Jaypee Institute of information Technology, Noida

Software Development Fundamentals 1 - Lab Sheet

Week 1: 1 Oct- 6th Oct

Assignment Type: Practice

Lab A & B (Control Structures)

Instructions to be followed while carrying out the Lab:

1. Refer location (\\fileserver2\Computer Science & IT\ODD Sem 2018\B. Tech\1st Year\SDF -1 Lab\Control Structures Help

2. Always save your lab work and keep backup of html files

5. Perform the all the experiments

Q1. Visit the specified links to perform these lab experiments:

1) **Experiment Part I: Position of Point w.r.t to a Rectangle**
   Here we shall see how the problem of determining whether a given point is inside or outside a rectangle can be solved using various conditional constructs.
   1. Initialize the values of the variables on the top left. X and Y denote the x and y coordinate of the input point.
   2. Select the code prototype with which you would like to solve the problem.
   3. Click start to begin the experiment.
   4. Click Next to get a step by step execution of the code along with the reasoning which is displayed on the right hand side panel.

   Link: http://cse02-iiith.vlabs.ac.in/exp6/simulation/IfElse/index.html

2) **Experiment Part II: Selecting the Day of a week**
   Here we shall see how a switching construct works by associating one number to each of the days.
   1. First, select a day from the top left by clicking on the correspoding radio button or enter any number in the textbox directly. Then, click on SUBMIT.
   2. Select the code prototype with which you would like to solve the problem.
   3. Click on the activated START button to begin the experiment.
   4. Click Next to get a step by step execution of the code. The changes in local variables can be visualized on the bottom left of the screen. The OUTPUT can be visualized on the right part of the screen

   Link: http://cse02-iiith.vlabs.ac.in/exp6/simulation/SwitchCase/index.html

Q 2. A) Is there any problem executing the following Loop, try to resolve the problem if any:

```
for(;;)
{
printf("Keep Coding");
}
```

B) Interpret the output of the following program by changing the values of i:

```
#include <stdio.h>
int main()
{
   int i,j;
    for(i=1;i<=15;i++)
   {
      for(j=1;j<=i;j++)
printf("%d",j);
       printf("\n");
    }
    return 0;
}
```

C) What is the output of the following program:

```
#include <stdio.h>

int main(){     int i = 0, j = 0;

 while (i<5,j<10)

  {   i++;   j++;   }

printf("%d %d", i, j); }
```

Q3. Design a program in C to print the first alphabet of your name using asterisks (stars).

Q4. Design a C program to get the following outputs:

(1)

```
Enter number of rows:  8
********
*       *
*       *
*       *
*       *
*       *
*       *
********
```

(2)

```
(2) Enter any number to find sum of its digit:  7654321
```

Sum of digits = 28

(3) Use the following logic to print the given pattern:

Pattern:

```
*
**
***
****
*****
****
***
**
*
```

LOGIC:

- From the user, input number of columns to print. Store it in a variable say `N`.
- Then, declare a variable as loop counter for each column, say `columns = 1`.
- In order to iterate through rows, run an outer loop from 1 to `N * 2 - 1`. The loop structure should look like `for(i=1; i<N*2; i++)`.
- In order to iterate through columns, run an inner loop from 1 to `columns`. The loop structure should look like `for(j=1; j<=columns; j++)`. Inside this loop print star.
- After printing all columns of a row, move to next line.
- After inner loop check `if(i <= N)` then increment `columns` otherwise decrement by 1

Q5 Write C programs for the following using control structures:

1. To print all natural numbers in reverse (from n to 1)
2. To print all alphabets from a to z. - using while loop
3. To print all even numbers between 1 to 100. - using while loop
4. To find sum of all even numbers between 1 to n.
5. To find sum of all odd numbers between 1 to n.
6. To print multiplication table of any number.
7. To count number of digits in a number.
8. To find first and last digit of a number.
9. To find sum of first and last digit of a number.
10. To swap first and last digits of a number.
11. To calculate sum of digits of a number.
12. To enter a number and print its reverse.
13. To check whether a number is palindrome or not.
14. To find frequency of each digit in a given integer.
15. To enter a number and print it in words

16. To print ASCII values of all English alphabets
17. To find LCM of two numbers
18. To check weather a given number is prime or not
19. To print Fibonacci series upto N terms
20. To find all prime numbers between I and N