What is Data Flow Diagram?

Also known as DFD, Data flow diagrams are used to graphically represent the flow of data in a business information system. DFD describes the processes that are involved in a system to transfer data from the input to the file storage and reports generation.

Data flow diagrams can be divided into logical and physical. The logical data flow diagram describes flow of data through a system to perform certain functionality of a business. The physical data flow diagram describes the implementation of the logical data flow.

Why DFD?

DFD graphically representing the functions, or processes, which capture, manipulate, store, and distribute data between a system and its environment and between components of a system. The visual representation makes it a good communication tool between User and System designer. Structure of DFD allows starting from a broad overview and expand it to a hierarchy of detailed diagrams. DFD has often been used due to the following reasons:

Logical information flow of the system

Determination of physical system construction requirements

Simplicity of notation

Establishment of manual and automated systems requirements

DFD Diagram Notations

Now we'd like to briefly introduce to you a few diagram notations which you'll see in the tutorial below.

External Entity

An external entity can represent a human, system or subsystem. It is where certain data comes from or goes to. It is external to the system we study, in terms of the business process. For this reason, people used to draw external entities on the edge of a diagram.

Customer
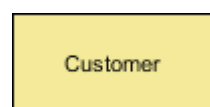
Process

A process is a business activity or function where the manipulation and transformation of data take place. A process can be decomposed to a finer level of details, for representing how data is being processed within theprocess.
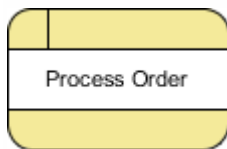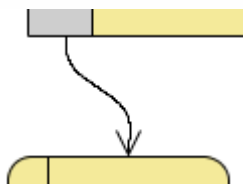

Data Store

A data store represents the storage of persistent data required and/or produced by the process. Here are some examples of data stores: membership forms, database tables, etc.
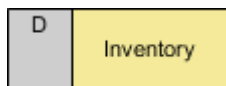

Data Flow

A data flow represents the flow of information, with its direction represented by an arrowhead that shows at the end(s) of flow connector.


Use Case Diagram

As the most known diagram type of the behavioral UML types, Use case diagrams give a graphic overview of the actors involved in a system, different functions needed by those actors and how these different functions interact.

It's a great starting point for any project discussion because you can easily identify the main actors involved and the main processes of the system.
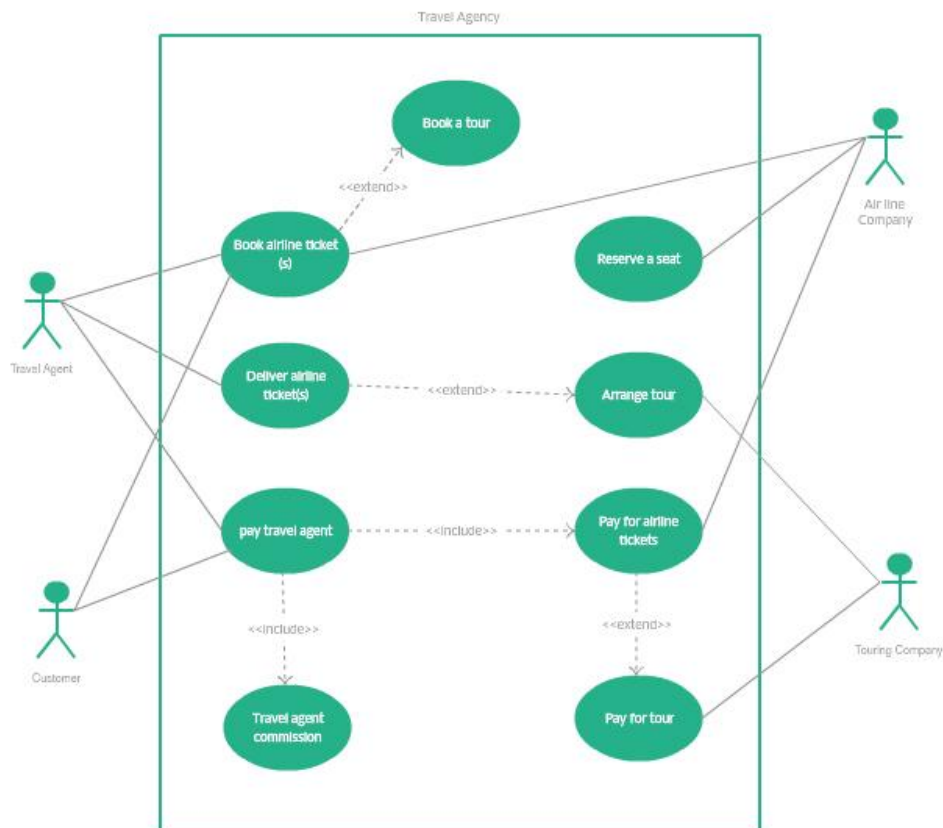
Activity Diagram

Activity diagrams represent workflows in a graphical way. They can be used to describe the business workflow or the operational workflow of any component in a system. Sometimes activity diagrams are used as an alternative to State machine diagrams.
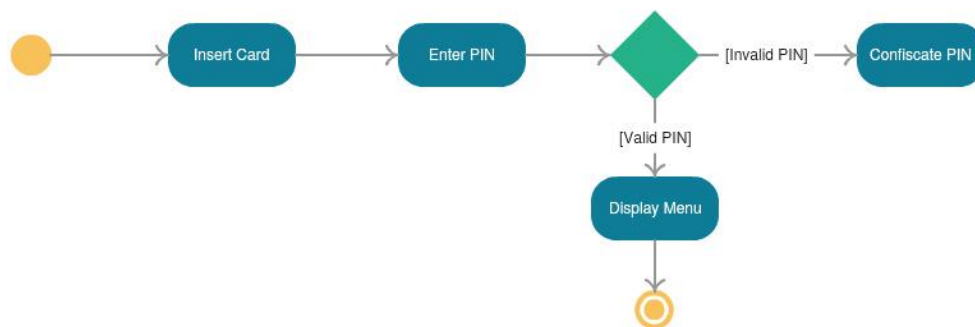
Class Diagram

