Solved Question Paper December 2012

1.a)What are the benefits of object oriented methodology in real life applications ? (5marks)

It's a approach through which modelling of the systems are done by visualizing the system based on the real world concepts.

There are several benefits of object oriented modelling. Reuse and emphasis on quality are the major highlights of Object Oriented Methodology. Object Oriented Methodology provides resistance to change, encapsulation and abstraction etc. Object-oriented modeling reduces the need for maintenance and increases both reliability and flexibility.

Major benefits of Object Oriented Modelling is that :

- Development of the system becomes fast
- Quality of the system increases
- Improves the communication between users, analysts etc.
- The ability to tackle more challenging problems
- It gives the freedom of use of existing code and design.

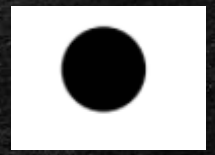
- Helps in the development of complex system with less risk due to basic properties like class, objects and inheritance.
- Helps in understanding problems, communicating with experts from distance, modelling enterprises and designing programs and databases.
- It reduces the need for maintenance and if needed maintenance is easier.
- It increases both reliability and flexibility.
- Modular Architecture : We can replace or add any one component (**module**) without affecting the rest of the system. This is because there is clear division between components.
- It gives the freedom of use of existing code and design : In this each object is a stand alone component that can be reused not only within a specific problem domain, but also in completely different problem domains, having the requirements of similar objects.
- It focuses on data relationships. We cannot develop a successful system when data relationships are not well understood.
- It provides all of the insight of an ER diagram and contains additional information related to the methods to be performed on the data.

- The ability to tackle more challenging problem domains
- Improved communication among users, analysts, designers and programmers.

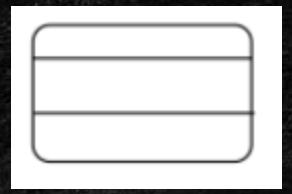
1.b) Briefly explain each elements of state diagram w.r.t. dynamic modelling.(5marks)

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

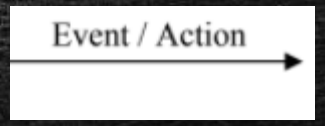
Initial State : This shows the starting point or first activity of the flow. Its denoted by a solid circle. This is also known as pseudo state, where the state has no variables describing its further and no activities, to be done.



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.

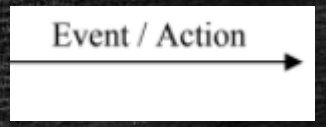


Transition : An arrow indicating the object to transition from one state to the other. The actual trigger even and action causing the transition are written beside the arrow, separated by a slash. Transitions that occur because the state has completed an activity are called “triggerless” transitions.

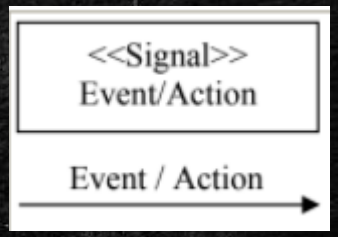


History States : A flow may require that the object go into the trance, or wait state, and on the occurrence of a certain event, go back to the state it was in when into a wait state-its last active state. This is shown in a state diagram with the help of a letter H enclosed within a circle.

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.