"Heaven's Light is Our Guide"

Rajshahi University of Engineering & Technology, Rajshahi

Department of Electrical & Computer Engineering
(ECE-20)

Course Code: 1204
Course Title: Object Oriented Programming Sessional
Assignment: Using Java

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Submitted To
Rakibul Hassan
Assistant Professor
Dept. Of Electrical & Computer Engineering

Submitted By
Name: Md. Tajim An Noor
Roll: 2010025
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Problem:
Create a program in java that will take 3 inputs of football players. Inputs are: name, age, country, goal scored, distance covered. Then it'll print all info along with total match played, average goal scored, average distance covered and average speed.

Methodology:
Using OOP, this problem can be easily solved. Since java is a object oriented programing, to solve this problem, a class was first created named player. This class contains many variables which are mostly either information of the player(s) or some other information. It also contains method functions to calculate certain values or to return certain values.
Then in main(), first, it was asked how many players were gonna be added in the program. Then an array of object was created. Then using a for loop, inputs (name, age and country) were taken and using the constructor of the player class, the players' file-ish things were created.
Then using another method, further information such as goals, distance, minutes etc. were added. And lastly using another method of the class, the information was all printed in the console.

Code implementation:
Class:

```
package Labs.PlayerStats;

public class player {
    private String playerName, playerCountry;
    private int playerAge, goalScored, distanceCovered, minsPlayed, match;
    private double avgGoal, avgSpeed, avgDistance;

    public player(String playerName, int playerAge, String playerCountry) { //
constructor
        this.match = this.goalScored = this.distanceCovered = this.minsPlayed = 0;
        this.playerName = playerName;
        this.playerAge = playerAge;
        this.playerCountry = playerCountry;
    }

    public String srcName() { // to search for player later
        return playerName;
    }

    public void addMatch(int goalScored, int distanceCovered, int minsPlayed) { //
to add info
        this.match++;
        this.goalScored += goalScored;
        this.distanceCovered += distanceCovered;
        this.minsPlayed += minsPlayed;
    }

    public void showInfo() { // to show info
        System.out.println("Name: " + playerName);
        System.out.println("Age: " + playerAge);
        System.out.println("Country: " + playerCountry);
        System.out.println("Matches played: " + match);
```

```
        System.out.println("Goals Scored: " + goalScored);
        System.out.println("Disctance Covered: " + distanceCovered);
        System.out.println("Minuites Played: " + minsPlayed);
        avgStat();
        System.out.println("Average Goal: " + avgGoal);
        System.out.println("Average Speed: " + avgSpeed);
        System.out.println("Average Distance Covered: " + avgDistance);
    }

    public void avgStat() { // to find and store calculated values
        avgGoal = (float) goalScored / match;
        avgSpeed = (float) distanceCovered / minsPlayed;
        avgDistance = (float) distanceCovered / match;
    }

}
```

Main():

```
package Labs.PlayerStats;

import java.util.*;

public class StatProg {
    public static void main(String[] args) { // main()
        try (Scanner input = new Scanner(System.in)) {
            String playerName, playerCountry, srcName;
            int playerAge, goalScored, distanceCovered, minsPlayed, plNum, j, t;
            System.out.print("How many palyers?\n-> ");
            plNum = input.nextInt();
            input.nextLine();
            player[] footballer = new player[plNum + 2]; // array of objects
            for (int i = 0; i < plNum; i++) {
                System.out.println();
                System.out.print("Enter name: ");
                playerName = input.nextLine();
                System.out.print("Enter age: ");
                playerAge = input.nextInt();
                input.nextLine();
                System.out.print("Enter country: ");
                playerCountry = input.nextLine();
                footballer[i] = new player(playerName, playerAge, playerCountry); //
new object initializatiopn with constructor
            }
            System.out.println();
            System.out.print("Add info? (1 = Yes, 0 = No)\n-> ");
            t=input.nextInt();
            input.nextLine();
            while (t == 1) {
```

```
                System.out.println();
                System.out.print("Enter player to add info: ");
                srcName = input.nextLine();
                for (j = 0; j < plNum; j++) {
                    if (footballer[j].srcName().equals(srcName)) {
                        break;
                    }
                }
                System.out.print("Enter goals: ");
                goalScored = input.nextInt();
                System.out.print("Enter distance: ");
                distanceCovered = input.nextInt();
                System.out.print("Enter minuites played: ");
                minsPlayed = input.nextInt();
                input.nextLine();
                footballer[j].addMatch(goalScored, distanceCovered, minsPlayed);
                System.out.println();
                System.out.print("Add more info? (1 = Yes, 0 = No)\n-> ");
                t = input.nextInt();
                input.nextLine();
            }
            for (int i = 0; i < plNum; i++) {
                System.out.println();
                footballer[i].showInfo();
            }
        }
    }
}
```

Problem: Print out 100 elements of an array. The first 3 index holds 0, 1, 1 respectively. Then the indexes will hold the sum of the previous three indexes.

Methodology: This is a simple problem. To solve this BigInteger was used. Since a normal integer value can hold upto 64 bits of value, solving this problem with normal int will give us garbage values as output. That's why a new data type named BigInteger was used to solve this problem. BigInteger can contain large number that can exceed 64 bits.
First an array of BigInteger data type was declared. The size will be decided by the user and taken via user input, so a Scanner object was created and the size was stored in an integer variable. Then the BigInteger array was declared. The first three indexes were initialized manually to hold 0, 1 and 1 in them and they were printed. Then using a for loop, starting from 3, the indexes were printed out. Before printing using a math equation, the index's value was assigned.

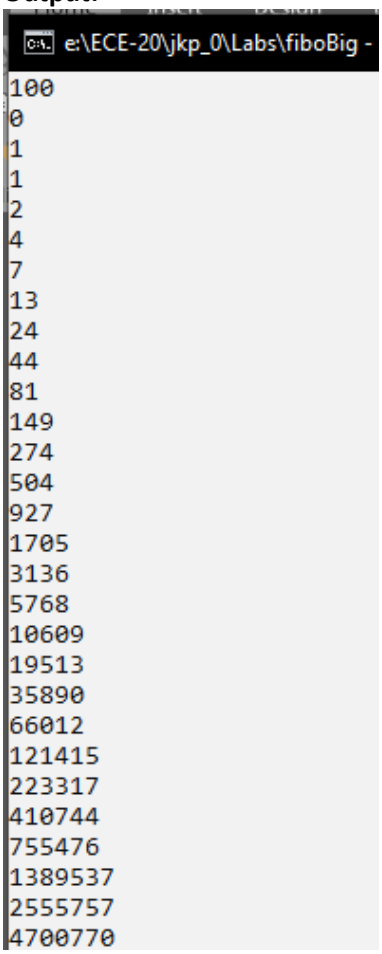
Code Implementation:

```
package Labs.fiboBig;

import java.math.BigInteger;
import java.util.*;
```

```java
public class fiboBig {
    public static void main(String[] args) {
        try (Scanner input = new Scanner(System.in)) {
            int c = input.nextInt();
            BigInteger[] a = new BigInteger[c];
            a[0] = BigInteger.ZERO;
            a[1] = a[2] = BigInteger.ONE;
            System.out.println(a[0]);
            System.out.println(a[1]);
            System.out.println(a[2]);
            for (int i = 3; i < c; i++) {
                a[i] = a[i - 1].add(a[i - 2]).add(a[i - 3]);
                System.out.println(a[i]);
            }
        }
    }
}
```

Output:



References:

https://www.geeksforgeeks.org
https://www.w3schools.com/java