CSE 115 Lab on simple loop (part 1) – Ara2

1. Write a C program that computes the sum of the series: 3+7+11+…+n, where n is a user input

```
//Program using while loop:
#include<stdio.h>
void main()
{
    int n, i=3, sum=0;
    printf("Enter the value of n:");
    scanf("%d",&n);

    while(i<=n){
        sum+=i;
        i+=4;
    }
    printf("sum=%d", sum);
}
```

```
//Program using for loop:
#include<stdio.h>

void main()
{
    int n, i, sum = 0;
    printf("Enter the value of n:");
    scanf("%d",&n);

    for(i=3;i<=n; i+=4){
        sum+=i;
    }
    printf("sum=%d", sum);
}
```

2. Write a C program to print all odd numbers from 1 to n (n is user input) using for loop.

```
#include <stdio.h>
void main()
{
   int i, n;
   printf("Print odd numbers till: ");
   scanf("%d", &n);    //Read the upper limit
```

```
   printf("All odd numbers from 1 to %d are: \n", n);
   for(i=1;  i<=n;  i+=2)
   {
       printf("%d\n", i);
   }
}
```

3. Write a C program that reads an integer and then computes & prints the factorial of that integer

```
#include<stdio.h>
void main()
{
    int n, i, fact = 1;
    printf("Enter the value of n:");
    scanf("%d",&n);

    for(i=1;i<=n; i++){
        fact*=i;
    }
    printf("n!=%d", fact);
}
```

Exercise Problems (You must use a loop for solving these problems):

1. Write a program to display all decimal digits (i.e., numbers in the range 0 - 9) in reverse order.
   Example output: 9 8 7 6 5 4 3 2 1 0
2. Write a program to display all the letters of the alphabet (a-z). Use two for loops: the 1st one will print all letters in small letters and the 2nd one will print them in capital letters.
   Example output: a b c d e ……… z
                      A B C D ……… Z

3. Write a program to compute the following series using while loop: 4+11+18++….+n
4. Write a program to compute the following series using while loop: $2^3+5^3+8^3+...+n^3$

5. Write a program to print all even numbers between m and n (m, n are user inputs) in reverse order.

Sample input/output (bold ones are inputs):

Enter m: **9**

Enter n: **21**

All even numbers between 9 and 20 in reverse order: 20, 18, 16, 14, 12, 10

Assignment Problems (You must use a loop for solving these problems):

1. Write a program to compute the following series using while loop: $5^2+9^2+15^2+23^2+....+n^2$

2. Write a program that computes the following series using for loop: 10000+2000+400+…+8

3. Write a program that takes a minimum number, a maximum number, and common difference and prints the sum of the *arithmetic* series between them.

Sample input/output (bold ones are inputs):

Enter minimum: **11**

Enter maximum: **19**

Enter Common difference: **2**

The Sum is: 11 + 13 + 15 +17 +19 = 75

4. Write a program that takes a minimum number, a maximum number, and common ratio and prints the sum of the *geometric* series between them.

Sample input/output (bold ones are inputs):

Enter minimum: **5**

Enter maximum: **150**

Enter Common ratio: **3**

The Sum is: 5 + 15 + 45 + 135 = 200

5. Write a C program to print the multiplication table (নামতা) of any given integer number.

Sample input/output (bold ones are inputs):

Enter number to print the multiplication table of: **5**

5 * 1 = 5

5 * 2 = 10

5 * 3 = 15

5 * 4 = 20

5 * 5 = 25

5 * 6 = 30

5 * 7 = 35

5 * 8 = 40

5 * 9 = 45

5 * 10 = 50

6. Write a C program to compute the value of $^nP_r = n*(n-1)*(n-2)*…*(n-r+1)$, read n and r from user.

7. Write a C program to find power of any number using for loop. Don't use pow() function. Example:

Enter base: **2**

Enter power: **5**

2 to the power 5 = 32