1. **Draw Design level class diagram for the following description and implement the same. [Identify classes, attributes, relationships, end names, multiplicity and show them clearly in the class diagram]**
   (Use of advanced relationships is expected)

   Implement this class diagram (Design Model) with a suitable object oriented language like java.
   No GUI or user inputs are expected. Test your class diagram through a main() method with the given test input.

   The implementation of Design model is expected for any one major scenario, where usage of 4 to 7 classes for implementation can be shown.

   QD01: Design model problem GPS and cycle route : GPS equipment, when used on bicycle rides, captures cycling routes. Each tracked route consists of series of sample track points (sampled after fixed time duration). Each track point contains x,y and z coordinates in meters of sample location and time from start in Seconds (e.g. a specific track point will look like Point(203.5, 12.24, 12.3, 200.0)). We can 'start' and 'stop' recording on GPS equipment. GPS screen displays messages 'START' and 'STOP' for respective actions.

   If we select 'route length' on GPS panel, GPS screen displays Total route length traveled so far. This route length is a sum of distances between each consecutive pair of track points in the track route.

   If we select 'Average velocity on GPS Panel, GS screen displays average velocity computed by formula: Average Velocity = total distance travelled/ total time elapsed

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2. **Draw Design level class diagram for the following description and implement the same. [Identify classes, attributes, relationships, end names, multiplicity and show them clearly in the class diagram]**
   (Use of advanced relationships is expected)

   Implement this class diagram (Design Model) with a suitable object oriented language like java.
   No GUI or user inputs are expected. Test your class diagram through a main() method with the given test input.

   The implementation of Design model is expected for any one major scenario, where usage of 4 to 7 classes for implementation can be shown.
   QD02. A drawing editor has editing window. User can draw Square, rectangle, circle and ellipse in the editor window. Each shape has center point. Point is

composed of x and y coordinates. Square is defined by length of side, circle by radius, rectangle by Length and Width, and Ellipse by major axis and Minor axis. By using 'draw' option, user can draw any of these shapes in the editor window. Editor window maintains a list of shapes drawn. At any time, user can compute total area covered by all shapes by using 'total Area' option of editor window. Similarly user can compute total perimeter by using 'total perimeter' option of the editor.

Transport system : PMT, Routes: 5, Buses: 3 automatic and 2 manual

3. **Draw Design level class diagram for the following description and implement the same. [Identify classes, attributes, relationships, end names, multiplicity and show them clearly in the class diagram]**
   (Use of advanced relationships is expected)

   Implement this class diagram (Design Model) with a suitable object oriented language like java.
   No GUI or user inputs are expected. Test your class diagram through a main() method with the given test input.

   The implementation of Design model is expected for any one major scenario, where usage of 4 to 7 classes for implementation can be shown.

   QD03. A bank has many accounts. An account is either a saving account or a current account. Each account has account number. Each account will have one to three account holders. Each account will have account balance (eg Rs 2090.12) Each account will have an interest rate. Each account can deposit amount in the account.
   Each account can withdraw amount from the account. Current account can overdraw amount and the balance can be negative. Each account will have an interest rate.
   Bank calculates interest and updates the balance of each account in a year.

4. **Draw Design level class diagram for the following description and implement the same. [Identify classes, attributes, relationships, end names, multiplicity and show them clearly in the class diagram]**
   (Use of advanced relationships is expected)

   Implement this class diagram (Design Model) with a suitable object oriented language like java.
   No GUI or user inputs are expected. Test your class diagram through a main() method with the given test input.

QD04. College's Library management system has facility to search and reserve books on their intranet site. Library staff and librarian is responsible for maintaining book catalogue, manage library accounts, purchase of new book. On late return of book, Student has to pay fine.

Implement Issue Book Scenario which includes search book.

5. Draw Design level class diagram for the following description and implement the same. [Identify classes, attributes, relationships, end names, multiplicity and show them clearly in the class diagram] (Use of advanced relationships is expected)

   Implement this class diagram (Design Model) with a suitable object oriented language like java.
   No GUI or user inputs are expected. Test your class diagram through a main() method with the given test input.

