LAB 6

AIM: To draw activity diagram of a) ATM b)Amizone

THEORY:

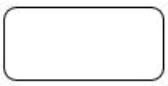
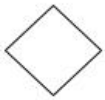
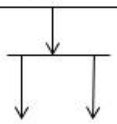
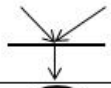
An **Activity Diagram** is a behavioral UML (Unified Modeling Language) diagram that represents the flow of activities or processes in a system. It visually describes how tasks are performed in a step-by-step manner, making it useful for modeling workflows, business processes, and system operations.

Components of an Activity Diagram

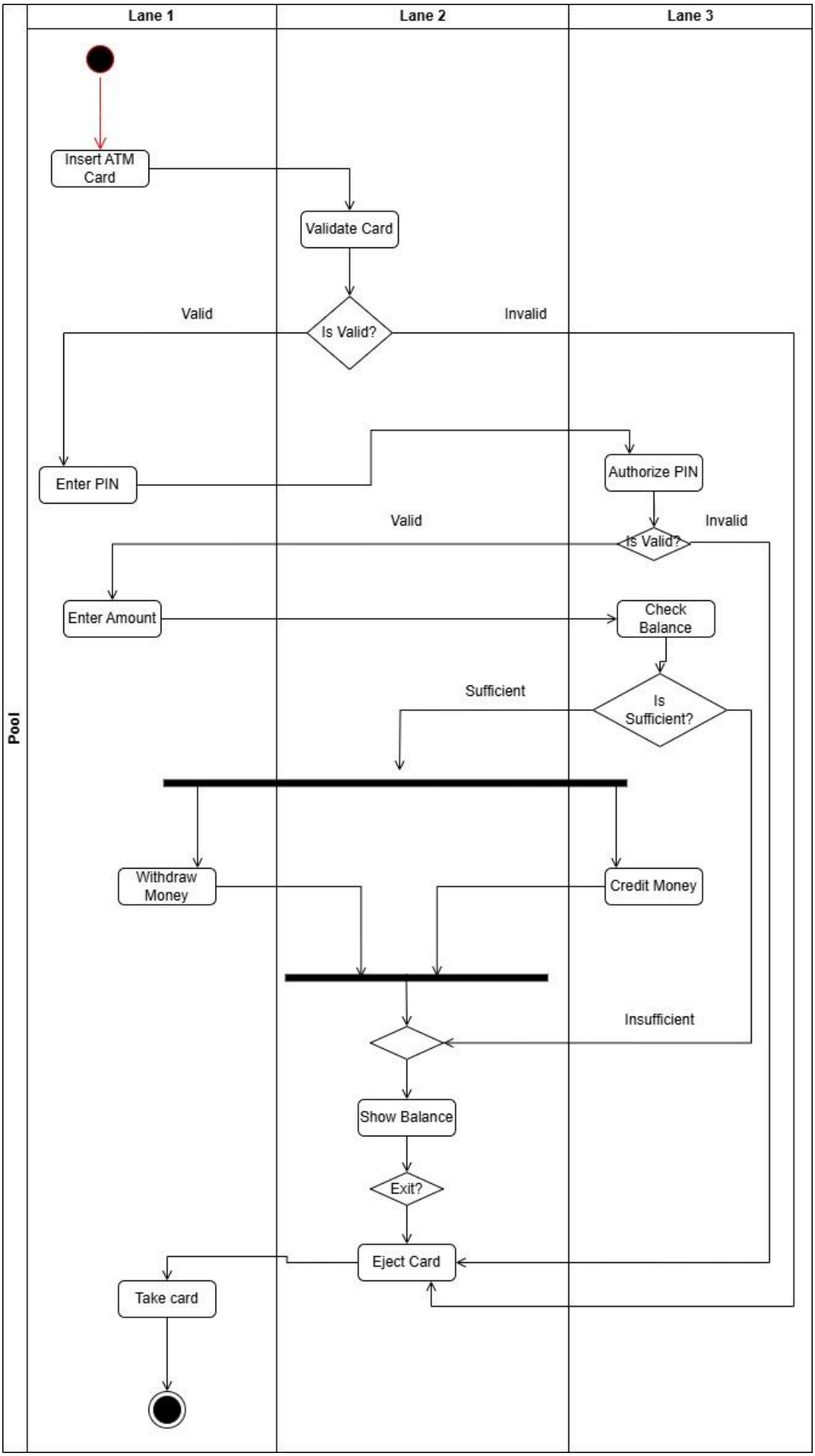
1. **Start Node** → Represents the beginning of the process (denoted by a filled black circle).
2. **Activity States** → Represent tasks or actions performed (depicted as rounded rectangles).
3. **Decision Nodes** → Represent choices or conditions (depicted as diamonds).
4. **Fork and Join Nodes** → Represent parallel processes:
    - **Fork** (splits one flow into multiple parallel flows).
    - **Join** (merges multiple parallel flows into one).
5. **Transitions (Arrows)** → Show the direction of process flow.
6. **End Node** → Represents the termination of the process (depicted as a black circle with a border).

