



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 – 2020

HNDIT2313 Object Oriented Analysis and Design

Instructions for Candidates:

Answer only five questions

No. of questions: 6

No. of pages : 3

Time: 3 hours

Question 01

- (i) What is meant by software development methodology? (02 marks)
- (ii) Mention two advantages of using proper software development approach (02 marks)
- (iii) What is object-oriented approach? (04 marks)
- (iv) Discuss the advantages of using object-oriented software development approach, comparing to traditional software development approach (12 marks)

(Total 20 marks)

Question 02

- (i) What is an object in software development? (02 marks)
- (ii) What is the role of constructor in object-oriented programming? (02 marks)
- (iii) Briefly mention the relation between inheritance and function overriding (04 marks)
- (iv) Write the C++ code to implement the classes of grocery store billing system as the given details. (12 marks)

SalesTransaction class has String type **transactionID**, float type **transactionAmount** String type **Date** as protected data members and **calculateValue()** as public method. Parameterized class constructor is used to initialize objects as values are passed in from the calling module. **OnlineTransaction** is a sub class of **SalesTransaction** class and it has private data member order String type **deleveryAddress**, string type **customerName** and string type **customerPhome**.

(Total 20 marks)

Question 03

- (i) What is meant by model? (02 marks)
- (ii) Mention two advantages of modeling in software designing? (02 marks)
- (iii) Relationships and diagrams are building blocks of UML. What are meant by relationship and diagram? → graphical representation of process (04 marks) collection of the-
- (iv) Draw a use case diagram for the following scenario in a grocery store app (12 marks)

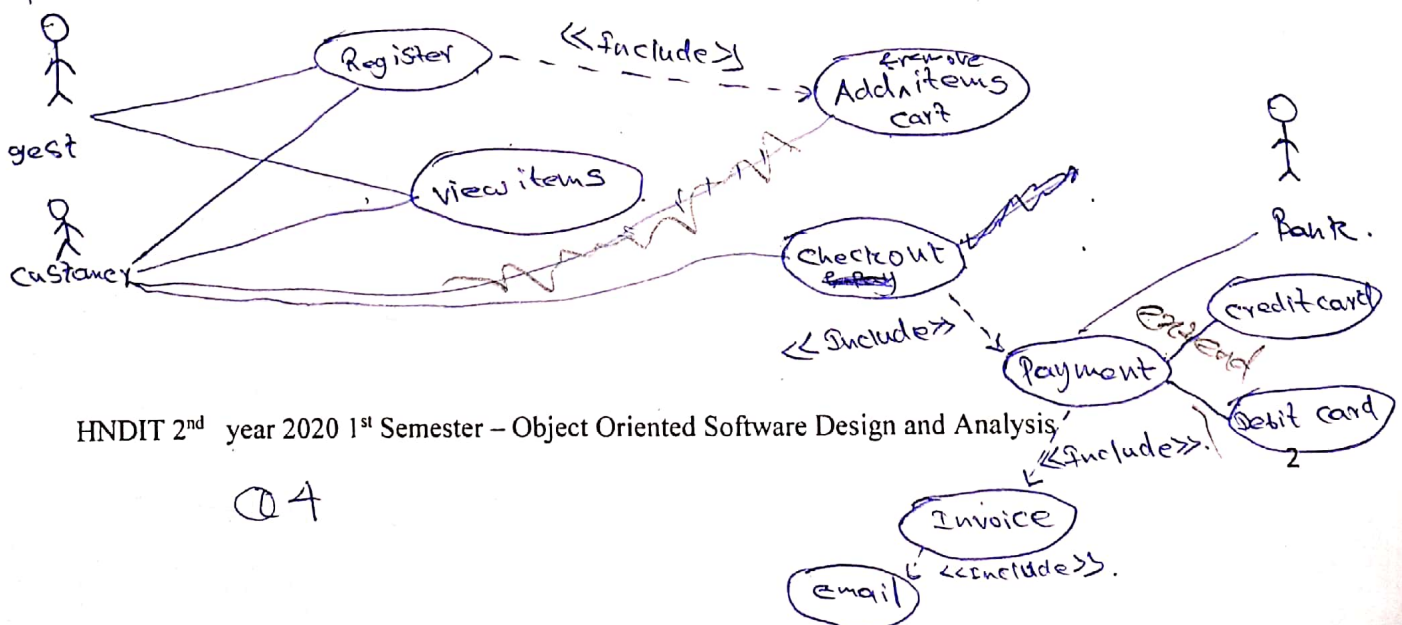
Both guests and registered customers can view the items. Guests can register. Registered customers can add items into cart. Items in the cart can be removed. In checkout customer should pay via credit or debit card. Invoice is sent to customer via email or SMS.

(Total 20 marks)

Question 04

- (i) What is meant by a class in object-oriented analysis and design? (02 marks)
- (ii) What is a boundary class according to object-oriented concepts? (02 marks)
- (iii) Explain the difference between class diagram and object diagram (04 marks)
- (iv) Assume you are designing an online web site for a beauty salon. Draw the class diagram considering the following scenario. (12 marks)

The available treatments, like facial, hair strait, nail polishing, etc. are listed in the system with relevant price and customers can view them. The treatment details can be edited. System saves customer information with customer name, and phone number. The customer information can be also updated if needed. Customers can get one or more appointments by providing the appointment date and time. Appointments can be edited later if needed. Appointments may include any one or more treatments.



Question 05

- (i) What is a swim lane diagram in UML? (02 marks)
- (ii) Mention two advantages of using swim lane diagrams (02 marks)
- (iii) Compare the difference between “merge” and “join” in swim lane diagrams (04 marks)
- (iv) Draw a suitable swim lane activity diagram for the following scenario related to online beauty salon app. (12 marks)

Registered customers can request for appointments by providing appointment date and time to the beauty salon app. If there are no other appointments at the same time, the app offers the appointment. If there are other appointment at the same time, the beauty salon app rejects the appointment. Then customer should pay Rs.500 in advanced for accepting the appointment. beauty salon app directs the customer payment details to the bank. The bank checks the payment details and verify or rejects the payment. The beauty salon app sends the appointment confirmation message to customer for verified payments, and Invalid Payment message for rejected payments.

(Total 20 marks)

Question 06

- (i) What is Unified Software Development Process? (02 marks)
- (ii) What is the technique used in USDP for reequipment capturing? (02 marks)
- (iii) Explain the advantages of efficient software development methodology (04 marks)
- (iv) Draw the Rational Unified process model and explain (12 marks).

(Total 20 marks)