

Lab Exercise 7

IT1050 – Object Oriented Concepts

Semester 1, 2018

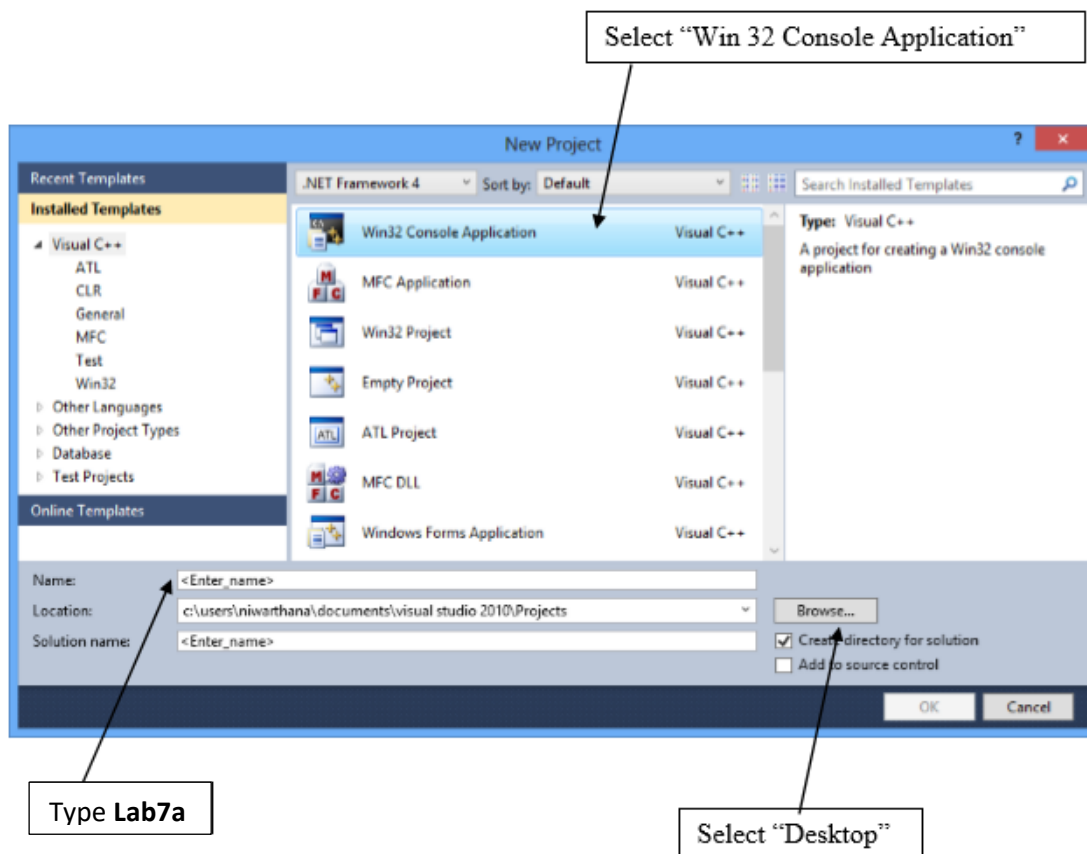
Objectives:

- Creation of classes and method calling in Object Oriented Programming concepts.

