**Lab # 01**

**UML (UNIFIED MODELLING LANGUAGE)**

UML stands for unified modeling language. UML is a language for specifying, visualizing and documenting. This is the step while developing any product after analysis. The goal is to produce a model of the entities involved in this project which later need to build.

The purpose of the design phase is to plan a solution of the problem specified by the requirement document. This phase is the first step of moving from the problem domain to the system domain, i.e., starting with what is needed. The design of the system is perhaps the most critical factor affects the quality of the software.

System design also called top-level design aims to identity models that should be in the system, the specification of these modules and how they interact with each other.

**DESIGN METHODOLOGY:**

Two basic modern strategies employed in software design are:

1. Top-down design

2. Bottom-up design

The top-down design is basically a decomposition process which focuses on the flow of control. At later stages it concern itself with the code production. The first step is to study the overall aspects of the tasks and to break into number modules, which are small enough group to code in forward manner.

In a bottom-up designing one first identifies and investigates part of design that most difficult and necessary designed decision are made the remainder of design is tailored to fit around the design.

An UML system is represented using fire different views

* Use-case view
* Logical view
* Implementation view
* Process view
* Deployment view

**UML DIAGRAMS:**

The diagram contains the graphical elements arranged to illustrate a particular part or aspect of the system. A system model having several diagrams of varying types of depending for the model.

There are various kinds of diagrams used in software design:

* Use case diagram
* Class diagram
* Object diagram
* Sequence diagram
* Collaboration diagram
* State chart diagram
* Activity diagram
* Component diagram
* Deployment diagram

**USE CASE DIAGRAM:**

Use case diagram identifies the functionality provided by the system, the users interact with the system, the association between the users and their functionality. Use cases are used in the analysis phase of software development. Primarily goals of use case diagram include;

* providing a high-level view of what the system does
* identify users of the system

**Graphical Notation:**

The basic components of use case diagrams are the actors, the use case and the association.

**Actor:**

An actor is a user of the system. The role of the user is written beneath the icon. Actors are not limited to humans.

Actor

**Use case:**

A use case is a functionality providing by the system, typically describes as verb object. Use cases are depicted with an ellipse. The name of the use case is written in within it.

Use case

**Association:**

Association is used to link actors with use cases and indicate that an actor participates in use case in some form. Association is depicted by a line connecting actor and use case.

**Lab Task:**

1. Design a use case diagram for ATM
2. Design a use case diagram for Order processing system