Lecture 4

I/0, operators, Cast, Library Functions

Taking Input in the Program

```
#include <iostream.h>
#include <conio.h>
void main(void)
{ clrscr();
    int a, b;
    cout<<"Enter first value ";
    cin>>a;
    cout<<"Enter second value ";
    cin>>b;
    cout<<a<<" + "<<b<<" = "<<a+b;
    getch();
}
```

Output

```
Enter first value 4
Enter second value 3
4 + 3 = 7
```

Temperature Conversion Program

```
#include <conio.h>
void main(void)
{   clrscr();
    int fah;
    cout<<"Enter Temperature in Fahrenheit ";
    cin>>fah;
    int cel = (fah - 32) * 5/9;
    cout<<"Equivalent temperature in Celsius is "<<cel;
    getch();
}
```

The const Qualifier

```
#include <iostream.h>
#include <conio.h>
void main(void)
{   clrscr();
    float radius;
    const float PIE = 3.14;
    cout<<"Enter radius of circle ";
    cin>>radius;
    float area = PIE * radius * radius;
    cout<<"Area of the circle is "<<area;
    getch();
}
```

Output

```
Enter radius of circle 0.5
Area of the circle is 0.785
```

Type Conversion

```
#include <iostream.h>
#include <conio.h>
void main(void)
{  clrscr();
    int count=7;
    float weight=200.5;
    double totalweight = count * weight;
    cout<<"Total weight calculated is "<<totalweight;
    getch();
}
```

Output : Total weight calculated is 1403.5

Type Conversion

- So, if we try to perform some Arithmetic operation on different data types, i.e. int, float and double etc then C/C++ calculates the result of such type of Arithmetic expression without giving any error.

Casts

- Cast is a way through which we change the type of the variable during the execution of the program for a limited time, because variables previously defined type can not calculate the values correctly due to its low range.

Casts

```
#include <conio.h>
void main(void)
{   clrscr();
    int test=25000; //range is -32,768 to +32,767
    test = (test * 10)/10;
    cout<<"Result is "<<test<<endl;
    test = 25000;
    test = (long(test)*10)/10;
    cout<<"Result now is "<<test;
    getch();
}
```

Output :

Result is -1214
Result now is 25000

Arithmetic Operators

- Following are the basic Arithmetic operators used in C/C++:

  i) + (Addition)

  ii) - (Subtraction)

  iii) * (Multiplication)

  iv) / (Division)

Arithmetic Operators

- Apart from the specified basic operators, there are some other operators used in C/C++, and are

v) % (Remainder or Modulus)
vi) ++ (Increment)
vii) -- (Decrement)
viii) += (Increment Assignment)
ix) -= (Decrement Assignment)
x) *= (Multiplication Assignment)
xi) /= (Division Assignment)
xii) %= (Remainder Assignment)

Arithmetic Operators

- Increment and Decrement operators can be used in two ways, i.e.
- **i) Prefix**
  - **++var, --var**
- **ii) Postfix**
  - **Var++, var--**

Basic operators

```
#include <iostream.h>
#include <conio.h>
void main(void)
{ clrscr();
    int a=5,b=2;
    cout<<"A = 5 and B = 2"<<endl<<endl;
    cout<<a<<" + "<<b<<" = "<<a+b<<endl;
    cout<<a<<" - "<<b<<" = "<<a-b<<endl;
    cout<<a<<" x "<<b<<" = "<<a*b<<endl;
    cout<<a<<" / "<<b<<" = "<<a/b<<endl;
    cout<<a<<" % "<<b<<" = "<<a%b;
getch();
}
```

Other operators

```
#include <iostream.h>
#include <conio.h>
void main(void)
{       clrscr();
        int a=5,b=2;
        a+=b;
        cout<<"a += b means value of a is "<<a<<endl;
        a=5,b=2;
        a-=b;
        cout<<"a -= b means value of a is "<<a<<endl;
        a=5,b=2;
        a*=b;
        cout<<"a *= b means value of a is "<<a<<endl;
        a=5,b=2;
        a/=b;
        cout<<"a /= b means value of a is "<<a<<endl;
        a=5,b=2;
        a%=b;
        cout<<"a %= b means value of a is "<<a<<endl;
        getch();
}
```

Prefix - Postfix

```
#include <iostream.h>
#include <conio.h>
void main(void)
{ clrscr();
    int a=5;
    cout<<"Value of A now is "<<a<<endl<<endl;
    cout<<"Prefix operator ++a gives "<<++a<<endl;
    cout<<"Value of a after Prefix is "<<a<<endl<<endl;
    cout<<"Postfix operator a++ gives "<<a++<<endl;
    cout<<"Value of a after Postfix "<<a<<endl<<endl;
    getch();
}
```

Relational Operators

- A relational operator compares two values. Comparisons involved in relation operators can be

i) < Less than
ii) > Greater than
iii) == Equals to
iv) != Not equals
v) <= Less than or equals
vi) >= Greater than or equals

- The result of comparison is either True or False. If a comparison provides 1, it means True and if it provides 0, it means False.

Relational Operators

```
#include <iostream.h>
#include <conio.h>
void main(void)
{   clrscr();
    int number;
    cout<<"Enter a Number ";
    cin>>number;
    cout<<"number < 10 = "<<(number<10)<<endl;
    cout<<"number > 10 = "<<(number>10)<<endl;
    cout<<"number == 10 = "<<(number==10)<<endl;
    getch();
}
```

Output

```
Enter a Number 10
number < 10 = 0
number > 10 = 0
number == 10 = 1
```

Using Library Functions

```
#include <iostream.h>
#include <conio.h>
#include <math.h>
void main(void)
{   clrscr();
    int a;
    cout<<"Enter a value ";
    cin>>a;
    cout<<"Square Root of "<<a<<" is "<<sqrt(a);
    getch();
}
```

Using Library Functions

Assignment

- Use at least 15 library function from more than one header files in a program.