

# CMPE 108 - Experiment 5

## Repetitive Structures

### OBJECTIVES:

- Understand how to edit, compile and execute C computer codes.
- Understand C programming: repetitive structures

### NOTES:

- You should prepare the preliminary work before coming to the laboratory session and bring soft or hard copies of the preliminary work with you.
- Before writing a computer code, you should do the following steps:
  - 1) understand and analyze the problem,
  - 2) develop an algorithm and/or flowchart,
  - 3) convert the algorithm and/or the flowchart into a C code.

### PRELIMINARY WORK:

1. Write a complete C program to evaluate each the following C program fragments and write the output into the given boxes on the right and explain the produced results of each C program.

a)

```
for (i=0; i<10; i++)
{
    printf("%d",i);
}
for (j=0;j<10;++j)
{
    printf("%d",j);
}
```

b)

```
for(i=0; i<10; i++)
    for(j=0; j<10; ++j)
        printf("i= %d \t j=%d \n",i,j);
        /* '\t' is tab sequence*/
```

c)

```
for(i=0, j=20; i<5, j>10; ++i, j--)
    printf("i=%d \t j=%d \n", i, j);
    /* '\t' is tab sequence */
```

d)

```
i=0;
for (; i<10; i++)
    for(j=0; j<10; )
        {
            printf("i=%d \t j=%d \n", i, j);
            j++;
        }
for(; i>=0; )
{
    j=0;
    for(; j>=0; )
        {
            printf("i=%d \t j=%d \n", i, j);
            j--;
        }
    --i;
}
```

e)

```
for(i=1; i<=50; i++)
{
    printf("i=%d", i);
    if (i%5==0)
        {
            printf("\n");
            break;
        }
    printf(" \t");
}
```

f)

```
for(i=1; i<=50; i++)
{
    printf("i=%d", i);
    if (i%5==0)
        {
            printf("\n");
            continue;
        }
    printf(" \t");
}
```

### TASKS in the LAB hours:

1.

a) Write a C program that sums the positive numbers up to 50 using a for-loop structure, finds the average and prints the sum and average on the screen.

b) Modify your program in such a way that it will sum unknown number of positive integers, find the average and print the sum and average on the screen.

*Hint: Use infinite for-loop.*

2. Write a C program that prompts the user to enter a number. If the number is an even number other than a multiple of 8 (8, 16, 24, 32 ...), the program will calculate the square of the number and print it on the screen, and ask for another number. If the number is odd, other than a multiple of 7 (7, 14, 21 ...), the program will calculate the cube of the number, print it on the

screen, and then ask for another number. The program will continue until the user enters the number 0 (zero). You should use for-loop structure with “*continue*” and “*break*” statements.

*Hints:*

- *The program should use the statement “continue”, whenever the user input is a multiple of 7 or 8, in order to skip to the next iteration of the loop.*
- *The program should use the statement “break” when the user input is equal to 0 (zero).*