i = 0, 2, 4, 6$:

① iteration:- ($i = 0$)

$$p = p + q + i = 2 + 3 + 0 = 5$$

$$p = p + q = 5 + 3 = 8$$

$$q = p - q = 8 - 3 = 5$$

Print $q = 5$

② iteration ($i = 2$):

$p = p + q + i = 8 + 5 + 2 = 15$
 $r = p + q = 15 + 5 = 20$
 $q = p - q = 20 - 15 = 15$
 print q = 15,

③ Ci = 4):

$p = p + q + i = 20 + 15 + 4 = 39$
 $r = p + q = 39 + 15 = 54$
 $q = p - q = 54 - 15 = 39$
 print q = 39,

④ i = 6:

$p = p + q + i = 54 + 39 + 6 = 99$
 $p = p + q = 99 + 39 = 138$
 $q = p - q = 138 - 39 = 99$
 print q = 99,

Output:- 5 15 39 99

- i) initialize i = 3 (float)
- ii) i-- (i = 2) then call main()
- iii) at i = 2, i-- \rightarrow i = 1 then call main()
- iv) Terminate

v) Unwinding recursion:

Print 1 (from print f("%d", 1))

Output: 1 1 1

5) Assign get the val = (100, 256, 3.3)

- discard comma operator except 3.3
- remove to integer (3)

Output:- 3

- 6)
- Declare i & uninitialized j
 - outer loop: i runs from 0 to j
 - inner loop: j runs from 0 to i

Final output:- Error (Undefined behavior)

7) palindrome check

1. Set $n = 1331$, $rev = 0$
2. Reverse n :

$rem = 1, rev = 1, n = 133$

$rem = 3, rev = 13, n = 13$

$rem = 3, rev = 133, n = 1$

$rem = 1, rev = 1331, n = 0$

3. Compare orig (1331) and rev (1331).

- 8)
- i) Initialize int val = 5.2 & truncate it
 - ii) print 5, then decrements (i--) to 4.
 - iii) if (1.25) is always true, so main() is a loop.

Output:- 5 5 5 ... (infinite loop)

- 9) Values: $a = 97, b = 97, c = 90$

M T W T F S S
☐ ☐ ☐ ☐ ☐ ☐ ☐

COMPASS

Date: _____

2. compare - $a > b$ & $a > c \rightarrow \text{False}$
 $b > a$ & $b > c \rightarrow \text{False}$
 $c > a$ & $c > b \rightarrow \text{True}$

3. print: C (98)

10) initialize: $a = 2, b = 90$

• Loop ($b > 9$):

iteration 1: $b = 90 \rightarrow \text{print } 90 \rightarrow b = 45$

iteration 2: $b = 45 \rightarrow \text{print } 45 \rightarrow b = 22$

iteration 3: $b = 22 \rightarrow \text{print } 22 \rightarrow b = 11$

iteration 4: $b = 11 \rightarrow \text{print } 11 \rightarrow b = 5$ (exit)

Output: 90, 45, 22, 11