National University of Computer and Emerging Sciences

Lab Manual 05
Object Oriented Programming

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1.1 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)
  - ********
  - ********
  - ********
  - ********
  - ********

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

$$Avg = totalScore / (noOfInnings - noOfNotOuts)$$

4- Write a **constructor** that takes "file name" and sets the value of each data member

5- 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

6- 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

7- 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