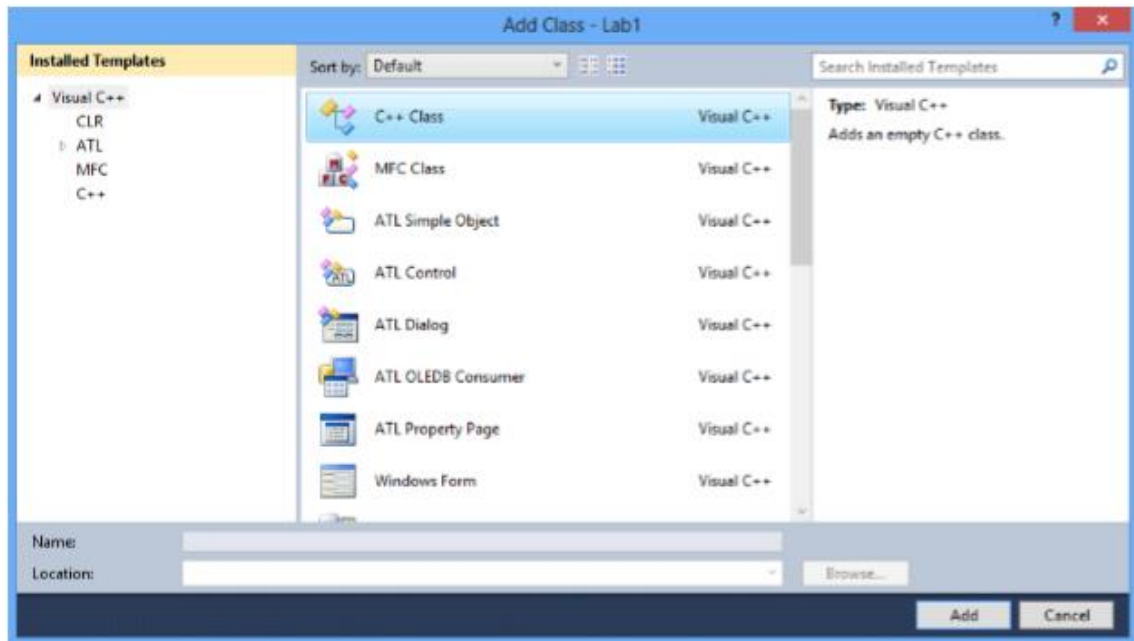
Exercise 1:

In Exercise 1 we will implement the *Circle* class that can be helpful to calculate the area of a garden.

- (a) In Visual C++, create a new Win32 Console Application project. Save the project in your Desktop. We will name the project as **Lab7a**

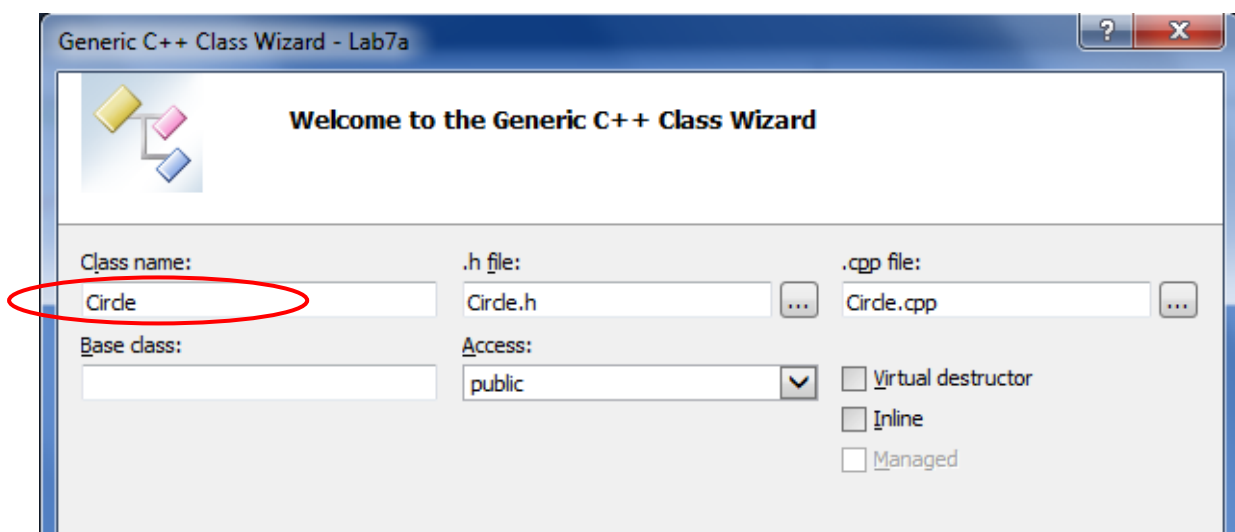


b) Add a new Class to the project from the main menu select **Project -> Add Class**



