# WEEK-4

**#1 Write a C++ program to check whether a number is even or odd using ternary operator.**

This is the required code with the result

```
1  #include<iostream>
2  using namespace std;
3  // check odd or even
4
5  int main()
6  {
7  cout<<"Enter a number\n";
8  int a;
9
10 cin>>a;
11 cout<<"your number is:";
12 a%2==0 ? cout<<"Even" :cout<<"Odd";
13
14 }
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS D:\C++\Lab\WEEK 4> cd "d:\C++\Lab\WEEK 4\" ; if ($?) { g++ week_4_1.
Enter a number
5
your number is:Odd
PS D:\C++\Lab\WEEK 4>
```

**#2 Write a C++ program to perform the addition of two numbers without using '+' operators.**

This is the required code:

```
1  #include <iostream>
2  using namespace std;
3  // adding two numbers without +
4  int main()
5  {
6      int a, b;
7      cout << "Enter two numbers" << endl;
8      cin >> a;
9      cin >> b;
10     // cout<<"Enter another number"
11     for (int i = 1; i <= b; i++)
12         a = a + 1;
13     cout << "The sum is " << a;
14 }
15
```

And this is the result:

```
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   POR

PS D:\C++\Lab\WEEK 4> cd "d:\C++\Lab\WEEK 4\" ;
Enter two numbers
5
6
The sum is 11
PS D:\C++\Lab\WEEK 4>
```

**#3 Write a C++ program to evaluate the arithmetic expression ((a+b/c*d-e)*(f-g)). Read the values a, b, c, d, e, f, g from the standard input device.**

The required code for the given program is given below:

```
#include <iostream>
using namespace std;
// evaluate arithmatic expession ((a + b / c * d - e) * (f - g))
int main()
{
    float a, b, c, d, e, f, g;
    cout << "Enter 'a'\n";
    cin >> a;
    cout << "Enter 'b'\n";
    cin >> b;
    cout << "Enter 'c'\n";
    cin >> c;
    cout << "Enter 'd'\n";
    cin >> d;
    cout << "Enter 'e'\n";
    cin >> e;
    cout << "Enter 'f'\n";
    cin >> f;
    cout << "Enter 'g'\n";
    cin >> g;
    cout << "the value of the given expression is : " << ((a + b / c * d - e) * (f - g));
}
```

And its result is:

```
PS D:\C++\Lab\WEEK 4> cd "d:\C++\Lab\WEEK 4\"
Enter 'a'
5
Enter 'b'
2
Enter 'c'
3
Enter 'd'
6
Enter 'e'
4
Enter 'f'
9
Enter 'g'
7
the value of the given expression is : 10
PS D:\C++\Lab\WEEK 4>
```

**#4 A Fibonacci sequence is defined as follows, the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C++ program to generate the first n terms of the sequence.**

This is the required code for Fibonacci sequence:

```
1   #include <iostream>
2   using namespace std;
3   int main()
4   {
5       long double n, a = 0, b = 1, nxt = 0;
6       cout << "Enter the number of terms you want in the series: ";
7       cin >> n;
8       cout << "Fibonacci Series is: \n";
9
10      for (int i = 1; i <= n; i++)
11      {
12
13          if (i == 1)
14          {
15              cout << a << ",";
16              continue;
17          }
18          if (i == 2)
19          {
20              cout << b << ",";
21              continue;
22          }
23          nxt = a + b;
24          a = b;
25          b = nxt;
26          cout << nxt << ",";
27      }
```

The result is:

```
PS D:\C++\Lab\WEEK 4> cd "d:\C++\Lab\WEEK 4\" ; if ($?)
Enter the number of terms you want in the series: 10
Fibonacci Series is:
0,1,1,2,3,5,8,13,21,34,
PS D:\C++\Lab\WEEK 4>
```

**#5 Write a C++ program to generate all the prime numbers between 1 and n, where n is the value supplied by the user.**

This is the required cod:

```cpp
#include <iostream>
using namespace std;
// prime numbers b/w 1 &n
int main()
{
    int n, i, j, k;
    cout << "Enter a number upto which you want the prime numbers: ";
    cin >> n;
    cout<<"The prime numbers are\n";
    for (i = 1; i <= n; i++)
    {
        if (i == 1 || i == 0)
            continue;

        k = 1;

        for (j = 2; j <= i / 2; j++)
        {
            if (i % j == 0)
            {
                k = 0;
                break;
            }
        }
        if (k == 1)
        {
            cout << " " << i;
        }
    }
}
```

