CTU training solutions

CAREER SUCCESS STARTS AT CTU

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<table>
<tr><td colspan="7">Faculty of Information Technology</td></tr>
<tr><td rowspan="4">I declare that I am familiar with, and will abide to the Examination rules of CTU

_____
Signature</td><td colspan="6">SUBJECT NAME: BEGINNER JAVA
SUBJECT CODE: JD521</td></tr>
<tr><td colspan="3">Summative Assessment
Duration:
Date:
Total Marks: 200
Total pages: 8</td><td colspan="3">Examiner: Mr. Isaac L
Moderator: Mrs. Lindeka M</td></tr>
<tr><td colspan="6">Student number</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="3">Surname:</td><td colspan="3">Initials:</td><td>/</td><td>%</td></tr>
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Instructions:

- Recall keeping a copy of all submitted assignments.
- All work must be typed using Microsoft Word and convert the word document to PDF before uploading to COLCampus.
- Kindly note that you will be evaluated on your writing skills in all your assignments.
- Negative marking will be applied if you are found guilty of plagiarism, poor writing skills or if you have applied incorrect or insufficient referencing.
- Each assignment must include a cover page, table of contents and full bibliography, based on Harvard referencing style.
- Students are not allowed to offer their work for sale or to purchase the work of other students. This includes the use of professional assignment writers. If this should happen, CTU training Solutions reserves the right not to accept future submissions from a student.
- Spelling, style, fonts, font size, line spacing

    - Please copy the questions onto your answer sheet (single space the questions), and make sure to use numbers to indicate the answers to each question.
    - Always use a spell checker before you submit assignments! We reserve the right to deduct point for each obvious misspelling.
    - Always double-space your answers.
    - Please use Arial (or Calibri (Body)), 12 points as the font for your assignments. Certain fonts have been known not to come across in the PDF files.
    - Use only black or blue font face colors. Do not use red!

Section 2

For this section you are only allowed to use NetBeans failing to comply your summative will not be marked.

Question 1 — 120 Marks

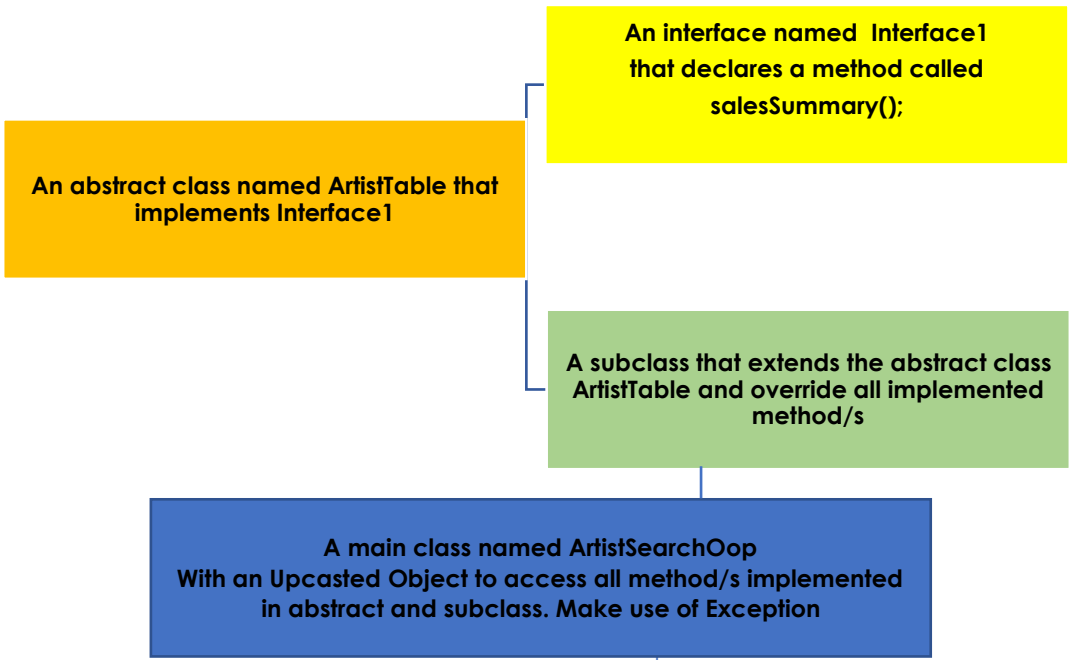
Scenario

You have been tasked to create a program named "**artistSearchOop**" that will allow a user to search for an artist from a table and display the artist information including the Artist name, the artist DVD sale, the artist CD sale, the artist Blu Ray Sale, and the total sale for that specific Artist. You have been given Table 1 which represents the Sales Summary of artists sales.

Table1: Sales Summary

```
run:
Artist Name          DVD Sales          Blu Ray Sales          CD Sales
_____________________________________________________________________
1. Master KG          900000              800000               500000
2. DJ B Coffee        700000              500000               500000
3. Bruno Mars         800000              100000               50000
4. F Fighters         100000              200000               200000
5. T Swift            300000              100000               50000
_____________________________________________________________________
        Total         2800000             1700000              1300000
```

Program Structure



Program Requirements

1. The **interface** declares a method called **salesSummary();**
2. The **abstract** class will have the following:
   a. The abstract class declares the following variables **int rowSum** **int colSum** and these variables should be initialized in the abstract constructor
   b. Thae abstract class also Implements the **salesSummary()**. The **salesSummary()** method will declare two arrays as follows:

   - a multidimensional array named **artistSales** using below information:

900000	800000	500000
700000	500000	500000
800000	100000	50000
100000	200000	200000
300000	100000	50000

   - a one-dimensional array named **artistNames** using below information:

```
Master KG
DJ B Coffee
Bruno Mars
F Fighters
T Swift
```

   c. The **salesSummary()** method should calculate the total of each column in the **artistSales** array and display a combined (**artistSales and artistNames**) table with the names and sales as shown in **Table 1**.

