

WEEK 4

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

Code:

```

1 //using namespace std;
2 //int main()
3 //{
4 //    int a;
5 //    cout<<"Enter a number ";
6 //    cin>>a;
7 //    if(a%2==0){
8 //        cout<<a<<" is even number";
9 //    }
10 //    else{
11 //        cout<<a<<" is odd";
12 //    }
13 //}
14 //}
15 #include<iostream>
16 using namespace std;
17 int main()
18 {
19     int a;
20     string num;
21     cout<<"Enter a number ";
22     cin>>a;
23     num =
24     (a%2==0)?(cout<<a<<" is even"):(cout<<a<<" is odd");
25     cout<<a<<num;
26     return 0;
27 }

```

Output:

```

8 // if(a%2==0){
9 //     cout<<a<<" is even number";
10 // }
11 // else{
12 //     cout<<a<<" is odd";
13 // }
14 //}
15 #include<iostream>
16 using namespace std;
17 int main()
18 {
19     int a;
20     string num;
21     cout<<"Enter a number ";
22     cin>>a;
23     num =
24     (a%2==0)?(cout<<a<<" is even"):(cout<<a<<" is odd");
25     cout<<a<<num;
26     return 0;
27 }

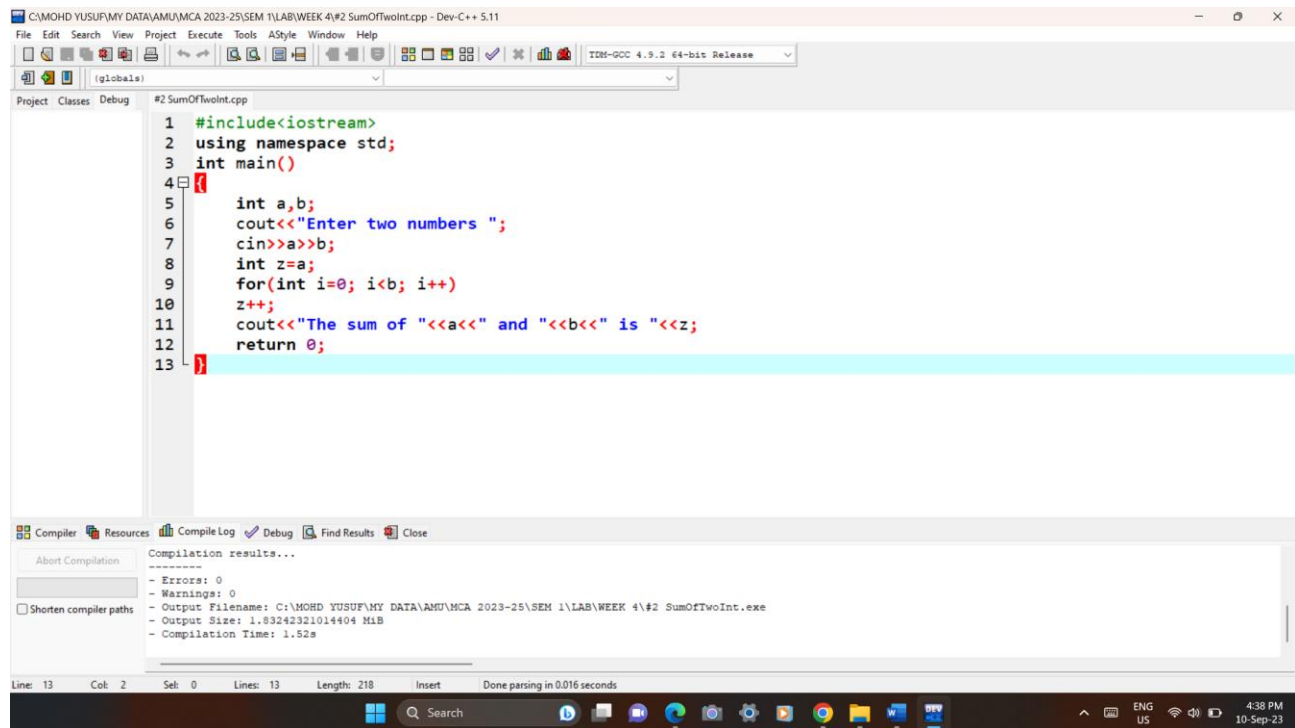
```

Enter a number 59
59 is odd
Process exited after 6.584 seconds with return value 0
Press any key to continue . . .

Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\WEEK 4\#1 OddOrEven.exe
- Output Size: 1.83242321014404 MiB
- Compilation Time: 4.49s

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

Code:

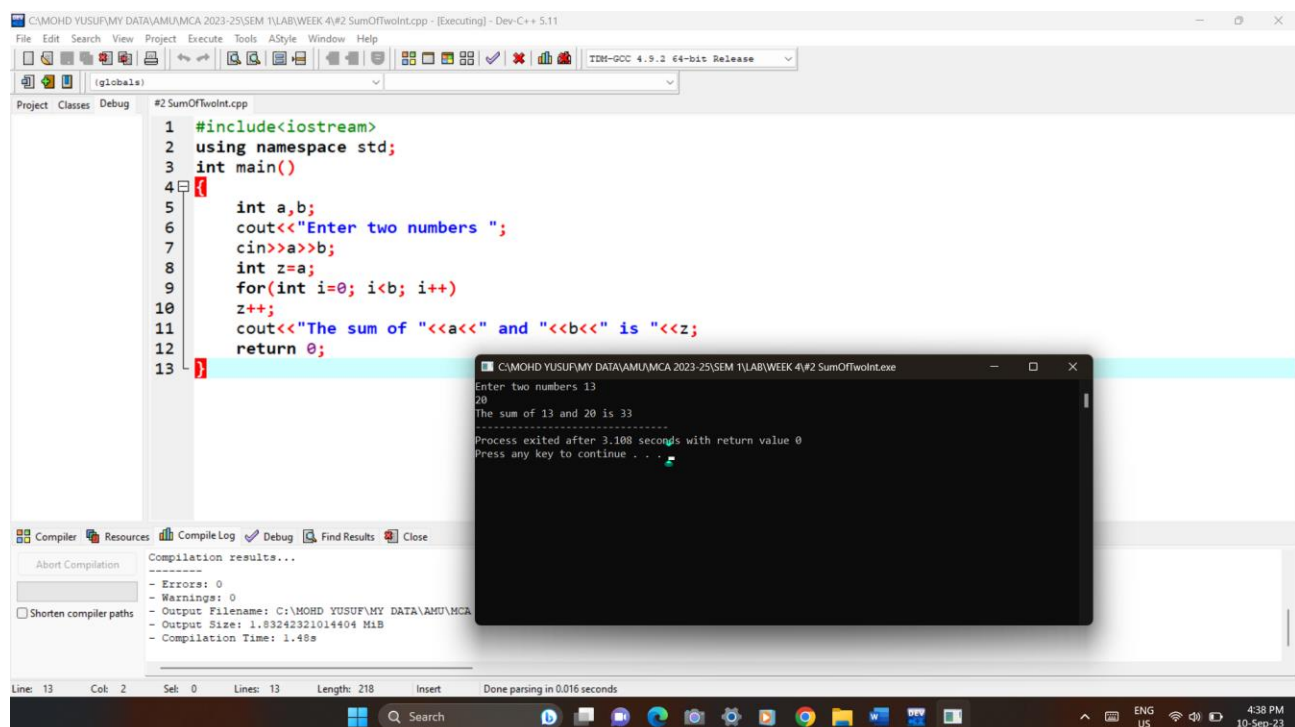


```
1 #include<iostream>
2 using namespace std;
3 int main()
4 {
5     int a,b;
6     cout<<"Enter two numbers ";
7     cin>>a>>b;
8     int z=a;
9     for(int i=0; i<b; i++)
10         z++;
11     cout<<"The sum of "<<a<<" and "<<b<<" is "<<z;
12     return 0;
13 }
```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\WEEK 4\#2 SumOfTwoInt.exe
- Output Size: 1.83242321014404 MiB
- Compilation Time: 1.52s

