CL-217
Object Oriented Programming

Lab No 6

Objectives:

- Structures
- Nested Structures
- Dynamic array of Structures
- Class, object and member functions
- Class private data members

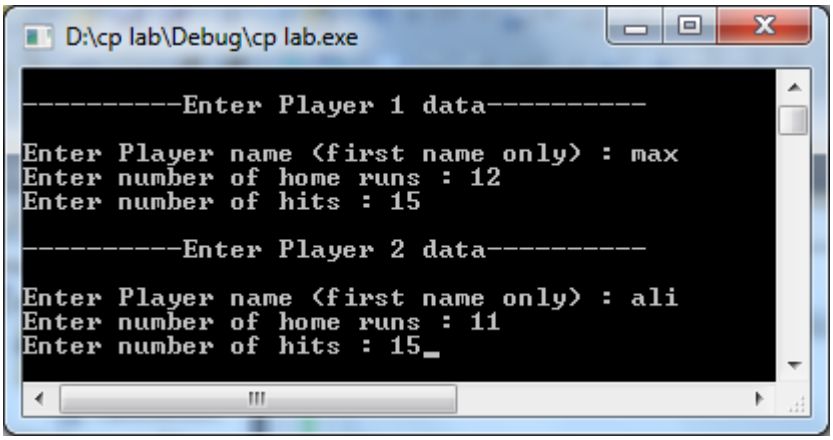
Note: Carefully read the following instructions (*Each instruction contains a weightage*)

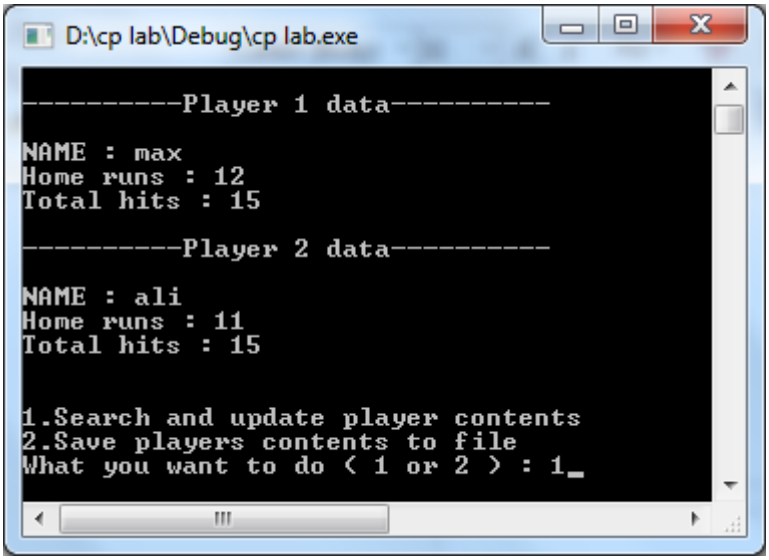
1. There must be a block of comments at start of every question's code by students; the block should contain brief description about functionality of code.
2. Comment on every function about its functionality.
3. Use understandable name of variables.
4. Proper indentation of code is essential
5. Write a C++ statement(s) for each of the following task one after the other, in the same order.
6. Make a Microsoft Word file and paste all of your C++ code with all possible screenshots of every **task outputs in MS word and do not submit .cpp file with word file**.
7. First think about statement problems and then write/draw your logic on copy.
8. After copy pencil work, code the problem statement on MS Studio C++ compiler.
9. At the end when you done your tasks, attached C++ created files in MS word file and make your submission on Microsoft teams. (Make sure your submission is completed).
10. Please submit your file in this format 19F1234_L4.
11. Do not submit your assignment after deadline.
12. Do not copy code from any source otherwise you will be penalized with negative marks.