[40 Marks]

3. The **subclass** class will have the following:
   a. The subclass declares a variable named int **Index** and this should be initialized in the subclass constructor.
   b. **Use of super()** to access superclass constructor.
   c. Override the **salesSummary()** method from the abstract class
   d. Overload the **salesSummary(int artistPosition):**

      This method will allow the user to search for a specific artist and display the below information:

      Artist Name
      Artist CD sale
      Artist DVD Sale
      Artist Blu Ray Sale
      Artist total of CD, DVD, and Blue Ray Sale

   e. The **salesSummary(int artistPosition)** will make use of a sentinel value to ensure that the user only enter a value between 0 and 6. If the user enter a number

greater than 5 the user should be notify and be given another chance to try again. Further, after 6 attempts the program should exit.

f. The **salesSummary(int artistPosition)** method will make use of a **switch case** to get the **artist Position.**

g. The **salesSummary(int artistPosition)** method will also ensure that if the user enter a negative value the program should stop.

[40 Marks]

4. The main class **ArtistSearchOop** will make use of a Scanner class to receive the artist position to be searched. This class will have declared an Upcasted object to be used to invoke the two methods (**salesSummary() and salesSummary(int artistPosition**). This class will make use of Exception handling to ensure that the flow of the program doesn't break when an exception occurs

[20 Marks]

Expected output

[20 Marks]

```
compile:
run:
Artist Name          DVD Sales          Blu Ray Sales          CD Sales
_____________________________________________________________________
1. Master KG          900000             800000              500000
2. DJ B Coffee        700000             500000              500000
3. Bruno Mars         800000             100000              50000
4. F Fighters         100000             200000              200000
5. T Swift            300000             100000              50000
_____________________________________________________________________
       Total          2800000            1700000             1300000
Please Enter a Number between 0 and 6
4
Artist Name: F Fighters
CD Sale: 100000
DVD Sale: 200000
Blu Ray Sale: 200000
Total: 500000
Please Enter a Number between 0 and 6
1
Artist Name: Master KG
CD Sale: 900000
DVD Sale: 800000
Blu Ray Sale: 500000
Total: 2200000
Please Enter a Number between 0 and 6
2
Artist Name: DJ B Coffee
CD Sale: 700000
DVD Sale: 500000
Blu Ray Sale: 500000
Total: 1700000
Please Enter a Number between 0 and 6
```

Question 2 — 60 Marks

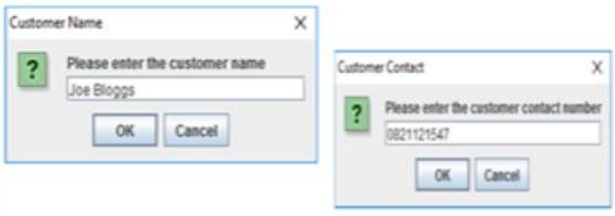
Create a class named **Customer** that will determine the monthly repayment amount due by a customer for a product bought on credit. The class has five fields: **customer name, contact number, product price, number of months and the monthly repayment amount**. Write **get** and **set** methods for each field, except for **the monthly repayment amount field**. The set methods must prompt) the user to enter the values for the following fields: customer name, contact number, product price and number of months. This class also needs a **method to calculate the monthly repayment** amount (***product price divided by the number of months***).

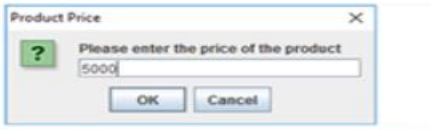
Add a subclass named **Finance_Period** that will determine if a customer pays interest or not. If the number of months to pay for the product is greater than three, the customer will pay 25% interest, else no interest applies. The maximum number of months to pay for the product is 12 months. Override the **calculate_repayment ()** method by determining if the customer will pay interest or not and calculate the monthly repayment amount.

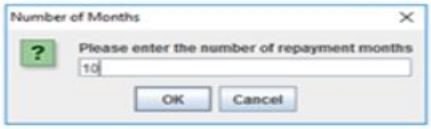
Create a class called **Customer_Finance** that contains the logic to test the two classes. Prompt the user for data ((***Use JOptionPane to receive the data***) for the first object where no interest applies and display the results; then prompt the user for data where interest is applicable and display the results. Make use of **Exception handling** to ensure that the flow of the program doesn't break when an exception occurs.

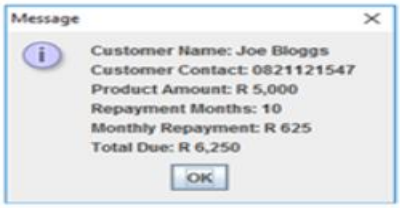
Before creating your program use any tool of your choice to create a program Structure (**as shown in question 1**) and also explain how you have applied the Object Oriented Principles (Polymorphism, Encapsulation, abstraction, and Inheritance) to showcase the flow of the program you are about to create.

Expected output









Question 3 — 20 Marks

3.1
Submit a 5 to 10 minutes video showcasing how the programs work.

10 Marks

3.2
Submit a pdf document with a cover page, table of content, program code and program output. (**AS SHOWN IN CLASS**)

5 Marks

3.3
Submit a zip folder with all source code for both programs

5 Marks

Completed Declaration of Authenticity

I _____ hereby
(FULL NAME)

declare that the contents of this assignment _____ is entirely my own work except for the following documents: (List the documents and page numbers of work in this portfolio that were generated in a group)

Activity	Date