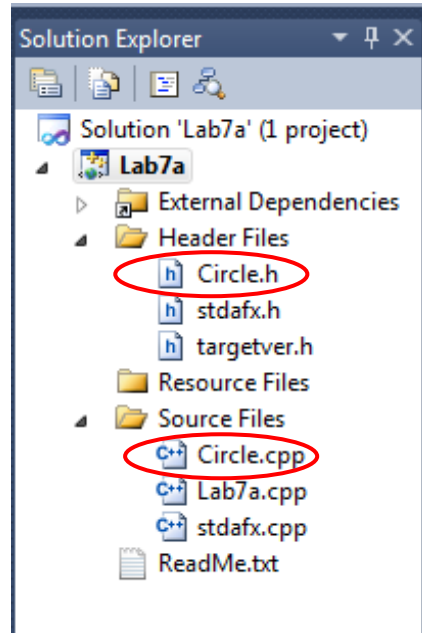
Select the C++ Class Template.

(b) We will create a Class called Circle. When you specify the Class Name the Wizard creates the header file and the .cpp file.



Click the "Finish" button at the bottom of the "C++ Class Wizard"

Then you can see the **Circle.h** and the **Circle.cpp** files in the “Solution Explorer”

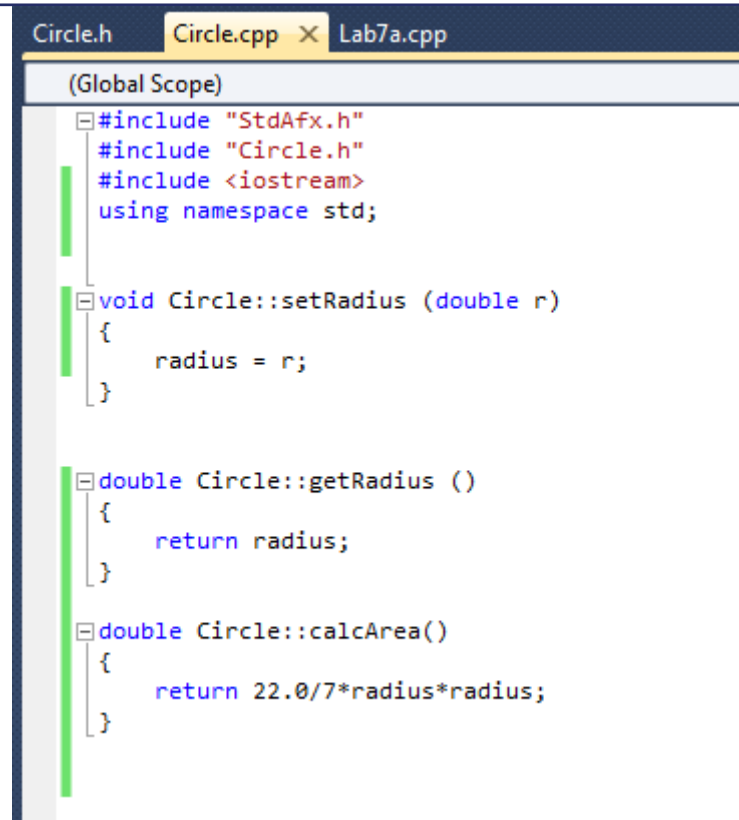


c) Write the definition of the Circle class in **Circle.h** header file. (Double click **Circle.h** from the Solution Explorer).

```
Circle.h  Circle.cpp  Lab7a.cpp
(Global Scope)
#pragma once
class Circle
{
private:
    double radius;

public:
    void setRadius(double r);
    double getRadius();
    double calcArea();
};
```