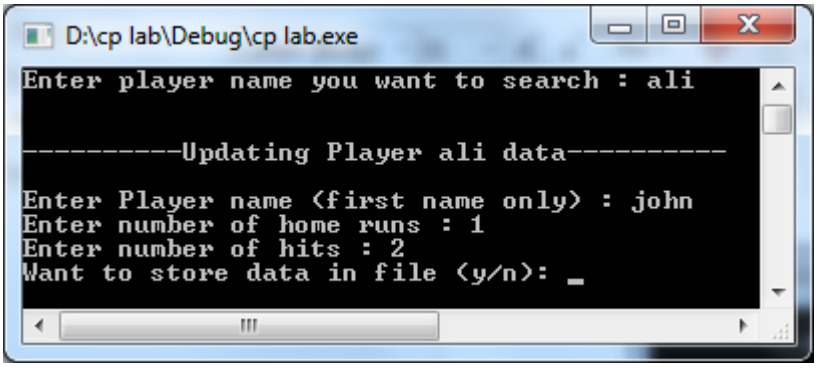
Problem 1: | Structured array

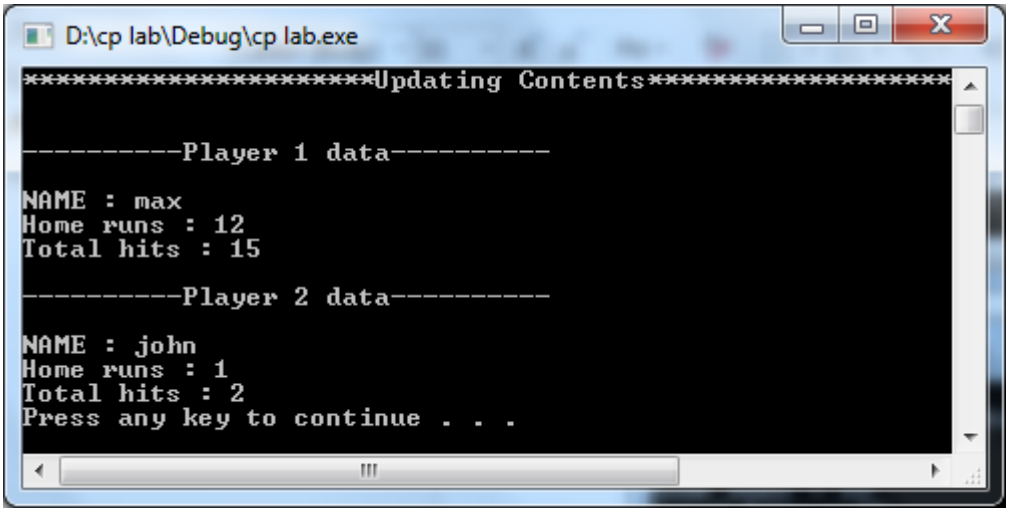
Write a program that declares a struct to store the data of a baseball player **(player's name, number of home runs, and number of hits**). Declare an array of 3 components to store the data of 3 baseball players. Your program must contain a function to **input** data and a function to **output** data. Add functions to **search** the array to find the index of a specific player and **update** the data of a player. Before the program terminates, give the user the option to save data in a

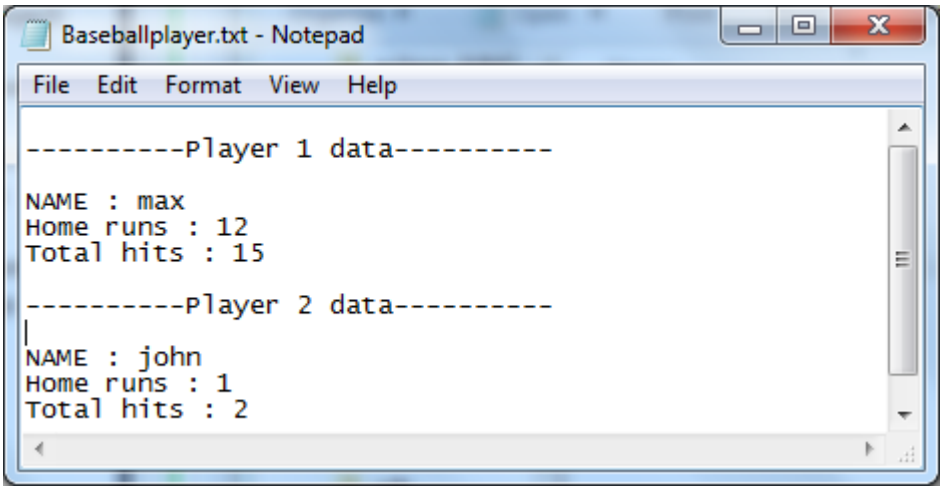
file (You may assume that input data is stored in a file.). Your program should be **menu driven**, giving the user various choices.











Problem 2: | (Nested structure, pointers)

In FAST-NU Faisalabad our Director want to make a Data Base system for student of Computer Science Department. The data base must contain

1) Name of Student

2) Address (House #, Street #, City Name, Province Name).

3) Age

4) GPA

Create a structure of **Student** which must has nested structure of **Address**. Take input for as many students as user wants. Then out put the final data in proper order.

Problem 3: | (Pointer to structure, Structure variable array, dynamic memory allocation)

A text file named "myfile.txt" contains matrix of any size, write a program that reads matrix from the file and count the number of rows and columns of the matrix. Then print the matrix, number of rows and columns on the console.

Problem 4: | (Unions)

Write a C++ program for the following problem:

Create a union Person_Record which will contain three members i.e. Name, Address and Phone.

For input purpose, give user the option to enter either name, address or phone number. If the user chooses to input name set the field to 1, if the user choses to input address set the field to 2 and if the user choses to input phone set field to 3.

Problem 5: | (Class, object and member functions)

Design a class called Date. The class should store a date in three integers: month, day, and year. There should be member functions to print the date in the following forms:

12/25/10

December 25, 2010

25 December 2010

Demonstrate the class by writing a complete program implementing it.

Note: Do not accept values for the day greater than 31 or less than 1. Do not accept values for the month greater than 12 or less than 1.

Problem 6: (Classes, objects, Private data members, Member functions)

Write the definition of a class person. Add the following 5 attributes (private) to the person class.

- Name: String
- Age: int
- Male: bool

- Occupation: string
- Cook: bool

Add the following functions to the class:

- setName: sets the name to the passed string
- getName: returns name
- setAge: sets the age to the passed integer
- getAge: returns age
- isMale: returns true if male is true else false
- isFemale: returns false if male is true
- setOccupation: returns a string
- getOccupation: returns a string
- canCook : returns true if cook is true else false

1. Create an object p1 of class person

   Input the values of all attribute in main. Set all the attributes and access all the attributes for p1 object and show the result of each method call in proper form.

2. Now create another object p2 and repeat step

Proper code indentation will hold extra marks!

Best of luck ☺

You are done with your exercise, submit on Teams at given time.