

C PROGRAMING / LINUX [DASL-100]

WEEK 3 [Section 5]

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➤ **C++ Programs To Create Pyramid and Pattern**

- Examples to print half pyramid, pyramid, inverted pyramid, Pascal's Triangle and Floyd's triangle in C++ Programming using control statements.
- Program to print half pyramid using *

➤ **C**

```
#include <stdio.h>
int main()
{
    int i, j, rows;

    printf("Enter number of rows: ");
    scanf("%d",&rows);

    for(i=1; i<=rows; ++i)
    {
        for(j=1; j<=i; ++j)
        {
            printf("* ");
        }
        printf("\n");
    }
    return 0;
}
```

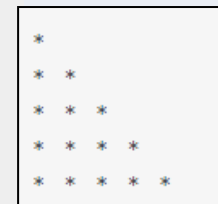
➤ **C++**

```
#include <iostream>
using namespace std;

int main()
{
    int rows;

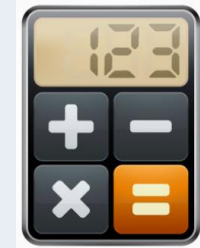
    cout << "Enter number of rows: ";
    cin >> rows;

    for(int i = 1; i <= rows; ++i)
    {
        for(int j = 1; j <= i; ++j)
        {
            cout << "* ";
        }
        cout << "\n";
    }
    return 0;
}
```



➤ C++ Program to Make a Simple Calculator to Add, Subtract, Multiply or Divide Using switch...case

➤ Example to create a simple calculator to add, subtract, multiply and divide using switch and break statement. for loop in this example.



```
# include <iostream>
using namespace std;

int main()
{
    char op;
    float num1, num2;

    cout << "Enter operator either + or - or * or /: ";
    cin >> op;

    cout << "Enter two operands: ";
    cin >> num1 >> num2;

    switch(op)
    {
        case '+':
            cout << num1+num2;
            break;

        case '-':
            cout << num1-num2;
            break;

        case '*':
            cout << num1*num2;
            break;

        case '/':
            cout << num1/num2;
            break;

        default:
            // If the operator is other than +, -, * or /, error message is shown
            cout << "Error! operator is not correct";
            break;
    }

    return 0;
}
```

➤ C Program to Convert Binary Number to Decimal and vice-versa

- In this example, you will learn to convert binary number to decimal and decimal number to binary manually by creating a user-defined function.
- Program to convert binary number to decimal

```
Enter a binary number: 1111
1111 in binary = 15
```

```
#include <stdio.h>
#include <math.h>
int convertBinaryToDecimal(long long n);

int main()
{
    long long n;
    printf("Enter a binary number: ");
    scanf("%lld", &n);
    printf("%lld in binary = %d in decimal", n, convertBinaryToDecimal(n));
    return 0;
}

int convertBinaryToDecimal(long long n)
{
    int decimalNumber = 0, i = 0, remainder;
    while (n!=0)
    {
        remainder = n%10;
        n /= 10;
        decimalNumber += remainder*pow(2,i);
        ++i;
    }
    return decimalNumber;
}
```

```
#include <iostream>
#include <cmath>

using namespace std;

int convertBinaryToDecimal(long long);

int main()
{
    long long n;

    cout << "Enter a binary number: ";
    cin >> n;

    cout << n << " in binary = " << convertBinaryToDecimal(n) << " in decimal";
    return 0;
}

int convertBinaryToDecimal(long long n)
{
    int decimalNumber = 0, i = 0, remainder;
    while (n!=0)
    {
        remainder = n%10;
        n /= 10;
        decimalNumber += remainder*pow(2,i);
        ++i;
    }
    return decimalNumber;
}
```



➤ C Program to Calculate Average Using Arrays

➤ This program takes n number of element from user (where, n is specified by user), stores data in an array and calculates the average of those numbers.

➤ C

```
#include <stdio.h>

int main()
{
    int n, i;
    float num[100], sum = 0.0, average;

    printf("Enter the numbers of elements: ");
    scanf("%d", &n);

    while (n > 100 || n <= 0)
    {
        printf("Error! number should in range of (1 to 100).\n");
        printf("Enter the number again: ");
        scanf("%d", &n);
    }

    for(i = 0; i < n; ++i)
    {
        printf("%d. Enter number: ", i+1);
        scanf("%f", &num[i]);
        sum += num[i];
    }

    average = sum / n;
    printf("Average = %.2f", average);

    return 0;
}
```

➤ C++

```
#include <iostream>
using namespace std;

int main()
{
    int n, i;
    float num[100], sum=0.0, average;

    cout << "Enter the numbers of data: ";
    cin >> n;

    while (n > 100 || n <= 0)
    {
        cout << "Error! number should in range of (1 to 100)." << endl;
        cout << "Enter the number again: ";
        cin >> n;
    }

    for(i = 0; i < n; ++i)
    {
        cout << i + 1 << ". Enter number: ";
        cin >> num[i];
        sum += num[i];
    }

    average = sum / n;
    cout << "Average = " << average;

    return 0;
}
```



➤ **To do List**

- Start Homework 3
- C Program to Calculate Standard Deviation(**DUE NEXT SECTION**)
- Research and write a brief summary on “header files” applied to C and C++ Language [Make sure to give two examples] (**DUE NEXT SECTION**)