

**Assignment1**

(To be submitted on or before 6/4/2012)

**Q1) Briefly describe the following fundamental concepts of object oriented world.**

- Objects
- Class
- Abstraction
- Encapsulation
- Inheritance
- Polymorphism

**Q2) List the differences between Object Oriented and Traditional Analysis & Design Techniques.**

**Q3) List the principles of Object Oriented Software Development Process**

**Q4) Why we need Models?**

**Q5) List the principles of Object Oriented Modeling**

**Q6) What is UML?**

**Q7) What are the building blocks of UML :**

**Q8) List the Things we use in UML.**

**Q9) List the four kinds of Relationships we use in UML.**

**Q10) Classify the Diagrams included in UML.**

**Q11) Briefly describe the following diagrams.**

1. Class diagrams
2. Use case diagrams
3. Objects diagrams
4. Composite structure diagram
5. Component diagram

**Q12) Read the following and draw diagrams given below.**

This is an Order Management System of an application.

Here a Customer can have multiple Orders, but an Order is related to exactly one Customer.

There are two types of Orders: SpecialOrder and NormalOrder.

SpecialOrder and NormalOrder have all the properties as the Order. In addition they have additional functions like dispatch and receive.

- (a) Class Diagram
- (b) Use Case Diagram
- (c) Object Diagram
- (d) Component Diagram

**Object Oriented Analysis & Design  
(Assignment)****Assignment 2**

(To be submitted on or before 26/5/2012)

**Q13) Briefly describe following diagrams. (Continuation of Q11)**

6. A Statechart diagram
7. Interaction diagrams
8. Activity diagrams
9. Deployment diagrams
10. Package diagrams

**Q14) Read the following and draw diagrams given below. (Continuation of Q12)**

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SpecialOrder and NormalOrder have all the properties as the Order. In addition they have additional functions like dispatch and receive.

(e) Statechart Diagram:

(f) Sequence Diagram

(g) Colaboration Diagram

(h) Activity Diagram:

(i) Deployment Diagram

**Q15) Read the following paragraph and draw a Use Case Diagram.**

An automated teller machine (ATM) or the automatic banking machine (ABM) is banking subsystem that provides bank customers with access to financial transactions in a public space without the need for a cashier, clerk or bank teller.

Customer (actor) uses bank ATM to check balances of his/her bank accounts, deposit funds, withdraw cash and/or transfer funds (use cases). ATM Technician provides maintenance and repairs. All these use cases also involve Bank actor whether it is related to customer transactions or to the ATM servicing.

**Q16) Read the following paragraph and draw a Class Diagram.**

Library Domain Model describes main classes and relationships which could be used during analysis phase to better understand domain area for Integrated Library System (ILS), also known as a Library Management System (LMS).

Each physical library item - book, tape cassette, CD, DVD, etc. could have its own item number. To support it, the items may be bar-coded. The purpose of bar-coding is to provide a unique and scannable identifier that links the bar-coded physical item to the electronic record in the catalog. Barcode must be physically attached to the item, and barcode number is entered into the corresponding field in the electronic item record.

Barcodes on library items could be replaced by RFID tags. The RFID tag can contain item's identifier, title, material type, etc. It is read by an RFID reader, without the need to open a book cover or CD/DVD case to scan it with barcode reader.

Library has some rules on what could be borrowed and what is for reference only. Rules are also defined on how many books could be borrowed by patrons and how many could be reserved.

**Q17) Read the following paragraph and draw a Composite Structure Diagram**

Bank ATM is typically made up of several devices such as central processor unit (CPU), crypto processor, memory, customer display, function key buttons (usually located near the display), magnetic and/or smart chip card reader, encrypting PIN Pad, customer receipt printer, vault, modem.

**Object Oriented Analysis & Design  
(Assignment)****HNDIT (2<sup>nd</sup> Year)****Q18) Read the following paragraph and draw an Activity Diagram**

Online customer can browse or search items, view specific item, add it to shopping cart, view and update shopping cart, checkout. User can view shopping cart at any time. Checkout is assumed to include user registration and login.

**Q19) Read the following paragraph and draw a State Machine Diagram**

Water can exist in several states - liquid, vapor, solid, and plasma. Several transitions are possible from one state to another. For example, freezing is phase change from liquid state to ice. Condensation is phase change from vapor state to liquid. Water vapor could turn directly into frost through deposition.

**Q20) Read the following paragraph and draw a Package Diagram**

Web Shopping, Mobile Shopping, Phone Shopping, and Mail Shopping packages merge Shopping Cart package. The same 4 packages use Payment package. Both Payment and Shopping Cart packages import other packages.