**CORE JAVA PROBLEM STATEMENTS**

1. Create an Application for Audio House to collect the details about the albums and their release dates, this should be stored in the form of Array List of Album type Objects, the details of the Album include AlbumId , AlbumName, ReleaseYear, Group

Options should be provided to do the following tasks

1) One should be able to view all the album against release year.

2) One should be able to search the albums by the following methods

a) Album Id wise b) year of release wise

3)Delete an entry from the album by albumId.

2) Create an Application for a College, which enables one to initialize the College Details as follows

CollegeId: String

CollegeName: String

CollegAddress: String

CollegeLicenseNo: String

StudentCapacity: int

Category [Medical/Preuniversity/Degree/Engg] :String

StaffNumbers: int

AcademicHead: String

Facility should be made to accept the data from the user and options should be given

both to initialize through Constructors as well as Getters/Setters

the functions to display the same should be provided

1. Write a program to perform the following activities for an Electronics Goods Showroom

a) accept Television details like size, type- led / lcd ,cost

if the size is 14 inch and type is lcd discount is 8%

if the size is 14 inch and type is led discount is 10%

if the size is 20 inch and type is lcd discount is 12 %

if the size is 20 inch and type is led discount is 14 %, facility should be made to accept the Television details along with the price and display the corresponding discounts allowed.

**(Hint:use if else if construct use nested if when required)**

1. For a School Management System, as part of marks processing, you are asked to accept the scores of the students from Standard 1 to 5, tool should allow one to enter the Standard/Class Teacher Name and number of students/subjects and accordingly, depending upon the no of subjects, scores have to be accepted. Facility should be provided to view the details too.

Hint: Use 2 Dimensional Array

1. Write a program to accept the Employee Salary , if the salary is above 10k and <= 15k calculate the bonus as 10% and if the salary is > 15K and less than 25K calculate the bonus as 8% and above 25K calculate bonus as 6%, other than this range, user should be able to continue the activity of accepting salary and calculating the bonus as long as user wishes(use while loop) if user, if the user enters different range of salary it should allow him to continue the loop by giving an appropriate message(use continue).
2. To the problem No. 5 add appropriate exception handling mechanism for any exceptional situation for eg. When string is entered instead of numeric value for salary.
3. For a product Mfg. unit , you are creating a small module to accept the Product Details like Product Id, ProductName , ProductDescription,ProductCategory,ProductPrice and QOH(quantity On Hand) throw a custom exception whenever the Product Price is above 100000, use appropriate constructors and Object type called Product.

Hint : Use Custom Exception

1. Create an application for a designer who is involved with different shapes & designs development.

His need is to find the area of different shapes like Square, Triangle, Rectangle & RegularPolygon for various dimensions and he may have the need to include more shapes in future, there fore use abstraction appropriately for the scenario.

1. For a College tutorials, there is a tool which is being created to maintain scores of students who have taken up supplementary exams , accept the no. of students and accordingly accept the student scores, but each student might have taken different no. of supplementary exams(subjects) therefore use a two dimensional jagged array for the same.
2. You are creating a tool to maintain customer details for an agency. Customer Details include customerId , customerName,customerAddress, customerPhone,customereMail,purchaseValue & salesTax.

The data should be accepted from the user and initialized through constructors and array of Objects of Customer type is to be used to hold data. Size of the array depends upon the no. of customers , that the user enters.

1. In the question Number 10, there is a facility that needs to be added which helps in searching if a Customer exists, who stays in an area entered by the user and should display the same.
2. Add functionality to the tool created in Q. No 10 which would find the average purchase value of the Customers. And accordingly categorise the customers as Average Customer, Highly Valued customer or LowValuedCustomer , if the customers fall in the average category , above average category or below average category and display the corresponding customers under the respective heads.
3. Create a tool for an organization to calculate Salary for its employees who fall under 2 categories 1) Permanent Employee & 2) Contract Employee

Permanent Employee may contain details like employeeCode,Name,department,designation, basic , hra , cca, allowances and deductions.

Contract Employee may contain details like employeeCode, Name, department, designation, noOfHours, incentives,totalEmoluments.

Use appropriate abstraction for the scenario.

1. A tool is required for the Post Office to provide an interest calculator for their NSC customers. the tool should accept the denominations & no. Of Certificates purchased ,also it should calculate the interest along with the tax applicable on interest based on the chart given below.

|  |  |
| --- | --- |
| **Total Interest in Rs** | **Tax Rates** |
| 1 to 100000 | 5% |
| 100001 to 500000 | 10% |
| 500001 to 1000000 | 20% |
| >1000000 | 30% |

|  |  |
| --- | --- |
| **Investment** | **Interest Rates** |
| Any Amount | 5% Per Year-compounded |

1. There are 3 labs in the Electronics department (EL1,E L2 and EL3) with a seating capacity of p, q and r. Find the lab which has the least seating capacity.

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