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ICS 102: Introduction to Computing I
Term 161 - Lab Project Report

- ***A glance about the Project***

We made an Online Test System to provide to an already registered set of students. The user would login to access the system. In case of incorrect credentials, the system will not terminate and will prompt for a reattempt (unlimited times until a successful login). After a successful attempt, the system will view a menu and the user is required to enter a choice:

```
Welcome to the Online Test System...
Please choose an action:
 1-Login
 2-Exit
1
Please Enter your Name and Password:
Name: Hamza
Password: ha3456
Wrong attempt, try again:
Please Enter your Name and Password:
Name: Hamza
Password: ha1234
welcome Hamza!
Please enter the number of the choice you want from the following menu:
 1-Take a test.
 2-View Leaderboard.
 3-View my profile.
 4-Logout.
```

After that the menu will be prompted after the end of every choice.

- **Snapshot of Each Menu Choice:**

1. Take a test.

```
 2-View Leaderboard.
 3-View my profile.
 4-Logout.
1
--------------------------------------------------------------------------
Your test has started now, you have 10 minutes...
Good Luck…
                                                                (10 mins remaining...)
1) To compare two strings lexicographically the String method _____________ should be used.
(a)equals
(b)equalsIgnoreCase
(c)compareTo
(d)==

C
                                                                (7 mins remaining...)
2) The program included in the Java SDK that allows a programmer to separate the class interface from the class implementation is called:
(a)javac
(b)java
(c)javadoc
(d)none of the above

A
                                                                (7 mins remaining...)
3) A _____________ statement terminates the current iteration of a loop.
(a)Break
(b)Continue
(c)Switch
(d)Assert

A
                                                                (4 mins remaining...)
4) null can be used:
(a)to indicate a variable has no real value
(b)in a Boolean expression with ==
(c)as a placeholder
(d)all of the above

B
Time's up !!!
------------------------------------------------------
Your final result is 1 / 10
------------------------------------------------------
```

2. View Leaderboard.

```
Please enter the number of the choice you want from the following menu:
 1-Take a test.
 2-View Leaderboard.
 3-View my profile.
 4-Logout.
2
------------------------------------------------------------------------
ID      Name            Highest Score   #of Attempts
45      Ahmed           10              5
9       Khalid          10              3
8       Mohammed        9               6
3       Omar            7               3
13      mustafa         7               1
4       Mansour         6               19
14      saad            6               1
5       Yahya           5               14
15      fahad           5               7
12      abdulrahman     4               2
Average                 6.9             6.1
------------------------------------------------------------------------
```

3. View my profile.

```
Please enter the number of the choice you want from the following menu:
 1-Take a test.
 2-View Leaderboard.
 3-View my profile.
 4-Logout.
3

------------------------------------------------------------------------
Your ID is: 6
Your name is Hamza
Your  highest score is: 1
You have taken this test 9 times.
------------------------------------------------------------------------
```

4. Logout and Exit.

```
Please enter the number of the choice you want from the following menu:
 1-Take a test.
 2-View Leaderboard.
 3-View my profile.
 4-Logout.
4

Please choose an action:
 1-Login
 2-Exit
2
Thank you for using this system...
```

- **We made two Classes which named Student and Exam**

1. **Exam Class:** this class contains the main method and a list of methods which we called in the main method, the methods will be explained below.

```
public static void main(String[] args) throws FileNotFoundException {

//This method stores arrays of Questions and Answers from TestBank file then print it Randomly.
public static void takeQuestion() throws FileNotFoundException {

//This method takes-in a method of an array of students -getStudentsBo()-, takes the TOP10s, calculate the average, and  display it.
public static void displayAllStudents(){

//This method takes-in an array of students from a StudentsDataUpdate for the leaderBoard + Profile and calls the method -sortStudent().
public static Student[] getStudentsBo(){

//This method takes-in an array of students from a StudentsData for THE login issue + Profile.
public static Student[] getStudentsLog() {

//This method will update the scores and numOfattempets then print it out in StudentsDataUPDATE file.
public static void updateStudent(Student[] Student){

//This method related to the Timer.
private static final int setInterval() {

//This method takes-in an array of students, sort it using selection sort algorithm.
public static void sortStudents(Student[] sArray) {
```

- **We made several methods that are in Exam Class and are displayed below:**

1. **takeQuestion ():** This method stores arrays of Questions and Answers from TestBank file then print it Randomly.

2. **displayAllStudents ():** This method takes-in a method of an array of students -getStudentsBo ()-, takes the TOP10s, calculate the average, and display it.

3. **getStudentsBo ():** This method takes-in an array of students from a StudentsDataUpdate file for the leaderBoard and Profile and uses the method -sortStudent ().

4. **getStudentsLog ():** This method takes-in an array of students from a StudentsData file for THE login issue and Profile.

5. **updateStudent (Student [] Student):** This method will update the scores and numOfattempets then print it out in StudentsDataUPDATE file.

6. **sortStudents (Student [] sArray):** This method takes-in an array of students, sort it using selection sort algorithm.

7. **timer. scheduleAtFixedRate (new TimerTask () {}, period, delay):** this is the actual timer method with three parameters (new TimerTask () {}, period, delay).

8. **setInterval ()**: This method is related to the Timer method.

2. **Student Class:** this class contains two constructors and five getters and method to print which is toString and two methods to update Scores and numOfAttempts.

```
   public Student(int ID, String name,String pass, int score,int attempt ){ // this Constructor for The Login + Profile
       this.ID = ID;
       this.name = name;
       this.pass = pass;
       this.score = score;
       this.attempt = attempt;
   }
   public Student(int ID, String name, int score,int attempt ){    // this Constructor for The leaderBoard + UpdateProfile
       this.ID = ID;
       this.name = name;
       this.score = score;
       this.attempt = attempt;
   }
   public int getID() {
   public String getName() {
   public String getPass() {
   public int getScore() {
   public int getAttempt() {

    public String toString() {
       return getID() + "\t" + getName() + "     \t" + getScore() +"\t\t"+ getAttempt();
   }
 public void updScore(int correct) {
     if (correct > this.score) {
         int temp;
         temp = this.score;
         this.score = correct;
         correct = temp;
          }
      }

 public void updAttempt(int attempt) {
     this.attempt += attempt;
      }
}
```

End of the Report