Object Oriented Programming
CSE 1115
Assignment

- You must write a report (Hardcopy) consisting of the solution. At the front page of your report you have to mention

1. **Course Title, Course Code and Course Teacher**
2. **your full name;**
3. **student ID;**
4. **section;**
5. **Semester;**
6. **Submission Date;**
7. **And your serial number in class. You will find that in the grade sheet that shared with you in classroom.**

Deadline: Check ELMS

You have to submit

- the **scanned handwritten copy of your assignment - pdf file". (Don't Submit any softcopy)**

Please remember this is a strict deadline. Under no circumstances, this deadline will change. Failure to submit during the deadline will result in **penalty marks.**

• DO NOT COPY from the internet, seniors, batchmates, or any other sources. Each of the assignments will be evaluated with a viva. You must be able to explain your code. Any plagiarism will be severely penalized. If found out, there will be -100% marks reduction.

• DO NOT PUT the question in chatGPT and ask it to write the answer. If found out, there will be -100% marks reduction.

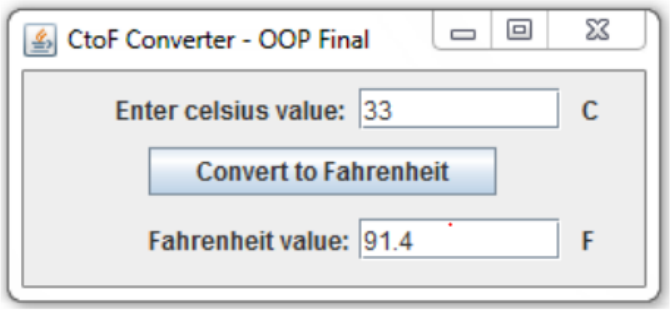
Answer the following questions:

Ques 1. Create a GUI application where clicking a button will check/uncheck a CheckBox and also change the text of the button. Clicking the button will

b. Check/Select the checkbox if it is not checked/selected. Also set the text of the Button to "UnCheck".

c. Uncheck/Unselect the checkbox if it is checked/selected. Also set the text of the Button to "Check".

Ques 2. You are required to complete a Java GUI application that has the functionality of converting temperature from Celsius value to Fahrenheit value. The application takes Celsius value from one JTextField (namely textFieldCelsius), converts this value into Fahrenheit value on click of a JButton (namely btnConvert) and displays the Fahrenheit value into another JTextField(namely textFieldFahrenheit). Suppose necessary code for GUI creation is already provided. Formula for converting C to F: F= (Cx(9/5)) + 32 .



Ques 3. Write necessary code to design a GUI like fig.1 and after clicking the button show a message like fig.2.

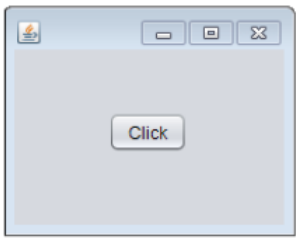


fig. 1

fig. 2

Ques 4. Write a JAVA program that contains two buttons, Button 1 and Button 2.

i) Initially Button 1 has Red background and Button 2 has Blue background. On clicking Button 1, if Button 1's background is Red, it changes to Green. If Button 1's background is Green, it changes to Red.

ii) On clicking Button 2, if Button 2's background is Blue, it changes to Cyan. If Button 2's background is Cyan, it changes to Blue.

Ques 5. Consider the following code:

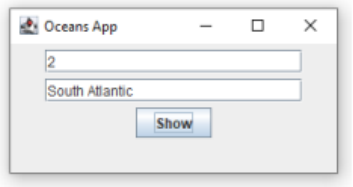
```
class GUITest{
    public static void main(String[] args) {
        JFrame f = new JFrame("Oceans App");
        f.setSize(300, 150);
        f.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        f.setLayout(new FlowLayout());

        String [] oceans = {"Arctic", "North Atlantic", "South Atlantic",
                "Indian", "North Pacific", "South Pacific", "Antarctic"};

        JTextField tf1 = new JTextField(20);
        JTextField tf2 = new JTextField(20);

        // Your code here

        f.setVisible(true);
    }
}
```



The code contains a String array named **oceans**. You should complete the code so that a GUI is generated as shown in the image. The GUI contains 2 JTextFields, **tf1** and **tf2** and a JButton **Show**. The user inputs an **index** in the range 0-6 in **tf1** and clicks the **Show** button. Then the ocean name in the given **index** of the **oceans** array is shown in tf2. Implement the mechanism of the **Show** button also. Now complete the code.

Ques 6. Write a program for a large company to find the employees who are eligible for an increment. Do the following operations.

a) Take n number of employees' name, id, and last 6 months' performance scores as user input from keyboard. (Assuming you are taking input from user)

b) Now calculate each employee's average score and write all the employee's information in a file named 'employee.txt'. Put each information in separate lines as follows-

Employee1 name
Employee1 id
Employee1 average score
Employee2 name
Employee2 id
Employee2 average score
……..

c) Now read the average score of each employee from the 'employee.txt' file. Find out which

employee scored more than 75 and write down their names on a separate file called ‘increment.txt’.

Ques 7

a) Suppose, you are given a string. Now create an ArrayList of characters containing each character of the string. Then change the third element(if it exists) of the ArrayList to ‘z’. The program should then print out the contents of the list. **Write necessary codes.**
[help: use set(index, element) function to set an element

b) You are given a class “Point” having two instance variables x and y. You are also given an ArrayList of type “Point”. **Write necessary codes** to sort the ArrayList with respect to “x + y” in descending order using the “Collections.sort(<ArrayList>)” function.

Ques 8

You are given a file named “person.txt”. Each line of the file contains information about a person, containing id, age and nationality (divided by forward slash). The file looks like this:

```
1/20/Bangladeshi
2/23/Argentinian
3/35/Portuguese
```

Write a function that will return the id of a person having maximum age (If there are multiple persons with maximum age, return any one of them).

Ques 9

Suppose you have a file “**id.txt”** that contains the ids of multiple UIU students. Write a java code to write the odd ids in the id.txt file to another file called **“odd.txt”** and the even ids in the id.txt file to another file called “**even.txt**”. Check the following example for clarification:

id.txt	odd.txt	even.txt
011001212 011002213 011003214 011004215 011005216	011002213 011004215	011001212 011003214 011005216

Ques 10

Create a file named "**e.txt.**" Take 5 strings as input from the user and write them to the "e.txt" file using **BufferedWriter**. Read the data from the "e.txt" file using **BufferedReader** and form a single sentence with words separated by a single space. Write this sentence to a single line in a new file named "**f.txt**" using **BufferedWriter.**

Ques 11

Write a program to calculate the profit for each product. The product list and corresponding information can be found in the given input file "**AnnualSell.txt**". Write output to "**Profit.txt**" file in the following format:

Item Profit
... .
... .

Total Profit:

Max Profit Item

Exception Handling:

- Handle All file IO Exception

- If any of the price is less than zero then throw InvalidPriceException.

- If TotalUnitSold is less than Zero then throw TotalUnitSoldMnimumBoundException.

- If TotalUnitSold is greater than 1000 then throw TotalUnitSoldMaximumBoundException

- Create ncecessary custom Exception classes

- Close all file after the completion of operation

……

AnnualSell.txt

Item	UnitCost	UnitSellingPrice	TotalUnitSold
Pen	8	10	500
Paper	8.5	10	450
File	50	55	100
Java Book	250	-260	75
Mouse	300	298	65
Ruler	5.5	6	600
Pencil	7	7.5	45