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Title of LAB Assignment: UML Diagrams (Activity Diagram)	
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Aim: UML Diagrams (Activity Diagram)

Description:

Introduction to UML Activity Diagrams

What is UML?

UML Activity Diagrams are a type of Unified Modeling Language (UML) diagram that is used to visually represent the flow of control through a system. They are similar to flowcharts, but they provide more specific symbols and notations for modeling different types of control flow.

Purpose of Activity Diagrams

Activity diagrams are used to depict the flow of control through a system, from start to finish. They can be used to model a variety of systems, including business processes, software systems, and physical systems.

Benefits of Activity Diagrams

Activity diagrams offer several benefits, including:
- Clarity: They provide a clear and concise visual representation of complex systems.

- Communication: They can be used to communicate the design of a system to both technical and non-technical audiences.

- Analysis: They can be used to identify and analyze potential bottlenecks or inefficiencies in a system.

- Design: They can be used to design the architecture of a software system.

- Documentation: They can be used to document the behavior of a system.

Elements

Activity diagrams consist of the following elements:

- Activities: Activities represent the tasks or actions that are performed in a system. They are depicted as rounded rectangles.

- Control nodes: Control nodes are used to direct the flow of control through a system. Common control nodes include initial nodes, final nodes, decision nodes, and merge nodes.

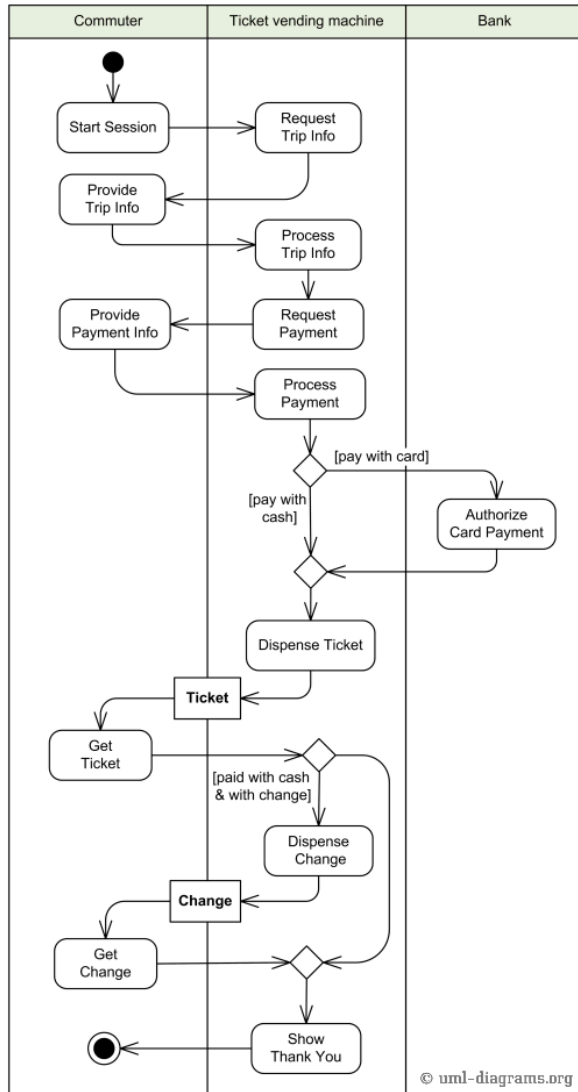- Edges: Edges connect activities, control nodes, and other elements in

an activity diagram. They indicate the flow of control or data

between elements.

Activity Diagram Notations

Understanding the notations used in Activity Diagrams is essential for creating and interpreting them effectively.

Activity	Rounded rectangle
Initial node	Solid black circle
Final node	Solid black circle with a cross inside
Decision node	Diamond
Merge node	Bar
Edge	Solid line
Object flow	Dashed line with an arrowhead

Creating an Activity Diagram

Commuter	Ticket vending machine	Bank

(● Start Session) → Request Trip Info

Provide Trip Info ← Request Trip Info

Provide Trip Info → Process Trip Info

Process Trip Info → Request Payment → Provide Payment Info

Provide Payment Info → Process Payment

Process Payment → ◇ [pay with card] → Authorize Card Payment

[pay with cash] → ◇ ← Authorize Card Payment

◇ → Dispense Ticket

Dispense Ticket → **Ticket** → Get Ticket

Get Ticket → ◇ [paid with cash & with change] → Dispense Change

Dispense Change → **Change** → Get Change

Get Change → ◇ → Show Thank You → ◉

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To create an activity diagram, follow these steps:

- Identify the activities that are performed in the system.
- Define the control flow between the activities.
- Add control nodes to direct the flow of control.
- Connect the activities and control nodes with edges.
- Add labels to the activities, control nodes, and edges.

Conclusion:

In conclusion, Activity Diagrams in UML are a valuable tool for modeling and understanding dynamic processes and workflows. They provide clarity,

facilitate communication, aid in analysis, support system design, and serve as documentation references. Whether used in software development, business process improvement, or system analysis, Activity Diagrams play a vital role in creating efficient and well structured systems. Understanding and effectively employing this UML diagram can greatly enhance the quality and success of system development projects.