   The implementation of Design model is expected for any one major scenario, where usage of 4 to 7 classes for implementation can be shown.

   QD05. Railway reservation system has facility to enquire trains, reservation enquiries, PNR enquiries etc. The system allows to book tickets online using card to registered passengers. Assume various facilities provided by Indian Rail and write detailed problem statement.

   Implement Book ticket scenario which includes check availability.

6. Draw Design level class diagram for the following description and implement the same. [Identify classes, attributes, relationships, end names, multiplicity and show them clearly in the class diagram] (Use of advanced relationships is expected)

   Implement this class diagram (Design Model) with a suitable object oriented language like java.
   No GUI or user inputs are expected. Test your class diagram through a main() method with the given test input.

QD06: Prassana travels Booking system has facility to search buses, check availability, book tickets, view routes etc. You can search buses by date, time, type of buses. Assume necessary information.

Implement Book ticket Scenario.

7. **Draw Design level class diagram for the following description and implement the same. [Identify classes, attributes, relationships, end names, multiplicity and show them clearly in the class diagram]**
(Use of advanced relationships is expected)

   Implement this class diagram (Design Model) with a suitable object oriented language like java.
   No GUI or user inputs are expected. Test your class diagram through a main() method with the given test input.

   QD07: Organization's Employee management system has facility to edit profile, view salary, apply for leave, view task/job allotment information etc. When candidate is selected by organization, he/she has to register with EMS. The manager allots works to different employees on the basis of their skill set. The schedules are generated and sent to employees. On successful completion of tasks the reward points are given to employees. The rewards points are considered for next pay hike given to employees. Assume various participants and draw detailed Use Case Diagram.

   Implement Apply for leave scenario which includes check no of leaves available.

8. **Draw Design level class diagram for the following description and implement the same. [Identify classes, attributes, relationships, end names, multiplicity and show them clearly in the class diagram]**
(Use of advanced relationships is expected)

   Implement this class diagram (Design Model) with a suitable object oriented language like java.
   No GUI or user inputs are expected. Test your class diagram through a main() method with the given test input.

QD08: At the end of third year TP cell of institute asks students to register with training and placement site. While registering student, personal, educational and extracurricular information with resume, is collected by portal. The companies have to register with college portal and have to submit selection method and criteria. The resumes are matched with companies and interviews are scheduled by T & P office. The results of every round are displayed online. Assume necessary details.

Implement Register student scenario.

9. **Draw Design level class diagram for the following description and implement the same. [Identify classes, attributes, relationships, end names, multiplicity and show them clearly in the class diagram]**
   (Use of advanced relationships is expected)

   Implement this class diagram (Design Model) with a suitable object oriented language like java.
   No GUI or user inputs are expected. Test your class diagram through a main() method with the given test input.

   The implementation of Design model is expected for any one major scenario, where usage of 4 to 7 classes for implementation can be shown.

   QD09: Teaching and Learning management system of department is responsible for various activities performed during entire semester. Various committees such as time table, seminar, project, unit test, attendance etc. use this system from start till report generation. At the start of semester, subject choices are taken from faculties. HOD allots subjects and timetables for classes and labs are generated. The attendance is monitored and defaulter list is generated at the end of every month. Unit tests are conducted twice a semester. T/W is calculated on the basis of attendance percentage and unit test performance. Student with less than 75% attendance is detained. Assume various activities performed by various committees. Assume necessary details.

Implement Calculate termwork scenario where termwork for semester.

10. **Draw Design level class diagram for the following description and implement the same. [Identify classes, attributes, relationships, end names, multiplicity and show them clearly in the class diagram]**
    (Use of advanced relationships is expected)

    Implement this class diagram (Design Model) with a suitable object oriented language like java.
    No GUI or user inputs are expected. Test your class diagram through a main() method with the given test input.

    The implementation of Design model is expected for any one major scenario, where usage of 4 to 7 classes for implementation can be shown.

    QD10: City Pride movie booking system displays movie schedule, movie reviews, movie trailers, etc. User can search movie by date, time, movie name and Members can book tickets online using credit/debit card. Members can post movie review and ratings.

    Implement Book tickets scenario, includes check availability.