Purpose of an Activity Diagram

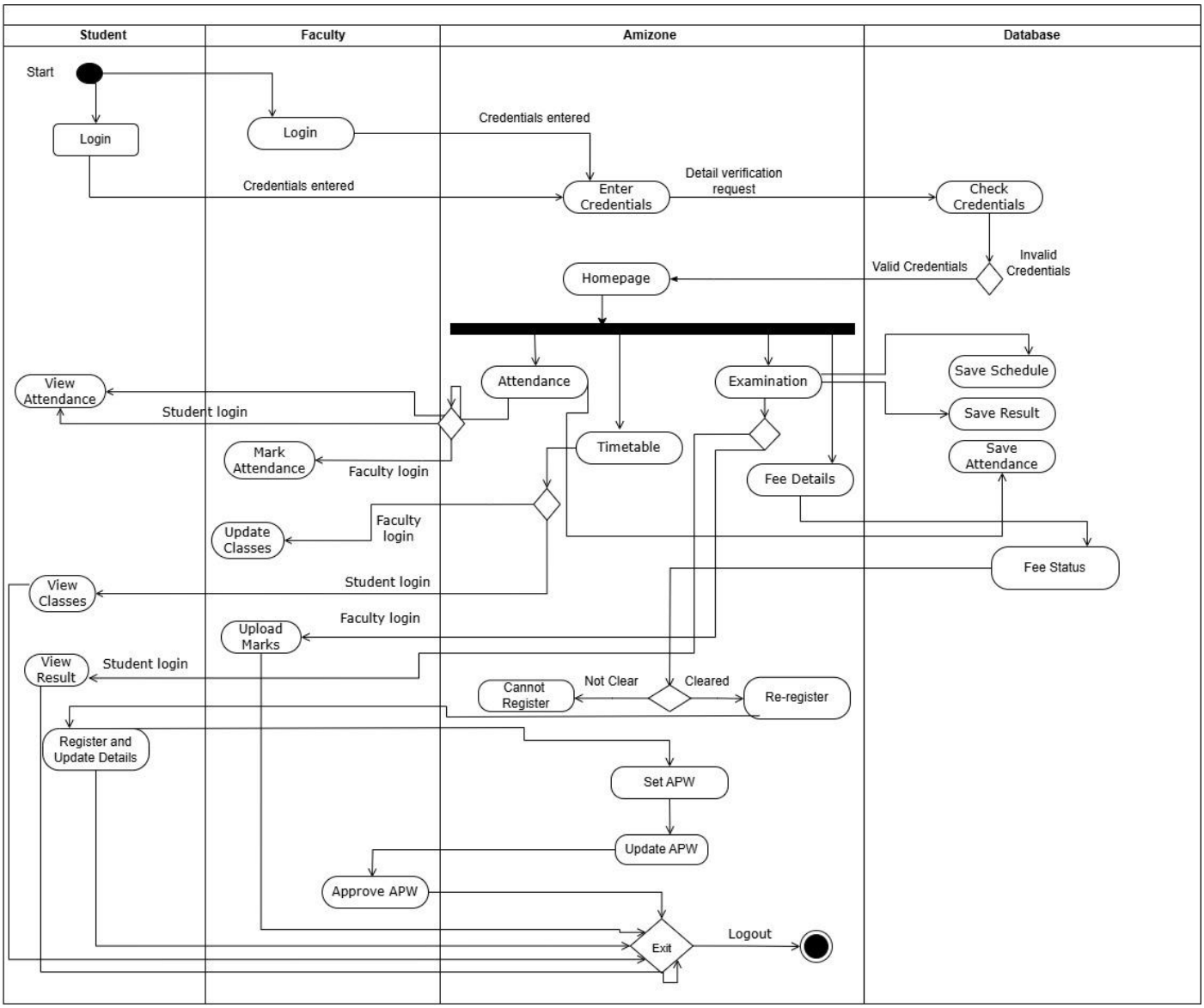
- **Models Workflows:** It represents sequential and parallel processes in business or software workflows.
- **Clarifies System Behavior:** Helps in understanding how a system responds to different user interactions.
- **Identifies Bottlenecks:** Highlights inefficiencies or delays in processes.
- **Aids in Software Design:** Helps developers visualize system operations before implementation.

Sr. No	Name	Symbol
1.	Start Node	
2.	Action State	
3.	Control Flow	
4.	Decision Node	
5.	Fork	
6.	Join	
7.	End State	

a) Activity diagram of ATM



b) Activity diagram of Amizone



LAB 7

AIM: To draw component diagram of ATM

THEORY:

A **Component Diagram** is a structural UML (Unified Modeling Language) diagram that represents the **physical components** of a system and their relationships. It shows how different parts of a system interact to **form a complete application**. Component diagrams are especially useful in **software architecture design**, helping to understand the dependencies among various components.