Output:



```
1 #include<iostream>
2 using namespace std;
3 int main()
4 {
5     int a,b;
6     cout<<"Enter two numbers ";
7     cin>>a>>b;
8     int z=a;
9     for(int i=0; i<b; i++)
10         z++;
11     cout<<"The sum of "<<a<<" and "<<b<<" is "<<z;
12     return 0;
13 }
```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\WEEK 4\#2 SumOfTwoInt.exe
- Output Size: 1.83242321014404 MiB
- Compilation Time: 1.48s

Enter two numbers 13
20
The sum of 13 and 20 is 33
.....
Process exited after 3.108 seconds with return value 0
Press any key to continue . . .

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.

Code:

```

1 #include<iostream>
2 using namespace std;
3 int main()
4 {
5     float a[6],result;
6     char ch='a';
7     cout<<"Enter values of a,b,c,d,e,f and g to perform following expression"<<endl;
8     cout<<"((a + b / c * d - e) * (f - g))"<<endl;
9     for(int i=0; i<=6; i++)
10    {
11        cout<<"Enter value for "<<ch<<" : ";
12        cin>>a[i];
13        ch++;
14    }
15    result = ((a[0] + a[1] / a[2] * a[3] - a[4]) * (a[5] - a[6]));
16    cout<<"The result of expression (( "<<a[0]<<" + "<<a[1]<<" / "<<a[2]<<" * "<<a[3]<<" - "<<a[4]<<" * ("<<a[5]<<" - "<<a[6]<<" )) is "<<result;
17    return 0;
18 }

```

Compilation results...

```

- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\WEEK 4\#3 TakeInputFromTheUser.exe
- Output Size: 1.8331241607666 MiB
- Compilation Time: 1.56s

```

Output:

```

1 #include<iostream>
2 using namespace std;
3 int main()
4 {
5     float a[6],result;
6     char ch='a';
7     cout<<"Enter values of a,b,c,d,e,f and g to perform following expression"<<endl;
8     cout<<"((a + b / c * d - e) * (f - g))"<<endl;
9     for(int i=0; i<=6; i++)
10    {
11        cout<<"Enter value for "<<ch<<" : ";
12        cin>>a[i];
13        ch++;
14    }
15    result = ((a[0] + a[1] / a[2] * a[3] - a[4]) * (a[5] - a[6]));
16    cout<<"The result of expression (( "<<a[0]<<" + "<<a[1]<<" / "<<a[2]<<" * "<<a[3]<<" - "<<a[4]<<" * ("<<a[5]<<" - "<<a[6]<<" )) is "<<result;
17    return 0;
18 }

```

Compilation results...

```

- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\WEEK 4\#3 TakeInputFromTheUser.exe
- Output Size: 1.8331241607666 MiB
- Compilation Time: 1.56s

```

Terminal Output:

```

Enter values of a,b,c,d,e,f and g to perform following expression
((a + b / c * d - e) * (f - g))
Enter value for a : 1
Enter value for b : 2
Enter value for c : 3
Enter value for d : 4
Enter value for e : 5
Enter value for f : 6
Enter value for g : 7
The result of expression (( 1 + 2 / 3 * 4 - 5) * (6 - 7)) is 1.33333
Process exited after 8.744 seconds with return value 0
Press any key to continue . . .

```

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.

Code:

```

1 #include<iostream>
2 using namespace std;
3 int main()
4 {
5     int n,first=0,second=1;
6     int nextTerm =0;
7     cout<<"Enter number of terms for fabonacci series that you want to generate ";
8     cin>>n;
9     if(n<1)
10        cout<<"!! Invalid input ";
11    else
12    {
13        cout<<n<<" terms of fabonacci series are : { ";
14        for(int i=1; i<n; i++)
15        {
16            cout<<first<<" , ";
17            nextTerm = first + second;
18            first = second;
19            second = nextTerm;
20        }
21        cout<<first<<" }";
22    }
23    return 0;
24 }

```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\WEEK 4\#4 FabonaccSeries.exe
- Output Size: 1.83244514465332 MiB
- Compilation Time: 1.38s