And it's result is:

```
PS D:\C++\Lab\WEEK 4> cd "d:\C++\Lab\WEEK 4\" ; if ($?) { g++ week_4_5.cpp
Enter a number upto which you want the prime numbers: 96
The prime numbers are
 2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89
PS D:\C++\Lab\WEEK 4>
```

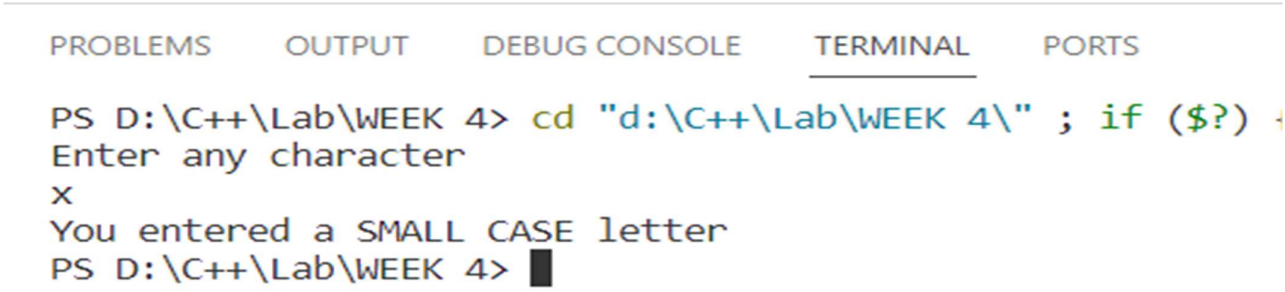
**#6 A character is entered through keyboard. Write a C++ program to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol using if-else and switch case. The following table shows the range of ASCII values for various characters.**

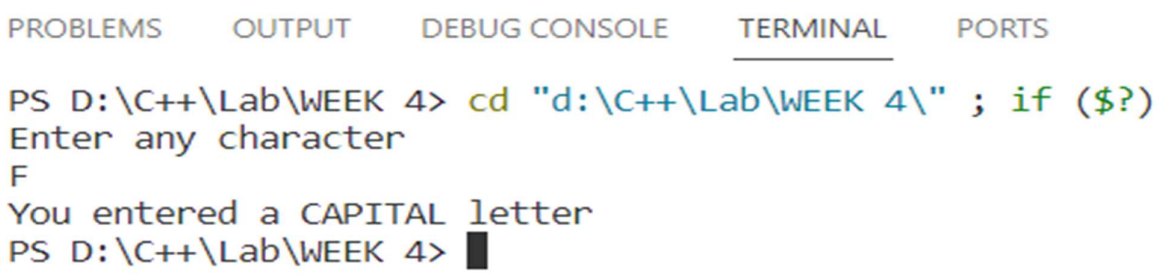
| **Characters** | |
|---|---|
| **ASCII** | **A-Z, 65-90, a-z, 97-122, 0-9, 48-57** |
| **Special symbols** | **0-47, 58-64, 91-96, 123-127** |

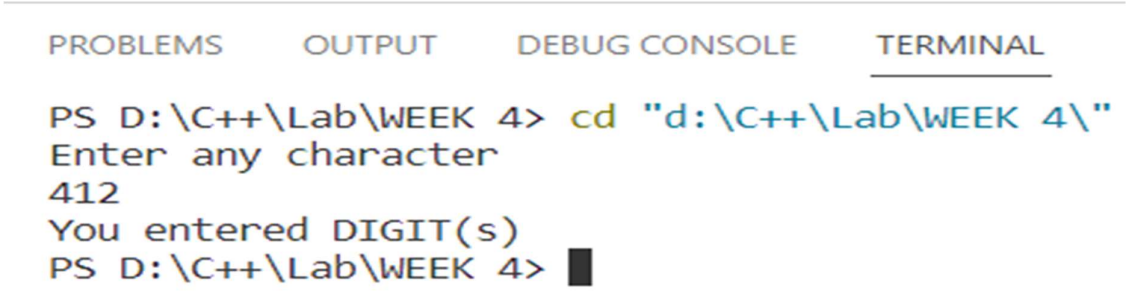
This is the required code:

