



SLIATE

SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION

(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Higher National Diploma in Information Technology
Second Year, First Semester Examination – 2018
HNDIT2313/IT3103- Object Oriented Analysis and Design

Instructions for Candidates:
Answer five (05) questions.
All questions carry equal Marks.

No. of questions : 06
No. of pages : 04
Time : 03 hours

Question 01

[Total 20 marks]

- ✓ (i) What is meant by object oriented approach in system development? (02 marks)
- ✓ (ii) Mention two advantages of object oriented approach. (04 marks)
- (iii) Briefly explain "inheritance". (02 marks)
- ✓ (iv) Write the C++ code to implement the classes of restaurant program according to the given details.

Order class has String type **orderId**, String type **date**, float type **amount** and float type **discount** as protected data members and **addData()**, **display()** as public method.

Constructor is used to initialize amount and discount variables. **addData()** method is used to input values to the variables. **Display()** method is used to display **orderId** and **date**.

dineInOrder is a sub class of Order class and it has public method **calculate()**. It returns difference between amount and discount. Create object and call all the methods mentioned above. (12 marks)

Question 02

[Total 20 marks]

- ✓ (i) What is meant by polymorphism in object oriented analysis and designing? (04 marks)
- ✓ (ii) Briefly explain the following terms
 - a. Overloading
 - b. Overriding(04 marks)

- ✓ (iii) What is meant by software development methodology? (04 marks)
- ✓ (iv) Mention two (02) advantages of efficient software development methodology (04 marks)
- ✓ (v) Give two main activities of inspection phase of Unified Process (04 marks)

Question 03

[Total 20 marks]

- ✓ (i) What is a model? (02 marks)
- ✓ (ii) State two (02) roles of use case diagrams in modeling systems. (04 marks)
- ✓ (iii) What is the use of 'include' relationship in use case diagrams (02 marks)
- ✓ (iv) Draw a use case diagram for the following scenario in a hotel (12 marks)

Following text describe the proposed Hotel Reservation System.

A customer can view the hotel information and reserve a room by online or visit the place and reserve rooms. Rooms can be Single room, double rooms or family rooms.

If they are online customers, system will check the room availability and notify the customer availability of rooms. If not, the receptionist does the task.

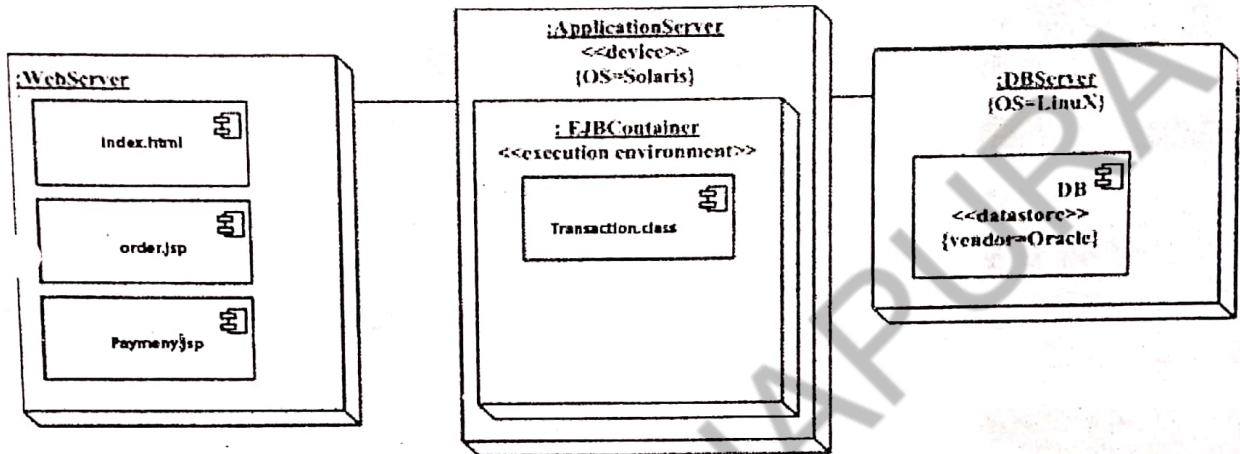
When the customer makes payment, the room is allocated for them. Online customers should pay via credit cards and others are allowed to pay by credit cards or cash payment.

When the customer checks-in the system is updated. The customer can check-out from the hotel at any time or extend after informing the receptionist. It will be accepted if rooms are available.

Question 04

[Total 20 marks]

- ✓ (i) Briefly explain deployment diagram. (02 marks)
- ✓ (ii) Explain the given deployment diagram for online ordering system. (04 marks)



- ✓ (iii) Briefly explain the class diagram in UML. (02 marks)
- ✓ (iv) Draw a class diagram for the scenario given in question number three(03) part four(iv) . (12 marks)

Question 05

[Total 20 marks]

- ✓ (i) What is an activity diagram in UML? (02 marks)
- ✓ (ii) Mention two advantages of using activity diagrams (04 marks)
- ✓ (iii) Briefly describe the advantages of activity diagram with swim lane. (02 marks)
- ✓ (iv) Draw an activity diagram with swim lane for the following scenario related to food order process in a restaurant. (12 marks)

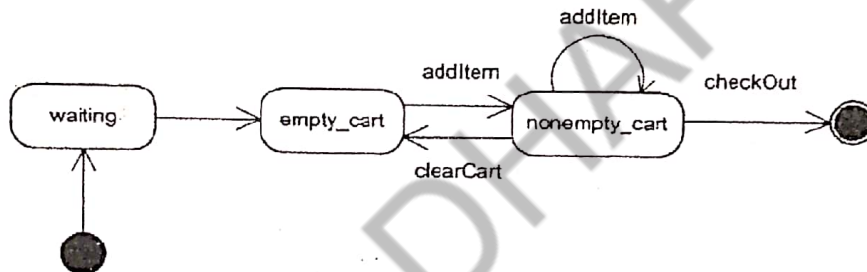
A customer checks the menu and orders food. The waiter checks the availability of food and if available, he informs the kitchen, if not available, he informs the customer.

If the meal is ready it will be informed to the waiter by the kitchen. The Waiter collects the meal and serves the customer. The customer finishes his meal and asks for bill. The Waiter informs the cashier about the order. The cashier prints the bill and issues it to the waiter. The waiter collects the bill and gives it to the customer.

Question 06

[Total 20 marks]

- ✓ (i) What is a state diagram? (02 marks)
- ✓ (ii) State two reasons to draw state diagrams (02 marks)
- ✓ (iii) Briefly explain the following terms in state diagram
 - a. state transition (02 marks)
 - b. entry action (02 marks)
- ✓ (iv) Briefly explain the scenario given in the following state diagram (04 marks)



- ✓ (v) Identify the states of **room** in hotel reservation system and draw the state diagram for it. (08 marks)