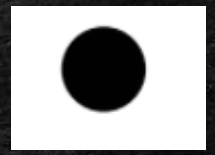
Solved Question Paper June 2013

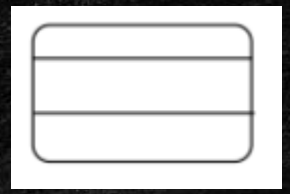
4.c)List and describe the elements of a State Diagram.(5marks)

Elements of the state diagram with respect to dynamic modelling are :

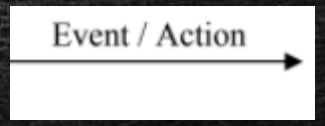
Initial State : This shows the starting point or first activity of the flow. Its denoted by a solid circle. This is also known as pseudo state, where the state has no variables describing its further and no activities, to be done.



State : Represents the state of an object at an instant of time. In a state diagram, there will be multiples of such symbols, one for each state of the object. Its denoted by a rectangle with rounded corners and compartments.

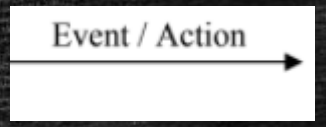


Transition : An arrow indicating the object to transition from one state to the other. The actual trigger even and action causing the transition are written beside the arrow, separated by a slash. Transitions that occur because the state has completed an activity are called “triggerless” transitions.

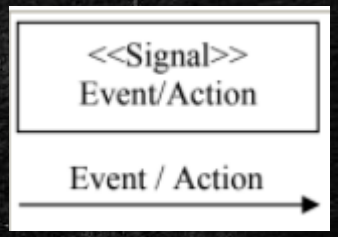


History States : A flow may require that the object go into the trance, or wait state, and on the occurrence of a certain event, go back to the state it was in when into a wait state-its last active state. This is shown in a state diagram with the help of a letter H enclosed within a circle.

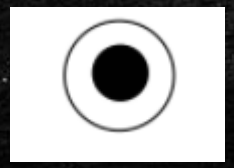
Event and Action : A trigger that causes a transition to occur is called as an event or action. Every transition need not occur due to the occurrence of an event or action directly related to the state that transitioned from one state to another. An event/action is written above a transition that it causes.



Signal : When an event causes a message/trigger to be sent to a state that causes the transition; then, that message sent by the event is called a signal.



Final state : The end of the state diagram is shown by a bull's eye symbol, also called a final state. A final state is another example of a pseudo state because it does not have any variable or action described.



3.c)Define Serialization. Where it can be used and why ? (5marks)

Specialization :

Specialization is the reverse process of Generalization means creating new sub classes from an existing class. Specialization involves the definition of a new class which inherits all the characteristics of a higher class and adds some new ones, in a subclass. It is a top-down design activity. In specialization, we split an entity to form multiple lower level entities. These newly formed lower level entities inherit some features of the higher level entities. It may happen that a higher level entity may not split further and hence, it may not have any lower level entity. Specialization is always applied on a single entity. It increases the size of a schema.

Specialization results in forming the multiple entity from a single entity. It creates new objects based on the difference between the existing ones and have some features of the parents.

Let us discuss an example of specialization. Let us consider entity **Animal**. The entity animal can further be spilt into **amphibian, reptiles, birds, mammals** etc.. Entity amphibian can be further split to **crocodile, alligator, frog**. The entity reptile splits to **snake, lizard**. The entity bird can be split to **sparrow, pigeon, parrot**. Mammals can be spilt to a **tiger, lion, elephant**.