Key Elements of a Component Diagram

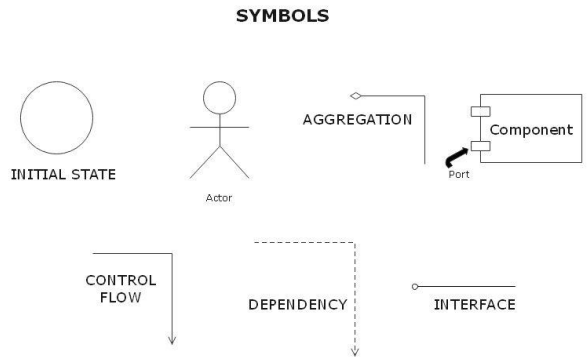
1. **Component** → Represents a modular part of the system (depicted as a rectangle with a small box-like symbol).
2. **Interface** → Defines how components communicate (shown as a circle or lollipop symbol).
3. **Dependency** → Represents relationships between components (dashed arrows).
4. **Ports** → Small rectangles on component edges, representing interaction points.
5. **Subsystems** → Logical grouping of related components.

Purpose of a Component Diagram

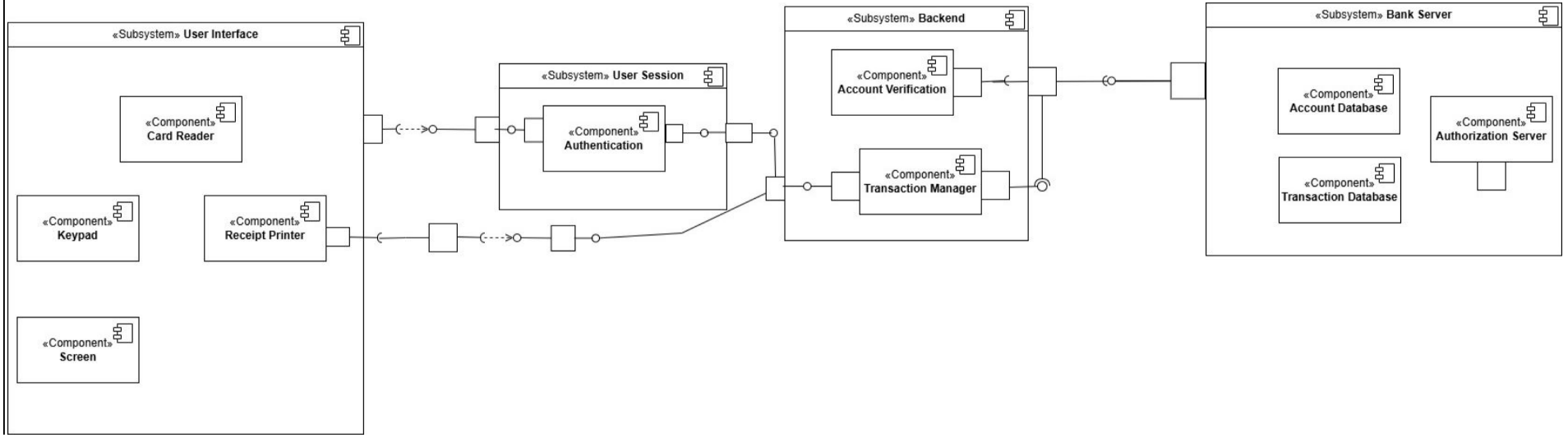
A component diagram is essential for **visualizing the high-level structure of complex software systems**. It helps in understanding **component interactions, module dependencies, and system organization**. Developers and architects use these diagrams for **planning, analyzing, and optimizing software architecture**, ensuring modularity and scalability.

Applications of Component Diagrams

- **Software Architecture Design** – Helps in designing modular and maintainable software systems by clearly defining components and their dependencies.
- **System Implementation Planning** – Used during the development phase to break down complex systems into smaller, manageable modules.
- **Dependency Management** – Identifies how components rely on each other, helping to prevent tight coupling.
- **Enterprise Applications** – Commonly used in large-scale applications such as **banking systems, e-commerce platforms, and university management systems** to represent interactions between different modules like authentication, databases, and user interfaces.



Component diagram of ATM


«Subsystem» User Interface
«Component» Card Reader
«Component» Keypad
«Component» Receipt Printer
«Component» Screen
«Subsystem» User Session
«Component» Authentication
«Subsystem» Backend
«Component» Account Verification
«Component» Transaction Manager
«Subsystem» Bank Server
«Component» Account Database
«Component» Transaction Database
«Component» Authorization Server