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Experiment no 1

Title : Draw state model for telephone line, with various activities.

Problem Defination : To draw a state diagram for telephone line with various activities

Prerequiste : Software Analysis skills

Software Requirement : Draw.io

Learning objective : To learn and draw state model for telephone line.

Outcome : We understood the concept of state model, and to draw the state model/diagram for any system.

Theory -

A state diagram is a graph whose node are state and whose directed arcs are transition between state which describes sequenced caused by event sequence. A state diagram typically models the common behavior of a class.

A state diagram is used to represent the condition of system on part of system at finite instance of time.

State diagram are also referred to as state machine and state-chart diagrams. These terms are often used interchangeably. so simply, a state diagram is used to model the dynamic behavior of a class in response to time and changing external stimuli.

We can say that each and every class has a state but we don't model every class using state diagram. We prefer to model the states with three / more states.

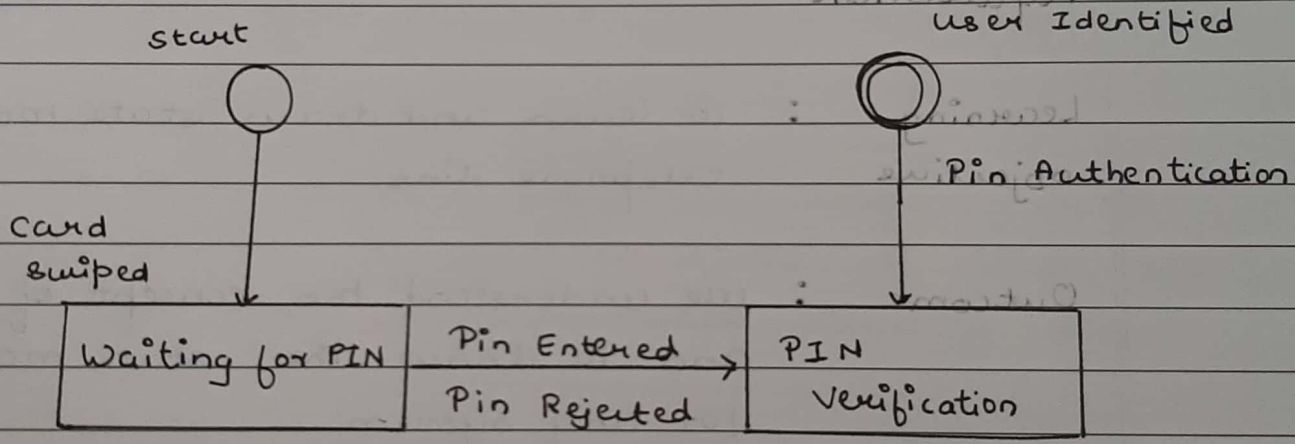


Figure - A state diagram for user verification. The state diagram above shows the different state in which the verification sub-system / class exist for a particular system.

There are two types of diagram in UML →

1. Structure Diagram -

It is used to model the static structure of system. For example - class diagram, package diagram, object diagram, deployment diagram.

2. Behavior Diagram -

It is used to model the dynamic change in the system over time. They are used to model and construct the functionality of a system.

So, a behavior diagram simply guides using use case diagram, Interaction diagrams, Activity diagram and state diagram

The basic purpose of state diagram is to portray various changes in state of class and not the processes or commands causing the changes.

However, a flowchart on the other hand portrays the processes or commands that on execution change the state of class or an object of the class.

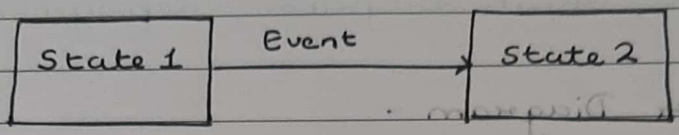
Basic Components of a statechart Diagram

1. Initial state -

We use a black filled circle represents the initial state of system or a class.

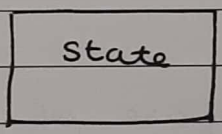
2. Transition -

We use a solid arrow to represent the transition of control from one state to another.



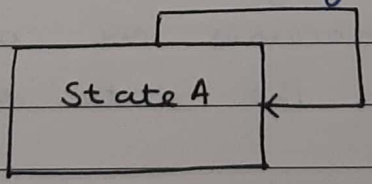
3. State -

We use a rounded rectangle to represent a state. A state represents the condition or circumstances of an object of a class at an instant of time.



4. Self transition -

We use a solid arrow pointing back to the state itself to represent a self transition.



5. Final state -

We use a filled circle within a circle notation to represent final state in state diagram.

Conclusion -

In this way, we studied how to draw a state model for telephone line.