CS-111

<Module No- 3>

- Lab3

NITK SURATHKAL

INBASEKARAN.P

201EC226

Mentor: Mrs Marwa Mohiddin

```c
// Lab 3.1 Questin 1
// Inbasekaran.P 201EC226
/*To determine whether a character entered is in lowercase,
uppercase, digit or a special character.*/
// For printf() and scanf()
#include <stdio.h>
// Including stdlib for system("clear") to clear the screen in the
 terminal.
#include <stdlib.h>


int main()
{
    // To clear the console.
    system("clear");

    printf("Enter the character: ");
    char ch;
    scanf("%c", &ch);

    if(ch >= 'a' && ch <= 'z')
    {
        printf("The character is lower case letter.\n");
    }
    else if (ch >= 'A' && ch <= 'Z')
    {
        printf("The character is upper case letter.\n");
    }
    else if (ch >= '0' && ch <= '9')
    {
        printf("The character is a digit.\n");
    }
    else
    {
        printf("The character is a special character.\n");
    }

    return 0;
}
```

OUTPUT

```
Enter the character: @
The character is a special character.
PS D:\Documents\NIT-K\My_Second_Sem\CS111\Lab3>
```

```c
// Lab 3.1 Questin 2
// Inbasekaran.P 201EC226
/*Find the roots of quadratic equation*/
// For printf() and scanf()
#include <stdio.h>
// Including stdlib for system("clear") to clear the screen in the terminal.
#include <stdlib.h>
// for pow() and sqrt()
#include <math.h>

int main()
{
    // To clear the console.
    system("clear");
    double a, b, c;
    printf("Enter coefficients of the quadratic equation a, b and c: ");
    scanf("%lf %lf %lf", &a, &b, &c);
    double D = b * b - 4 * a * c;
    double alpha, beta, x, iy;

    // real and unique roots
    if (D > 0)
    {
        alpha = (-b + sqrt(D)) / (2 * a);
        beta = (-b - sqrt(D)) / (2 * a);
        printf("root1 = %.2lf and root2 = %.2lf", alpha, beta);
    }

    // real and equal roots
    else if (D == 0)
    {
        alpha = beta = -b / (2 * a);
        printf("root1 = root2 = %.2lf", alpha);
    }

    // complex roots
    else
    {
        x = -b / (2 * a);
        iy = sqrt(-D) / (2 * a);
        printf("root1 = %.2lf+%.2lfi and root2 = %.2f-%.2fi", x, iy, x, iy);
    }

    return 0;
}
```

OUTPUT

```
Enter coefficients of the quadratic equation a, b and c: 1 2 1
root1 = root2 = -1.00
PS D:\Documents\NIT-K\My_Second_Sem\CS111\Lab3>
```

```c
// Lab 3.1 Questin 4
// Inbasekaran.P 201EC226
/*Write a menu driven program to demonstrate the simple arithmetic calculator*/
// Including standard input and output for printing the variables.
#include <stdio.h>
// Including stdlib for system("clear") to clear the screen in the terminal.
#include<stdlib.h>

int main()
{
// To clear the console.
    system("clear");

    char operator;
    printf("Enter an operator\n+\t-\t*\t/\n:");
    scanf("%c", &operator);

    double num1, num2;
    printf("Enter two numbers: ");
    scanf("%lf %lf", &num1, &num2);

    switch (operator)
    {
        case '+':
            printf("%.1lf + %.1lf = %.1lf", num1, num2, num1 + num2);
            break;
        case '-':
            printf("%.1lf - %.1lf = %.1lf", num1, num2, num1 - num2);
            break;
        case '*':
            printf("%.1lf * %.1lf = %.1lf", num1, num2, num1 * num2);
            break;
        case '/':
            printf("%.1lf / %.1lf = %.1lf", num1, num2, num1 / num2);
            break;
            // operator doesn't match any case constant
        default:
            printf("Sorry, Enter a valid operator");
    }

    return 0;
}
```

OUTPUT

```
Enter an operator
+       -       *       /
:+
Enter two numbers: 5 2
5.0 + 2.0 = 7.0
PS D:\Documents\NIT-K\My_Second_Sem\CS111\Lab3>
```

```c
// Lab 3.2 Questin 1
// Inbasekaran.P 201EC226
/*Program to reverse the digits of a number and to find the sum of the
digits*/
// For printf() and scanf()
#include <stdio.h>
// Including stdlib for system("clear") to clear the screen in the terminal.
#include <stdlib.h>


int main()
{
    // To clear the console.
    system("clear");
    printf("Enter the number: ");
    int number;
    scanf("%d",&number);
    int rnumber = 0;
    int sum = 0;
    while (number)
    {
        rnumber *= 10;
        int n = number%10;
        rnumber += n;
        sum += n;
        number /= 10;
    }
    printf("The reversed number is %d.\n",rnumber);
    printf("The sum of the digits is %d.\n",sum);
    return 0;
}
```

OUTPUT

```
Enter the number: 12345
The reversed number is 54321.
The sum of the digits is 15.
PS D:\Documents\NIT-K\My_Second_Sem\CS111\Lab3>
```

```c
// Lab 3.2 Questin 2
// Inbasekaran.P 201EC226
/* Program to find factors of a given number */
// Including standard input and output for printing the vari
ables.
#include <stdio.h>
// Including stdlib for system("clear") to clear the screen
in the terminal.
#include<stdlib.h>


int main()
{
    // To clear the console.
    system("clear");
    int num;
    printf("Enter a positive integer: ");
    scanf("%d", &num);
    printf("Factors of %d are: ", num);
    for (int i = 1; i <= num; ++i)
    {
        if (num % i == 0)
        {
            printf("%d ", i);
        }
    }
    return 0;
}
```

OUTPUT

```
Enter a positive integer: 52
Factors of 52 are: 1 2 4 13 26 52
PS D:\Documents\NIT-K\My_Second_Sem\CS111\Lab3>
```

```c
// Lab 3.2 Questin 6
// Inbasekaran.P 201EC226
/* Program to evaluate 1+x+x^2/2!+x^3/3!+....*/
// For printf() and scanf()
#include <stdio.h>
// Including stdlib for system("clear") to clear the screen in the terminal.
#include <stdlib.h>
// for pow() and sqrt()
#include <math.h>

int main()
{
    // To clear the console.
    system("clear");
    int n;
    printf("Enter the number of terms: ");
    scanf("%d",&n);
    float x;
    printf("Enter the value of x: ");
    scanf("%f", &x);
    float num = 1;
    float den = 1;
    double sum = 1;
    for(int i = 1; i < n; i++)
    {
        num *= x;
        den *= i;
        sum += num/den;
    }
    printf("The sum of teh series %lf.", sum);
    return 0;
}
```

OUTPUT

```
Enter the number of terms: 5
Enter the value of x: 1
The sum of teh series 2.708333.
PS D:\Documents\NIT-K\My_Second_Sem\CS111\Lab3>
```