

Q.1 Attempt any four

[20 marks]

Case Study : Bus Reservation:

Passenger makes reservation for tickets. Before making the reservation passenger checks for the availability of the ticket. If the seats are available, he books the seat and makes the payment. If the seats are not available, he is put for the waiting state. If required he can cancel the reservation and the cancellation charges are applied.

- i. Write a short note on association, dependencies and composition.
- ii. Draw Use case diagram for the following case study.
- iii. Draw the class diagram for following case study.
- iv. Write a python code considering the case study using the init method.
- v. What is need of development process of using UML?
- vi. Explain Inheritance and Generalization.
- vii. Give the guidelines for Activity diagram.
- viii. Draw Sequence diagram for given case study.

Q.2 Attempt any four.

[20 marks]

A) Case Study : Beauty Salon Management System:

Customers takes an appointment in a salon for the services. Beautician makes the entry of an appointment and gives the timing. Customers makes the payment for the services they have used. Customer can also cancel the appointment.

B) Case Study : University Registrar Office:

University office maintains data about the following entities 1. Courses including number, title, credits and syllabus. 2. Courses Offering including number, year, semester, section number, instructor, timing and classroom. 3. Students including id, name and program. 4. Instructor including id, name, department and title.

- i. Draw communication diagram for case study Q2. A.
- ii. Explain various components of communication diagram.
- iii. Draw Activity diagram for case study Q2.A.
- iv. Write a python code for case study Q2.B using multithreading concept.
- v. Explain various components of Activity diagram
- vi. Draw Activity diagram for case study Q2. B.
- vii. Draw Communication diagram for case study Q2. B.
- viii. Write a python code for case study A using init and del method

Q.3 Attempt any four

Case Study : Hotel Room Reservation.

Customer enquires about the room availability in the Hotel. If available customer books the room according to the category (economy, delux and super delux). Facilities are made available depending on the category selected. Extra charges are applied if customer selects extra benefits (swimming pool, gym, breakfast, lunch, dinner).

- i. Generate a python code for creation of modules and packages.
- ii. Explain the concept of package diagram with respect to usecase diagram.
- iii. Define event and explain different types of event.
- iv. How to create multiple thread to implement concurrent flow of control, module and packages.
- v. Draw a State Change Diagram for given case study.
- vi. Explain components of state change diagram.
- vii. Draw Package diagram considering the case study.
- viii. Explain the concept of package diagram with respect to class diagram.

Q.4 Attempt any three

[15 marks]

Case Study : Employee payroll system for the Bank

Build a new payroll system to allow employees to record timecard information electronically and automatically generate paychecks based on the no. of hours worked and the total sales for commissioned employees. It should provide a desktop interface to allow employee to enter timecard information. Some employees work by the hour, and they are paid hourly rate. They submit timecards that record the date & no. of hours worked for a particular charge number. If someone works for more than 8 hours, they should be paid 1.5 times their normal rate for those extra hours. Hourly workers are paid every Friday.

Some employees are paid a flat salary but still they should provide their timecards that record the date and hours worked. They are paid on the last working day of the month.

The employee should be able to query the system for no. of hours, days worked, totals of all hours billed for specific task/charge, total amount received till a given date

- i. Draw state change diagram for given case study.
- ii. Explain CRC.
- iii. Draw Communication diagram for given case study.
- iv. Give the guidelines for use case modules.
- v. Draw a class diagram for given case study.
- vi. Draw activity diagram for following case study.