Assignment 5 : Questions and Solutions

1. “continue” statement is used to
    a) continue to the next line of code
    b) debug a program
    c) stop the current iteration and begin the next iteration from the beginning of the loop
    d) None of the above

Solution: (c)

2. “break” is used to
    a) exit from a program
    b) exit from the current loop
    c) Both of the above
    d) None of the above

Solution: (b)

3. What is the output of the following code?

```
#include <stdio.h>
int main()
{
  int i=0;
  do
  {
    printf("while vs do-while");
  }while(i==0);
  printf("Out of loop");
  return 0;
}
```

a) ‘while vs do-while’ once
b) ‘Out of loop’ infinite times
c) Both ‘while vs do-while’ and ‘Out of loop’ once
d) ‘while vs do-while’ infinite times

Solution: (d) As the condition inside the while statement is always true, the loop will be executed infinite times and the statement inside the loop will be printed infinite number of times.

4. Compute the printed value of i of the C program given below

```
#include <stdio.h>
int main()
{
   int i = 0, j = 0;
   while (i < 4, j < 5)
   {
      i++;
      j++;
   }
```

```
        printf("%d, %d\n", i, j);
        return 0;
    }
```

a) 4, 5
b) 4, 4
c) 5, 5
d) 0, 0

Solution: (c) The while condition checks the last condition (i.e. j<5) and till the condition is satisfied the block inside the loop is executed. Thus the loop runs for 5 times and both the values of i and j are incremented by 5.

5. The following program takes n as a positive integer input. What is the purpose of the program?

```
#include <stdio.h>
int main()
{
    int n, i;
    unsigned long result = 1;
    printf("Enter an integer: ");
    scanf("%d", &n);

    for(i=1; i<=n; ++i)
    {
        result*= i;
    }
    printf("The output of the program is %llu", result);
    return 0;
}
```

a) n multiplied n times
b) factorial of n
c) display factors of n
d) display Fibonacci series upto n.

Solution: (b) In the for loop, 1 to n is multiplied. This computes the factorial of the number n.

6. What will be the output after execution of the program?

```
#include <stdio.h>
int main()
{
    int i=5;
    while (i)
    printf("Programming ");
    printf("Hello\n");
    return 0;
```

```
    }
```

a) It will print “Programming” 5 times.
b) It will print “Hello” infinite times.
c) It will print “Programming” infinite times.
d) It will print “ProgrammingHello” infinite times.

Solution: (c) As any non-zero value inside while statement is considered as true, the while statement will always be executed. There is no terminating condition for the while loop, thus the program will print ‘Programming’ infinite number of times.

7. What is the output of the following C program?

```
#include <stdio.h>
int main()
{
   int a = 0, i = 0, b;
   for (i = 0;i < 5; i+=0.5)
   {
      a++;
      continue;
   }
   printf("%d", a);
   return 0;
}
```

a) 5
b) 10
c) No output (infinite loop)
d) Compilation error

Solution: (c) As i is initialized as an integer variable, integer value of i after the operation (i=i+0.5) will be zero. Thus, the loop will never be ended and the control will not come to the printf statement at all. So, nothing will be printed.

8. How many times ‘Hello’ will be printed while executing the below C code?

```
#include <stdio.h>
int main()
{
   int i = 0;
   int j = 0;
   for (i = 0;i < 4; i++)
   {
      for (j = 0;j < 5; j++)
      {
         if (i > 0)
            continue;
            printf("Hello \n");
      }
```

```
    }
     return 0;
}
```

a) 4 times
b) 20 times
c) 5 times
d) nothing is printed

Solution: (c) Only in the first iteration i=0 and the if condition is not satisfied, thus for j=0 to 5 i.e. 5 times Hello will be printed. From the next iteration of the first for loop, i will be 1 and the if condition becomes true and thus the loop continues without executing the printf statement. Hence, only 5 times Hello will be printed.

9. What is the output of the following C code?

```
#include <stdio.h>
int main()
{
   int a = 1;
   if (a--)
      printf("True\n");
   if (++a)
      printf("False\n");
      return 0;
}
```

a) True
b) False
c) Both 'True' and 'False' will be printed
d) Compilation error

Solution: (c) 'a--' post-decrement the value of a. Thus, the if statement is executed as the value of a is considered as 1 which is true. '++a' pre-increment the value of a. Thus, the decremented value of a (which is 0) is incremented first and then assigned. So, both the if statements are executed ad correspondingly both True and False will be printed.

10. How many times the 'Hello' will be printed in the below C code?

```
#include <stdio.h>
int main()
{
   int k = 0;
   for (; ; k++)
   {
         printf("Hello");
         if(k%10==0)
         break;
   }
   return 0;
```

```
}
```

a) 1 time
b) 10 times
c) 11 times
d) Compilation error

Solution: (a) As the initial value of k is 0, the if condition is satisfied and the break statement is executed. Thus the control of the program comes out of the loop and only once Hello is printed.

11. How many times Hello will be printed in the below C code?

```
#include <stdio.h>
int main()
{
   int k,j;
   for (k=0;k<=10; k+=2)
   {
            for(j=1; j!=k; j=j+1)
            {
                     printf("Hello \n");
                     break;
            }
   }
    return 0;
}
```

a) 10
b) 5
c) 6
d) Infinite

Solution: (c) for j=1, the inner for loop is always executed. Thus, it will print Hello and come out of the inner loop. Thus, hello will be printed six times (i.e. for k=0,2,4,6,8 and 10).

12. What is the output of the below C program?

```
#include <stdio.h>
int main()
{
   short int k=1, j=1;
   while (k <= 4 || j <= 3)
   {
            k=k+2;
            j+=1;
   }
   printf("%d, %d", k, j);
   return 0;
}
```

a) 5, 4
b) 7, 4
c) 5, 6
d) 6, 4

Solution: (b) The loop will be continued till any of the condition k<=4 or j<=3 is satisfied. So, the loop will be executed 3 times. Thus, the value of k and j would be 7 and 4.

13. Which "for" loop has range of similar indexes of 'i' used in for(i = 0; i < n; i++)?

a) for (i = n; i>-1; i--)
b) for (i = n; i >= 0; i--)
c) for (i = n-1; i>0; i--)
d) for (i = n-1; i>-1; i--)

Solution: (d)

14. What will be the output?

```
#include <stdio.h>
int main()
{
   int x=1;
   do
   {
      continue;
      printf("%d", x);
      x++;
      break;
   }while(x<=10);
      printf("After loop x=%d", x);
   return 0;
}
```

a) After loop x=1
b) 1After loop x=2
c) No output, it is an infinite loop.
d) 1 2 3 4 5 6 7 8 9 10

Solution: (c) No output, it is an infinite loop.
do while is an exit controlled loop, here loop body executed first, then condition will be checked. However due to continue statement, the lines after the "continue" statement are skipped. Hence nothing will be printed.

15. What will be the output?

```
#include <stdio.h>
int main()
{
   int x;
```

Assignment 5 : Questions and Solutions

```
    x = 4 > 8 ? 5 != 1 < 5 == 0 ? 1: 2: 3;
    printf("%d", x);
    return 0;
}
```

a) 1
b) 2
c) 3
d) Compilation error

Solution: (c) 3
exp1? exp2: exp3
4 > 8 ? (5 != 1 < 5 == 0 ? 1 : 2) : 3;
exp1 is false, so exp2 will not be evaluated. 3 will be printed.