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Subject Name : Software Design Lab

Experiment No. : 7

Experiment Name : To study State Chart diagram.

Roll No. : 17IT1064

Class/Div/Batch : TE/A/A4

Date of performance :

Date of submission :

Grade :

Sign :

Aim: To study State Chart Diagram

Hardware & Software Required: PC Desktop, Rational Rose

Theory:

State Diagram - Overview:

The name of the diagram itself clarifies the purpose of the diagram and other details. It describes different states of a component in a system. The states are specific to a component/object of a system.

A State chart diagram describes a state machine. Now to clarify it state machine can be defined as a machine which defines different states of an object and these states are controlled by external or internal events.

Activity diagram explained in next chapter, is a special kind of a State chart diagram. As State chart diagram defines states it is used to model lifetime of an object.

How to draw State chart Diagram?

State chart diagram is used to describe the states of different objects in its life cycle. So the emphasis is given on the state changes upon some internal or external events. These states of objects are important to analyze and implement them accurately.

State chart diagrams are very important for describing the states. States can be identified as the condition of objects when a particular event occurs.

Before drawing a State chart diagram we must have clarified the following points:

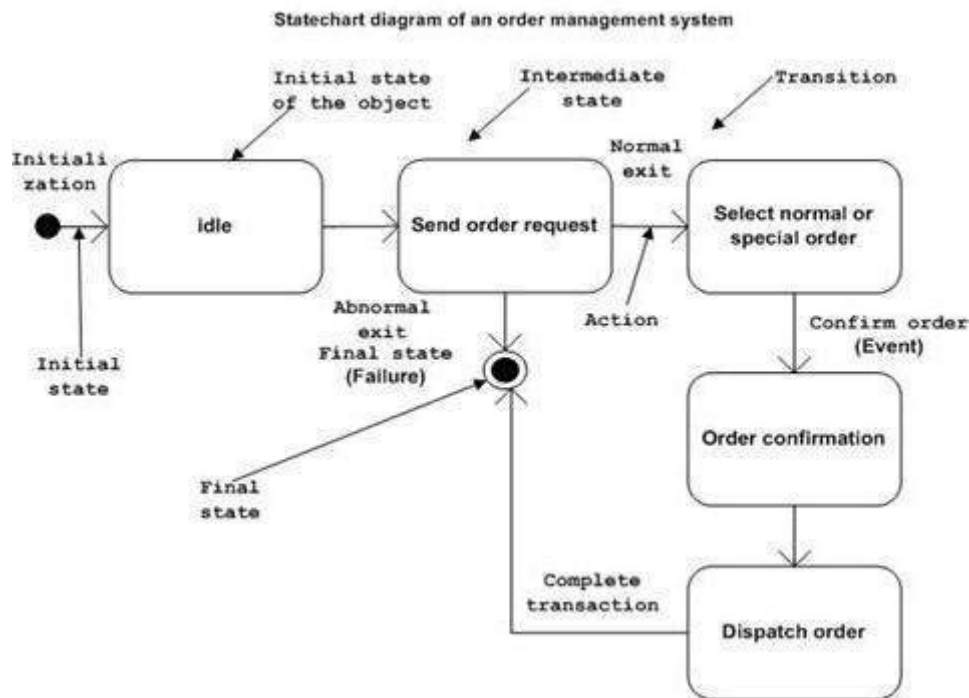
- Identify important objects to be analyzed.
- Identify the states.
- Identify the events.

The following is an example of a State chart diagram where the state of *Orderobject* is analyzed.

The first state is an idle state from where the process starts. The next states are arrived for events like *send request*, *confirm request*, and *dispatch order*. These events are responsible for state changes of order object.

During the life cycle of an object (here order object) it goes through the following states and there may be some abnormal exists also. This abnormal exit may occur due to some problem in the system. When the entire life cycle is complete it is considered as the complete transaction as mentioned below.

The initial and final state of an object is also shown below.



Where to use State chart Diagrams?

From the above discussion we can define the practical applications of a State chart diagram. State chart diagrams are used to model dynamic aspect of a system like other four diagrams discussed in this tutorial. But it has some distinguishing characteristics for modeling dynamic nature.

State chart diagram defines the states of a component and these state changes are dynamic in nature. So its specific purpose is to define state changes triggered by events. Events are internal or external factors influencing the system.

State chart diagrams are used to model states and also events operating on the system. When implementing a system it is very important to clarify different states of an object during its life time and state chart diagrams are used for this purpose. When these states and events are identified they are used to model it and these models are used during implementation of the system.

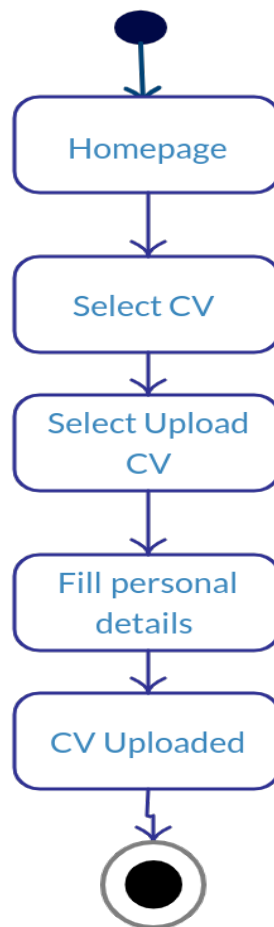
If we look into the practical implementation of State chart diagram then it is mainly used to analyze the object states influenced by events. This analysis is helpful to understand the system behavior during its execution.

So the main usages can be described as:

- To model object states of a system.
- To model reactive system. Reactive system consists of reactive objects.
- To identify events responsible for state changes.

- Forward and reverse engineering.

Results:



Conclusion and Discussion:

Thus State Chart diagrams have been understood