University of Engineering and Technology Lahore
Department of Computer Science and Engineering

CS-142 Programming Fundamentals
Lab1

Target: Get acquainted with C++ and designing simple programs using it.

Practice

- To take input from user we use `cin`. So program to find the distance between two `x, y` coordinates will be like this:

```
using namespace::std;
#include<iostream>
#include<math.h>
int main()
{
float x1,x2,y1,y2;
cout<<"Enter x1";
cin>>x1;
cout<<"Enter y1";
cin>>y1;
cout<<"Enter x2";
cin>>x2;
cout<<"Enter y2";
cin>>y2;

 float temp=((x2-x1)*(x2-x1))+((y2-y1)*(y2-y1));
 float dist=sqrt(temp);
 cout<<"Distance is "<<dist;

return 0;
}
```

- In given code write the equation to convert temperature given in `Celsius` to temperature in `Fahrenheit`:

```
int main()
{
   float cel=45.7, fahren;
   fahren =                          ;
   cout<<cel<<" is equivalent to "<<fahren<<"  Fahrenheit";
   return 0;
}
```

Problem Set 1

1. Write a program that finds the `area` and `diameter` of a circle given its radius.

2. Write a program that finds the area of cylinder given its `height` and `radius`.

3. Write a program that takes two floats `a` and `b` and displays their `sum`, `difference`, `product` and `quotient`.

4. The ideal gas law is given by $PV = nRT$, where P is the pressure (in pascals), V is the volume (in cubic meters), n is the number of moles of gas, T is the temperature in Kelvin and R is the gas constant (equal to 8.314 $JK^{-1}mol^{-1}$. Write a program which takes as input a temperature *in Fahrenheit*, pressure in pascals, and n then computes the volume of the gas in cubic meters. You should first convert the temperature in Fahrenheit to Kelvin. [1]

5. Write a program that takes two values in separate variables and then swaps the values of these variables.

6. Write a program that takes the values of *Base* and *Perpendicular* of a right angled triangle from user and calculates the **Area** and **Hypotenuse** of it.

[1] K=$\frac{F-32}{1.8} + 273.15$