Output:

```

1 #include<iostream>
2 using namespace std;
3 int main()
4 {
5     int n,first=0,second=1;
6     int nextTerm =0;
7     cout<<"Enter number of terms for fabonacci series that you want to generate ";
8     cin>>n;
9     if(n<1)
10        cout<<"!! Invalid input ";
11    else
12    {
13        cout<<n<<" terms of fabonacci series are : { ";
14        for(int i=1; i<n; i++)
15        {
16            cout<<first<<" , ";
17            nextTerm = first + second;
18            first = second;
19            second = nextTerm;
20        }
21        cout<<first<<" }";
22    }
23    return 0;
24 }

```

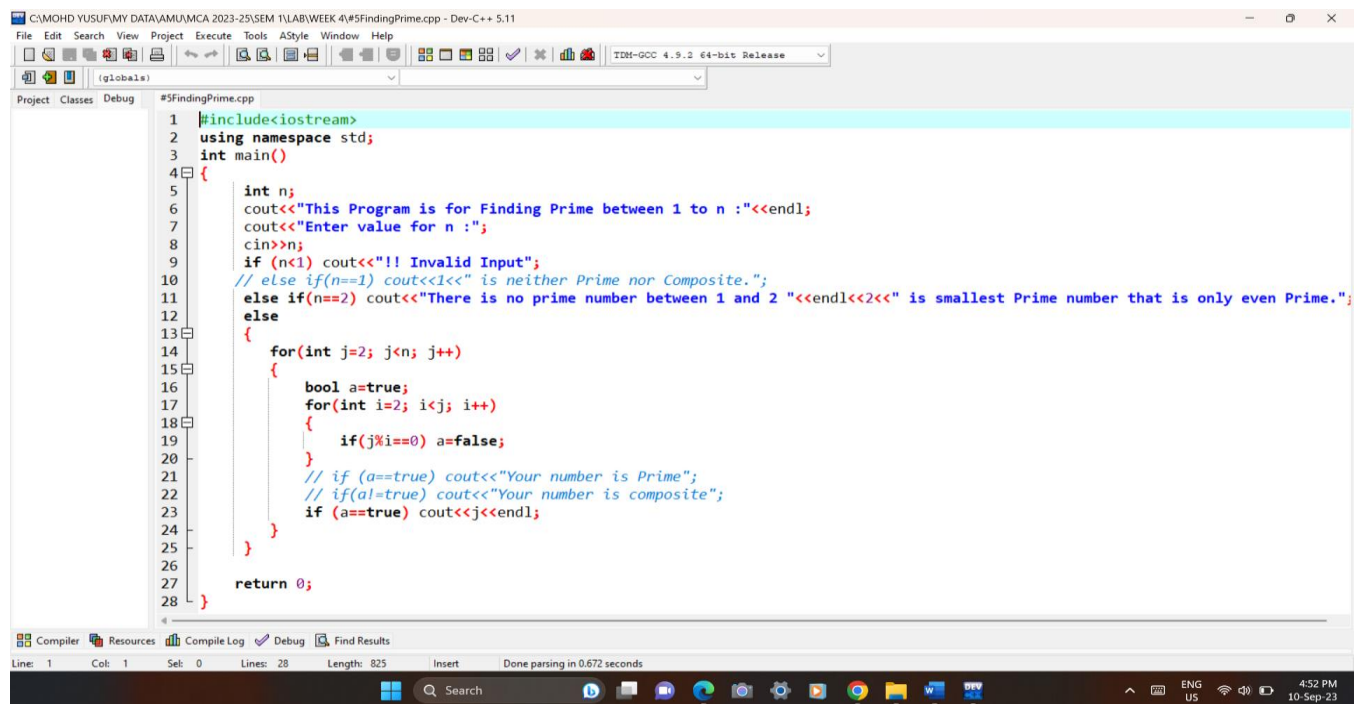
Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\WEEK 4\#4 FabonaccSeries.exe
- Output Size: 1.83244514465332 MiB
- Compilation Time: 1.38s

Enter number of terms for fabonacci series that you want to generate 8
8 terms of fabonacci series are : { 0 , 1 , 1 , 2 , 3 , 5 , 8 , 13 }
Process exited after 35.13 seconds with return value 0
Press any key to continue . . .