d) Implement Circle class in **Circle.cpp** (Double click on **Circle.cpp** from the Solution Explorer)



```
Circle.h  Circle.cpp  Lab7a.cpp
(Global Scope)
#include "StdAfx.h"
#include "Circle.h"
#include <iostream>
using namespace std;

void Circle::setRadius (double r)
{
    radius = r;
}

double Circle::getRadius ()
{
    return radius;
}

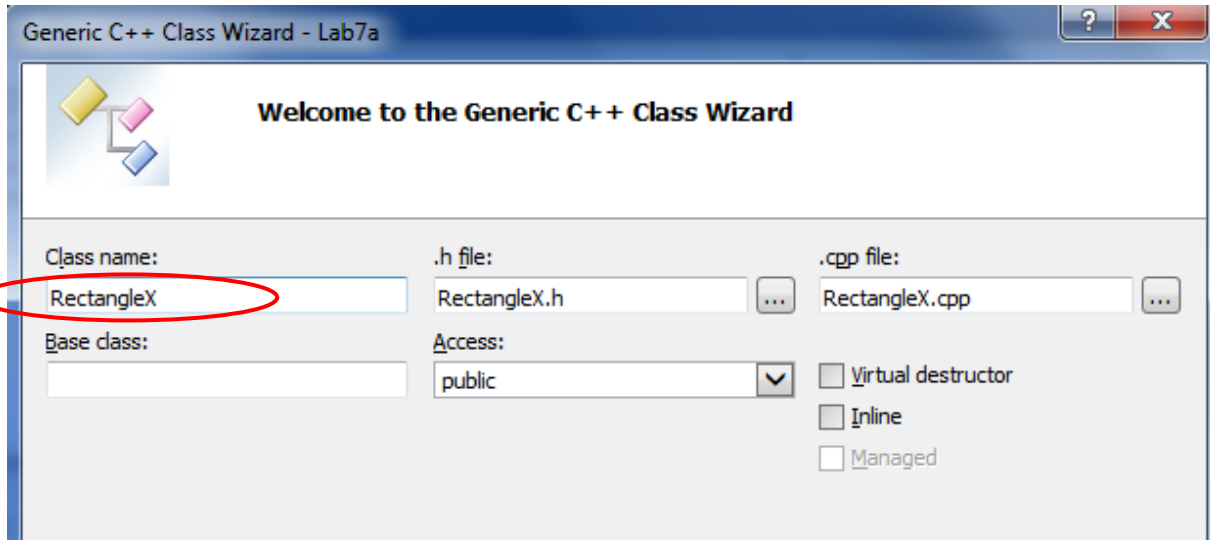
double Circle::calcArea()
{
    return 22.0/7*radius*radius;
}
```

Exercise 2:

In Exercise 2 we will implement the **RectangleX** class that can be helpful to calculate the area of a garden.

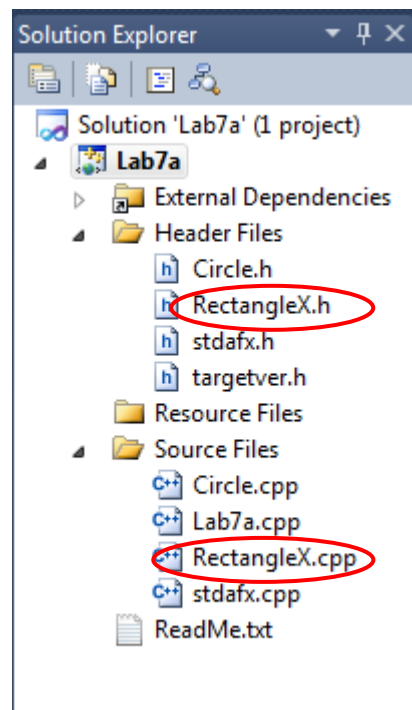
- Add another Class to the project from the main menu select **Project -> Add Class**. Select the C++ Class Template.
- We will create a Class called **RectangleX**. When you specify the Class Name the Wizard creates the header file and the .cpp file.

Note: Rectangle is a reserved word in C++. We can't use Rectangle as a class name instead of that use **RectangleX** as the class name

