

Requirement Engineering- Building the Model

Requirement model are actually a set of models is the first technical representation of the system.

Elements of the Requirement model

Requirements are represented in several modes. Each mode represents requirements in different views. However, set of generic elements is common to most requirements models.

1. Scenario based element

- This type of element represents the system user point of view.
- Scenario based elements are basic usecases and their corresponding usecase diagram.
- Scenario-based elements of the requirements model are often the first part of the model that is developed.
- They serve as input for the creation of other modelling elements such as UML Activity Diagrams.
- The following figure shows UML Activity diagram for placing the order.

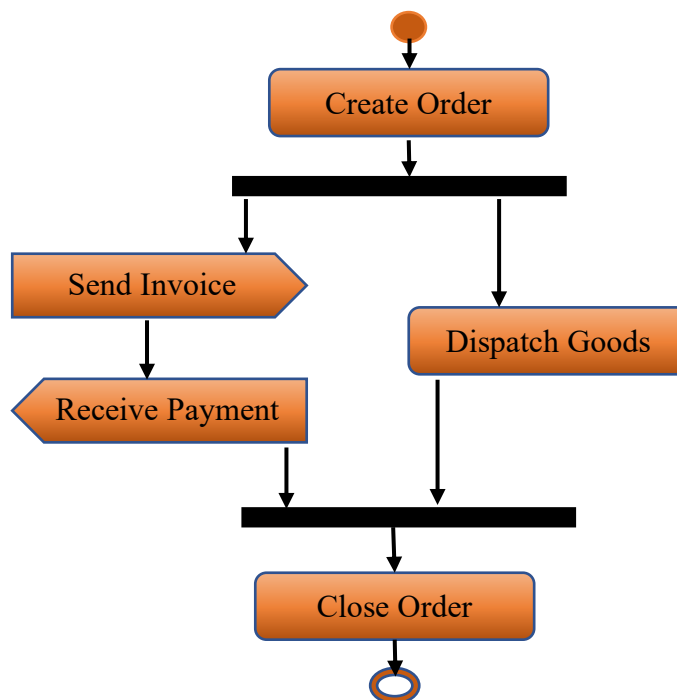


Figure: Activity diagram for placing the order

2. Class based elements

- Each usage scenario implies set of objects that are manipulated when actor interact with the system
- The objects are categorized into classes-things that have common attributes and behaviours.
- The following figure shows UML class diagram for online order processing.
- The following figure shows UML **Customer** class of online order processing system.

- The diagram lists the attributes of customer (e.g., name, address) and the operations (e.g., search items, place the order) that can be applied to modify those attributes.
- The collaboration is occurring between the classes.
- Class based elements are the class diagrams, collaboration diagrams.

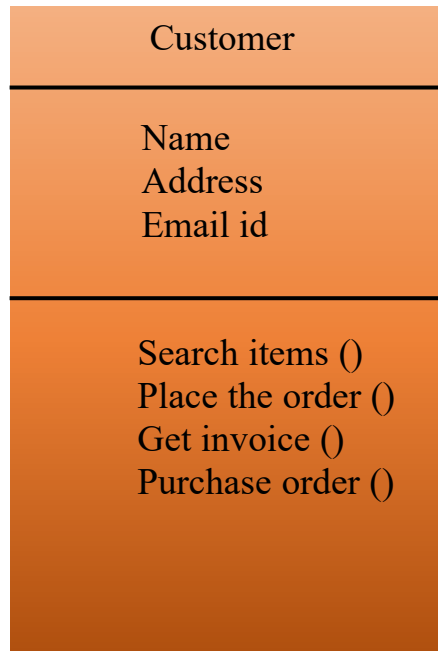


Figure: UML Class Diagrams

3. Behavioural elements

- The requirements model must provide modelling elements that depict behaviour of the system.
- The state diagram is one method for representing the behaviour of a system by depicting state of the system and how it is changed by the external events.

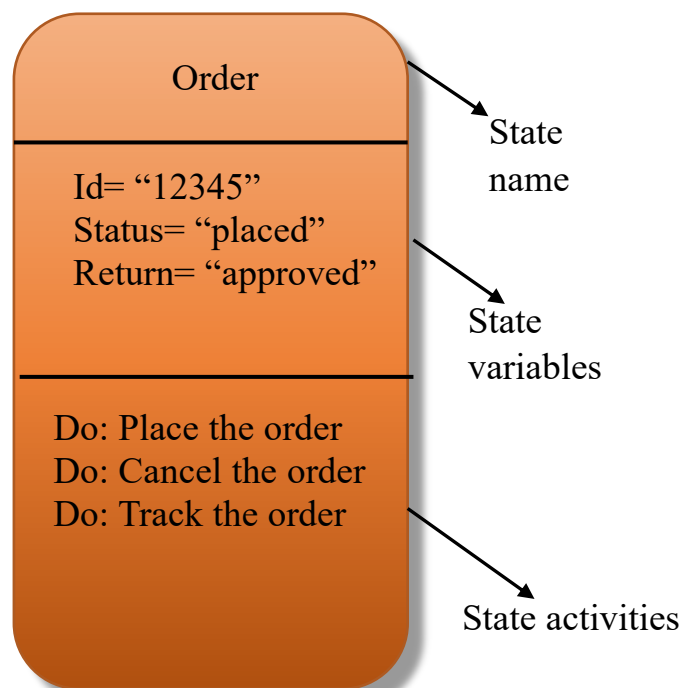


Figure: State Diagram

- A state is any externally observable mode of behaviour.
- Consider UML state diagram for order that is responsible for placing the order.
- The behaviour of individual classes can also be modelled using sequence diagrams

4. Flow oriented elements

- An information flows through a computer-based system as it gets transformed.
- It shows how the data objects are transformed while they flow between the various system functions.
- The flow elements are data flow diagram, control flow diagram.

Text Books

1. Roger Pressman S., “Software Engineering: A Practitioner's Approach”, 7th Edition, McGraw Hill, 2010.
2. Sommerville, “Software Engineering”, Eighth Edition, Pearson Education, 2007

Weblinks

1. <https://ocw.mit.edu/courses/aeronautics-and-astronautics/16-355j-software-engineering-concepts-fall-2005/lecture-notes/cnotes2.pdf>
2. https://drive.google.com/file/d/1noLGVIm2QpD_vmxMDziGyFVXGdI4BBUu/view
3. <https://drive.google.com/file/d/1K327JTpX4P1DPjINurjKznzZKoBk2Qot/view>
4. https://cdn.shopify.com/s/files/1/0457/4009/7694/files/software_engineering_pdf_pressman_7th_edition.pdf