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

Code:

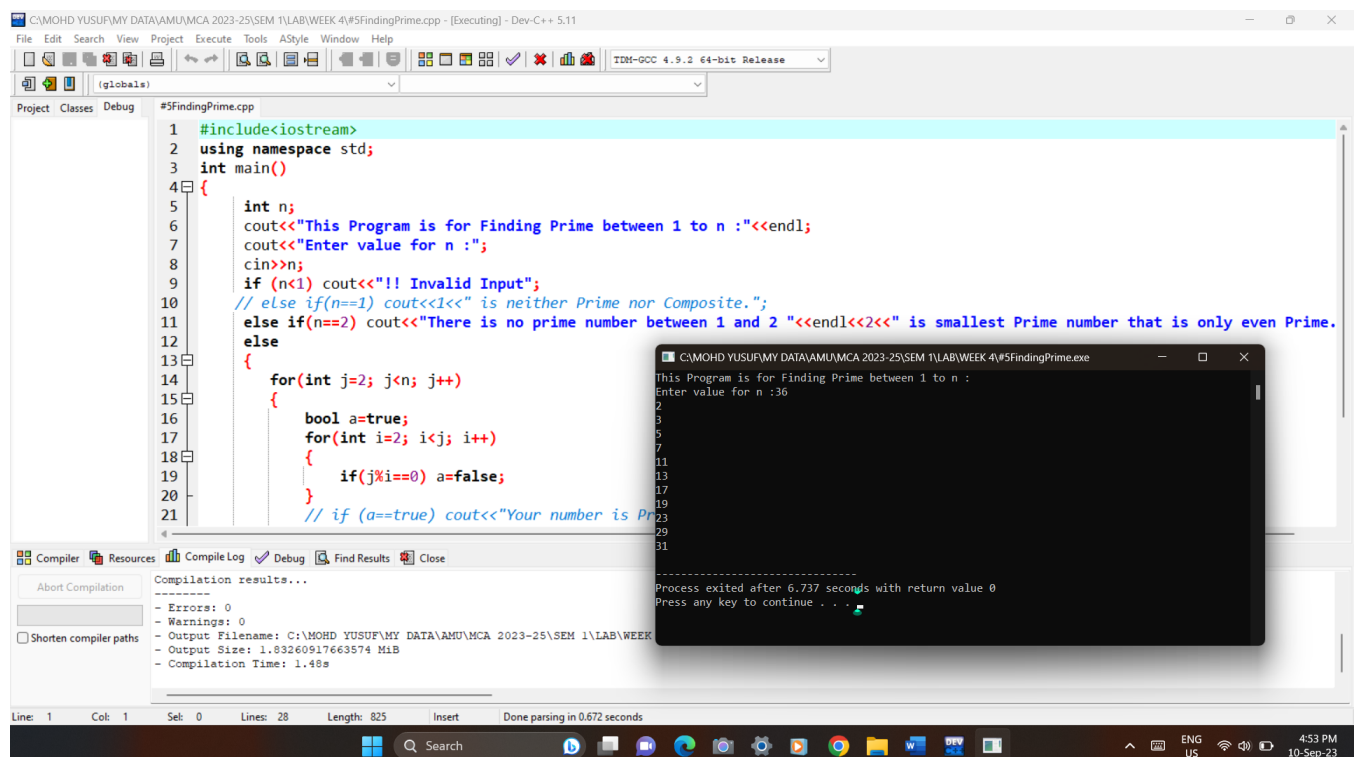


```

1 #include<iostream>
2 using namespace std;
3 int main()
4 {
5     int n;
6     cout<<"This Program is for Finding Prime between 1 to n : "<<endl;
7     cout<<"Enter value for n : ";
8     cin>>n;
9     if (n<1) cout<<"!! Invalid Input";
10    // else if(n==1) cout<<"1 is neither Prime nor Composite.";
11    else if(n==2) cout<<"There is no prime number between 1 and 2 "<<endl<<"2 is smallest Prime number that is only even Prime.";
12    else
13    {
14        for(int j=2; j<n; j++)
15        {
16            bool a=true;
17            for(int i=2; i<j; i++)
18            {
19                if(j%i==0) a=false;
20            }
21            // if (a==true) cout<<"Your number is Prime";
22            // if(a!=true) cout<<"Your number is composite";
23            if (a==true) cout<<j<<endl;
24        }
25    }
26
27    return 0;
28 }

