National University of Computer and Emerging Sciences



Lab Manual 05

Object Oriented Programming

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## Objectives

After performing this lab, students shall be able to:

* Objects vs Class, state vs behavior, access specifiers (Public, Private)
* Member functions (accessors, utilities, mutators etc)
* Constructors (default, overloaded).
* dynamic memory for data members as well as declaring objects.

**TASK 1:**

Create a simple “Rectangle” class that has two private data members - width and length, both should be positive numbers.

Provide following members functions:

* Write default and parameterized constructor
* **getWidth**, this function will return the width of rectangle
* **getLength**
* **setLength**, this function will take length as parameter and sets with the length of rectangle object
* **setWidth**
* **getArea**, this function will return the area of rectangle
* **rotateRectangle**, this function will turn width to length and length to width.
* **draw**, this function should draw a rectangle, for example if length =5 and width = 8 then rectangle should be drawn on console as shown below (5 rows, with 8 asterisk each row)
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**TASK 2:**

We want to design a program to manage the Cricketers batting records. You are given a file "data.txt", that contains the information of one player. Your task is to design a class "Player" and read data from the file in an object of "Player". File format is given below. File contains **TeamName(char \*), PlayerName(char\*), number of innings, number of not outs and scoreList(int\*).**  The number of entries in scoreList are equal to the **number of innings** of the player.

**File Format**

**teamName** **playerName** **noOfInnings** **noOfNotOuts** **scoreList**

Pakistan; Moin Ali; 15; 9; 45 4 37 0 2 41 1 49 65 56 76 18 67 9 17

**Tasks to do**

1. Write default constructor (Set suitable default values)
2. Write getters and setters of Player class
3. Write a **member** function that returns the average score of the player using formula

Avg = totalScore / (noOfInnings - noOfNotOuts)

1. Write a **constructor** that takes “file name” and sets the value of each data member
2. Write a **member** function that prints the details of the player as

**Team Name:** Pakistan

**Name:** Moin Ali

**Number of Innings:** 15

**Average score:** 35.67

1. Write a **member** function that receive an object of Player and compare this player with input player. A player will be good if he has greater avg score. Print Player details in the function which is better. Data is given in separate files
2. Write a **global** function **void readData(char\* filename, Player& obj)** that sets obj of Player. Use the setters/getters to set the value of each data member.

**Data1.txt**

Pakistan; Moin Ali; 15; 9; 45 4 37 0 2 41 1 49 65 56 76 18 67 9 17

**Data2.txt**

Bangladesh; Sakib Ul Hassan; 12; 4; 41 2 55 3 2 7 4 89 90 61 34 56