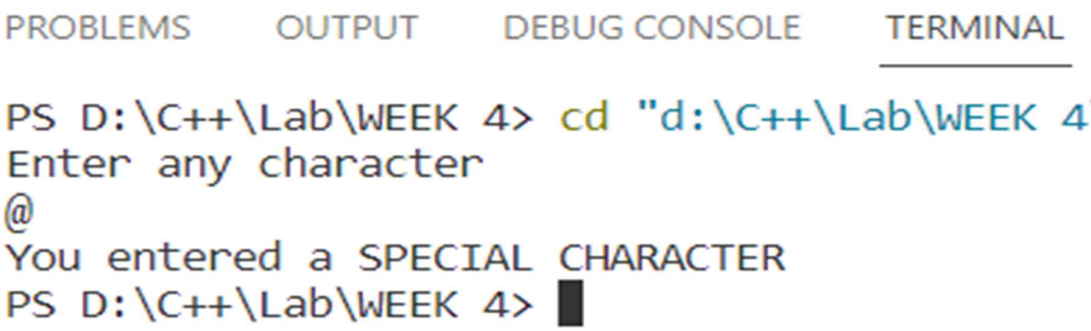
```
1   #include <iostream>
2   using namespace std;
3   // show the type of character
4   int main()
5   {
6       char ch;
7       cout << "Enter any character\n";
8       cin >> ch;
9       if (ch >= 65 && ch <= 90)
10          cout << "You entered a CAPITAL letter\n";
11
12      else if (ch >= 48 && ch <= 57)
13          cout << "You enteres a DIGIT";
14
15      else if (ch >= 97 && ch <= 122)
16          cout << "You entered a SMALL CASE letter\n";
17
18      else
19          cout << "You entered a SPECIAL CHARACTER\n";
20  }
```

And it’s results are:



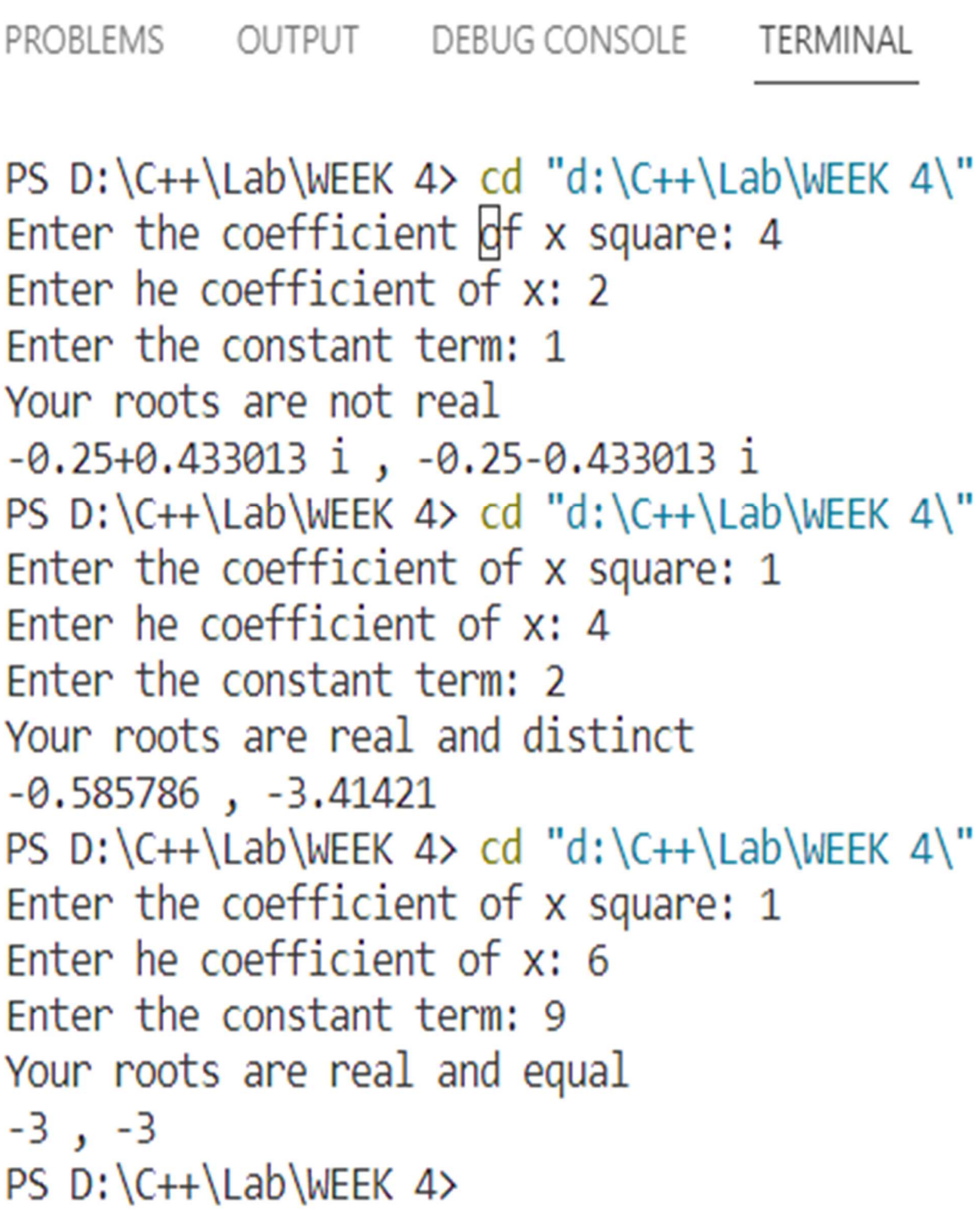



**#7 Write a C++ program to find the roots of a equation.**

This is the required code:

```
4   // Roots of quadratic equation
5   int main()
6   {
7       float a, b, c, dis, x, y, rlprt, cmplxprt;
8       cout << "Enter the coefficient of x square: ";
9       cin >> a;
10      cout << "Enter he coefficient of x: ";
11      cin >> b;
12      cout << "Enter the constant term: ";
13      cin >> c;
14      dis = b * b - 4 * a * c;
15
16      if (dis > 0)
17      {
18          cout << "Your roots are real and distinct\n";
19          x = (-b + sqrt(dis)) / (2 / a);
20          y = (-b - sqrt(dis)) / (2 / a);
21          cout << x << " , " << y;
22      }
23
24      else if (dis == 0)
25      {
26          cout << "Your roots are real and equal\n";
27          x = (-b + sqrt(dis)) / (2 / a);
28          y = (-b - sqrt(dis)) / (2 / a);
29          cout << x << " , " << y;
30      }
31
32      else
33      {
34          cout << "Your roots are not real\n";
35          rlprt = -b / (2 * a);
36          cmplxprt = sqrt(-dis) / (2 * a);
37          cout << rlprt << "+" << cmplxprt << " i"
38              << " , " << rlprt << "-" << cmplxprt << " i";
39      }
```

This is it's result:



**#8 Write a program to check whether a given 3 digit number is Armstrong number or not.**

This is the required code:

```cpp
#include <iostream>
#include <cmath>
using namespace std;
// Armstrong number
int main()
{
    int num, r, sum = 0, ArmNum;
    cout << "Enter number to check Armstrong Number";
    cin >> num;
    ArmNum = num;
    while (num > 0)
    {
        r = num % 10;
        sum = sum + (r * r * r);
        num = num / 10;
    }

    if (ArmNum == sum)
        cout << "Entered number is Armstrong number";
    else
        cout << "Entered number is not Armstrong number";
}
```

This is the result:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS D:\C++\Lab\WEEK 4> cd "d:\C++\Lab\WEEK 4\" ; if
Enter number to check Armstrong Number: 407
Entered number is Armstrong number
PS D:\C++\Lab\WEEK 4>
PS D:\C++\Lab\WEEK 4>
PS D:\C++\Lab\WEEK 4> cd "d:\C++\Lab\WEEK 4\" ; if
Enter number to check Armstrong Number: 412
Entered number is not Armstrong number
PS D:\C++\Lab\WEEK 4>
```