```

Output:



```

1 #include<iostream>
2 using namespace std;
3 int main()
4 {
5     int n;
6     cout<<"This Program is for Finding Prime between 1 to n : "<<endl;
7     cout<<"Enter value for n : ";
8     cin>>n;
9     if (n<1) cout<<"!! Invalid Input";
10    // else if(n==1) cout<<"1 is neither Prime nor Composite.";
11    else if(n==2) cout<<"There is no prime number between 1 and 2 "<<endl<<"2 is smallest Prime number that is only even Prime.";
12    else
13    {
14        for(int j=2; j<n; j++)
15        {
16            bool a=true;
17            for(int i=2; i<j; i++)
18            {
19                if(j%i==0) a=false;
20            }
21            // if (a==true) cout<<"Your number is Prime";
22            // if(a!=true) cout<<"Your number is composite";
23            if (a==true) cout<<j<<endl;
24        }
25    }
26
27    return 0;
28 }

```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\WEEK 4\#5FindingPrime.exe
- Output Size: 1.83260917663574 MiB
- Compilation Time: 1.48s

Process exited after 6.737 seconds with return value 0
Press any key to continue . . .

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 values A – Z: 65 – 90, a – z: 97 – 122, 0 – 9: 48 – 57 Special symbols 0 – 47, 58 – 64, 91 – 96, 123 – 127.

Code: using if else

```

1 #include<iostream>
2 using namespace std;
3 int main()
4 {
5     char ch;
6     cout<<"Enter any character :";
7     cin>>ch;
8     int a = (int)ch;
9     if (a>=97 && a<=122)
10    cout<<"Your character is Lower case alphabet ";
11    else if (a>=65 && a<=90)
12    cout<<"Your character is Upper case alphabet ";
13    else if (a>=48 && a<=57)
14    cout<<"Your character is Numeric ";
15    else
16    cout<<"Your character is Special character ";
17    return 0;
18 }
  
```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\WEEK 4\#5FindingPrime.exe
- Output Size: 1.83260917663574 MiB
- Compilation Time: 1.48s

Output:

```

1 #include<iostream>
2 using namespace std;
3 int main()
4 {
5     char ch;
6     cout<<"Enter any character :";
7     cin>>ch;
8     int a = (int)ch;
9     if (a>=97 && a<=122)
10    cout<<"Your character is Lower case alphabet ";
11    else if (a>=65 && a<=90)
12    cout<<"Your character is Upper case alphabet ";
13    else if (a>=48 && a<=57)
14    cout<<"Your character is Numeric ";
15    else
16    cout<<"Your character is Special character ";
17    return 0;
18 }
  
```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\WEEK 4\#6 CheckCharacterIfElse.exe
- Output Size: 1.8324499130249 MiB
- Compilation Time: 1.50s

Three console windows showing the output:

- Input: @ → Your character is Special character
- Input: g → Your character is Lower case alphabet
- Input: 9 → Your character is Numeric

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 values A – Z: 65 – 90, a – z: 97 – 122, 0 – 9: 48 – 57 Special symbols 0 – 47, 58 – 64, 91 – 96, 123 – 127.

