System

A system is a collection of components which are working together to achieve a specific goal. These components are working according to a plan which has its own organized procedure and those components are interdependent.

Photosynthesis system, School System, Nervous system are some examples for a system.

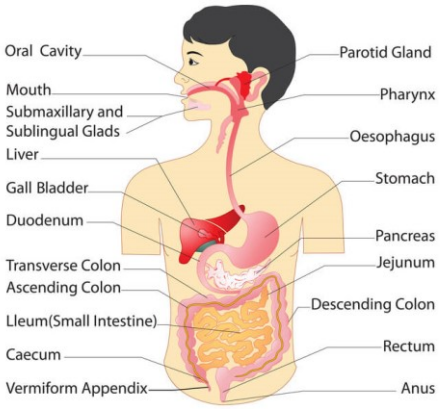

Figure 1 - digestive system of the human body

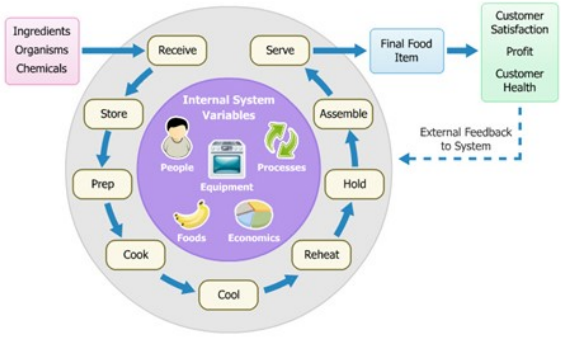

Figure 2 - An example for a restuarant system

Components of a general system can be shown as follows. It contains sub components, boundary, external environment and relationships. These components are working together within this boundary and a single component may consist of several sub components. Each component interacts with another component or many other components. Those are called relationships. Complexity of the system may depend on the number of sub systems and relationships among them.

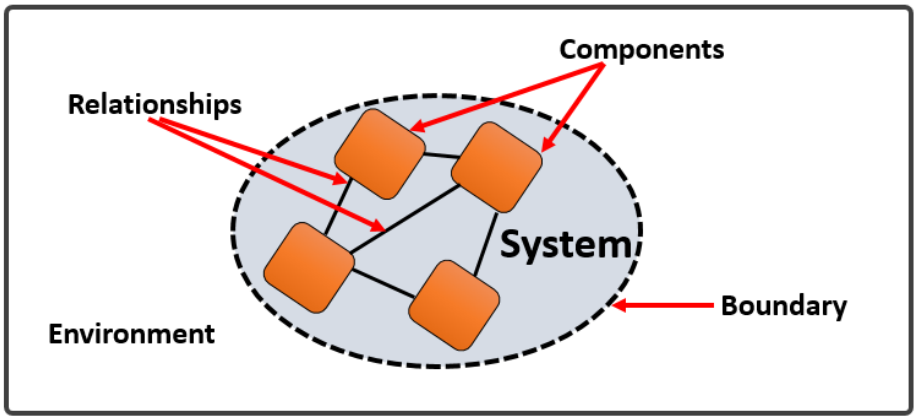

Figure 3 - Basic components of a system

Characteristics of a system

Followings are some characteristics of a system.

- **Organization**

Structure of the system of arrangement of components represent this.

- **Interaction**

This shows how each component works with each other or how each component functions with others.

- **Interdependence**

This says that one component may depend on another one or many other components. And this shows how those components are linked together within the system. For an example, input of a component may be an output of another one.

- **Integration**

This shows the level of bound between two components.

- **Specific objective**

Any system has a specific target or a goal and all the components are working together to achieve this target. This is an important thing of a system where all the parts of the system are oriented for achieving this.

Classification of systems

There are several classifications for a system based on their characteristics.

1. Open systems and closed systems
2. Natural systems and manmade systems
3. Physical systems and abstract systems
4. etc.

Among these classifications, we discuss two types of classifications through this chapter.

Open systems and Closed systems

Open System	Closed System
These systems interact with its environment through several interfaces. They get an input from outside and it produces outputs to the environment.	These systems do not interact with outside environment. They are isolated from their environment.
Example – • Human body • School System • Computer	Example – • Nervous system • Digestive system

Natural systems and Manmade systems

Natural System	Manmade System
Natural systems are systems in the environment which are made by the nature.	These systems do not interact with outside environment. They are isolated from their environment
Example – • Human body • photosynthesis	Example – • School system • Payroll system