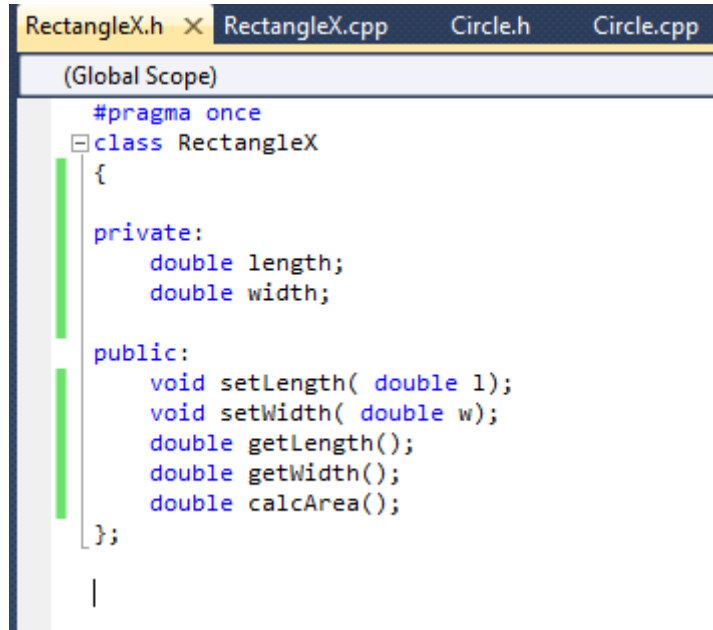


Click the “Finish” button at the bottom of the “C++ Class Wizard”

Then you can see the **RectangleX.h** and the **RectangleX.cpp** files in the “Solution Explorer”



- c) Write the definition of the **RectangleX** class in **RectangleX.h** header file. (Double click **RectangleX.h** from the Solution Explorer).



```
RectangleX.h X RectangleX.cpp Circle.h Circle.cpp
(Global Scope)
#pragma once
class RectangleX
{
private:
    double length;
    double width;

public:
    void setLength( double l);
    void setWidth( double w);
    double getLength();
    double getWidth();
    double calcArea();
};
```

- d) Implement **RectangleX** class in **RectangleX.cpp** (Double click on RectangleX.cpp from the Solution Explorer)

```

RectangleX.h  RectangleX.cpp  Circle.h  Circle.cpp
RectangleX
#include "StdAfx.h"
#include "RectangleX.h"
#include <iostream>
using namespace std;

void RectangleX::setLength ( double l)
{
    length = l;
}

void RectangleX::setWidth ( double w)
{
    width = w;
}

double RectangleX::getLength()
{
    return length;
}

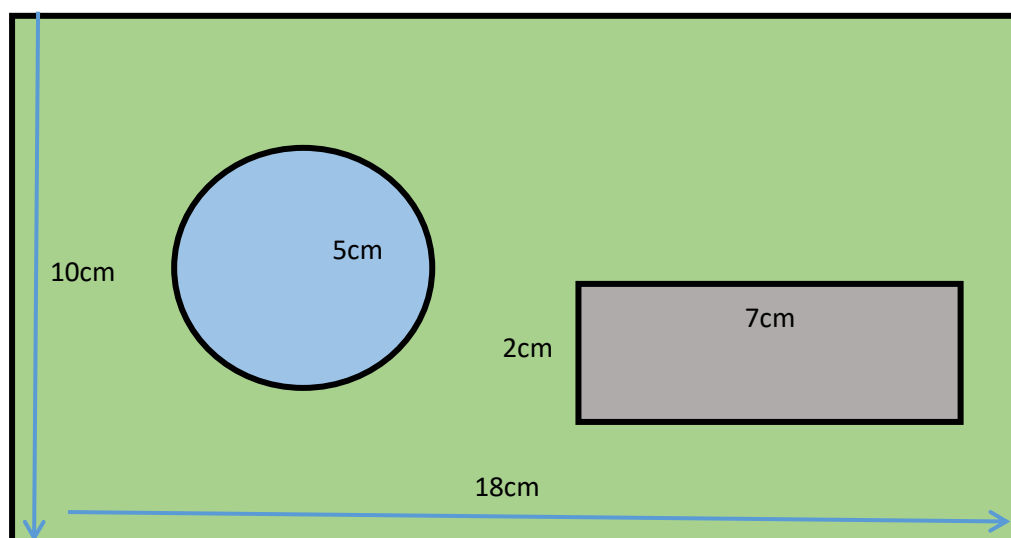
double RectangleX::getWidth ()
{
    return width;
}

double RectangleX::calcArea()
{
    return length * width;
}

```

Exercise 3:

Write the client program (main) in Lab07a.cpp to find the garden area (green colour) as shown in the diagram below.



Additional Exercise

- a) Implement a **Square** class that can be helpful to calculate the area of a square.

Follow the same steps as in Exercise 1 and Exercise 2 to implement the Square class accordingly. You may have to use,

Area of a square = length*length

- b) Modify the client program in Lab7a.cpp to add a square to the diagram as shown below and find the area shown in green.