Class diagrams are the main building block of any object-oriented solution. It shows the classes in a system, attributes, and operations of each class and the relationship between each class.
In most modeling tools, a class has three parts. Name at the top, attributes in the middle and operations or methods at the bottom. In a large system with many related classes, classes are grouped together to create class diagrams. Different relationships between classes are shown by different types of arrows.
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Class Diagram for Order Processing System
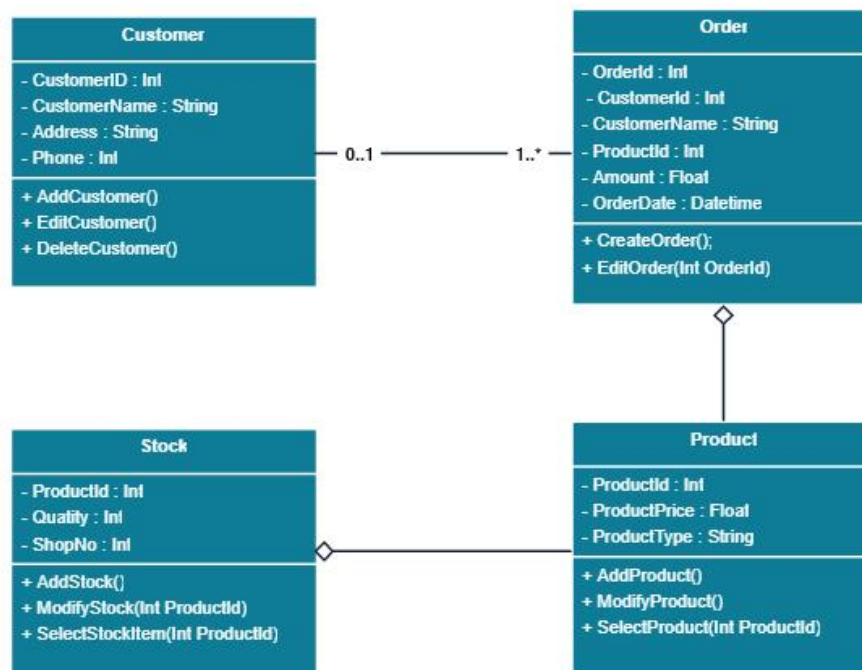
Sequence Diagram

Sequence diagrams in UML show how objects interact with each other and the order those interactions occur. It's important to note that they show the interactions for a particular scenario. The processes are represented vertically and interactions are shown as arrows.
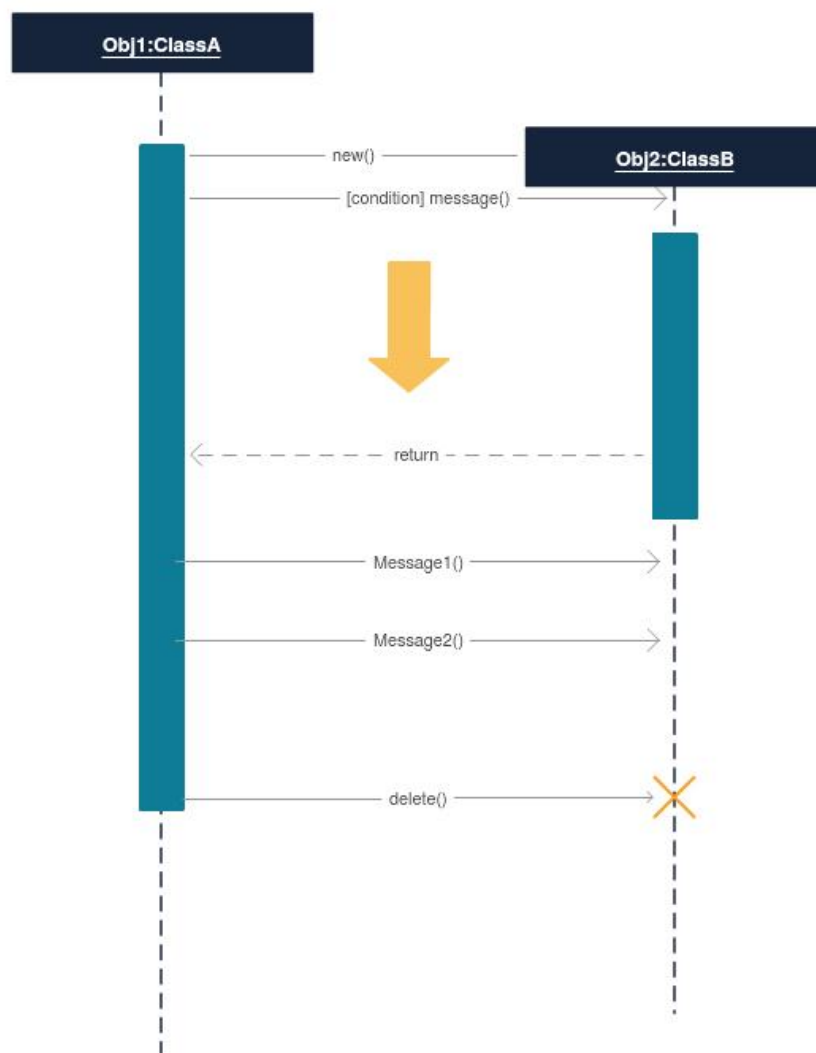
Sequence diagram drawn using Creately