Code: using switch

```

1 #include<iostream>
2 using namespace std;
3 int main()
4 {
5     char ch;
6     cout<<"Enter any character :";
7     cin>>ch;
8     int a = (int)ch;
9     switch(a)
10    {
11        case 97 ... 122 :
12            cout<<"Your character is Lower case alphabet ";
13            break;
14        case 65 ... 90:
15            cout<<"Your character is Upper case alphabet ";
16            break;
17        case 48 ... 57:
18            cout<<"Your character is Numeric ";
19            break;
20        default :
21            cout<<"Your character is Special character ";
22    }
23    // if (a>97 && a<=122)
24    // cout<<"Your character is Lower case alphabet ";

```

Output:

```

1 #include<iostream>
2 using namespace std;
3 int main()
4 {
5     char ch;
6     cout<<"Enter any character :";
7     cin>>ch;
8     int a = (int)ch;
9     switch(a)
10    {
11        case 97 ... 122 :
12            cout<<"Your character is Lower case alphabet ";
13            break;
14        case 65 ... 90:
15            cout<<"Your character is Upper case alphabet ";
16            break;
17        case 48 ... 57:
18            cout<<"Your character is Numeric ";

```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\WEEK 4\#6 CheckCharacterSwitch.exe
- Output Size: 1.8324499130249 MiB
- Compilation Time: 1.47s

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

Code:

```

1 #include<iostream>
2 #include<cmath>
3 using namespace std;
4 int main()
5 {
6     int a,b,c;
7     cout<<"Program to Find root of a Quadratic equation : "<<endl;
8     cout<<"ax^2 + bx + c = 0"<<endl;
9     cout<<"Enter value for a : ";
10    cin>>a;
11    cout<<"Enter value for b : ";
12    cin>>b;
13    cout<<"Enter value for c : ";
14    cin>>c;
15    float disc, root1, root2;
16    disc = sqrt((b*b)-(4*a*c));
17    if(isnan(disc)) cout<<"The discriminant is not valid number, there is no real roots exists.";
18    else
19    {
20        root1 = (-b + disc)/(2*a);
21        root2 = (-b - disc)/(2*a);
22        cout<<root1<<" and "<<root2<<" are the roots of your equation.";
23    }
24    return 0;
25 }

```

Output:

```

1 #include<iostream>
2 #include<cmath>
3 using namespace std;
4 int main()
5 {
6     int a,b,c;
7     cout<<"Program to Find root of a Quadratic equation : "<<endl;
8     cout<<"ax^2 + bx + c = 0"<<endl;
9     cout<<"Enter value for a : ";
10    cin>>a;
11    cout<<"Enter value for b : ";
12    cin>>b;
13    cout<<"Enter value for c : ";
14    cin>>c;
15    float disc, root1, root2;
16    disc = sqrt((b*b)-(4*a*c));
17    if(isnan(disc)) cout<<"The discriminant is not valid number, there is no real roots exists.";
18    else
19    {
20        root1 = (-b + disc)/(2*a);

```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\WEEK 4\#7 FindingRoots.exe
- Output Size: 1.83853340148926 MiB
- Compilation Time: 1.45s

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

Code:

```

1 #include<iostream>
2 #include<cmath>
3 using namespace std;
4 int main()
5 {
6     int n, lastDigit, count, Sum = 0;
7     cout<<"Enter a number : ";
8     cin>>n;
9     int a = n;
10    int b = n;
11    while(n>0)
12    {
13        n/=10;
14        count++;
15    }
16    while(a>0)
17    {
18        lastDigit = a % 10;
19        Sum += pow(lastDigit, count);
20        a/=10;
21    }
22    if(b==Sum) cout<<"Your number is Armstrong Number.";
23    else cout<<"Your number is not Armstrong number.";
24    return 0;
25 }

```

Output:

```

1 #include<iostream>
2 #include<cmath>
3 using namespace std;
4 int main()
5 {
6     int n, lastDigit, count, Sum = 0;
7     cout<<"Enter a number : ";
8     cin>>n;
9     int a = n;
10    int b = n;
11    while(n>0)
12    {
13        n/=10;
14        count++;
15    }
16    while(a>0)
17    {
18        lastDigit = a % 10;
19        Sum += pow(lastDigit, count);
20        a/=10;
21    }
22    if(b==Sum) cout<<"Your number is Armstrong Number.";
23    else cout<<"Your number is not Armstrong number.";
24    return 0;
25 }

```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\WEEK 4\#8 CheckArmstrongNumber.exe
- Output Size: 1.05559940338135 MiB
- Compilation Time: 1.47s