

- System:
  - A group of **interacting, interrelated, or independent** elements forming a complex whole.
  - A function related **group of elements**, especially: a networking of computer software, hardware, and data transmission devices.
  - **A set of objects** or phenomena grouped together for a classification or analysis.
  - A condition of **harmonious, orderly interaction**
  - An **organized and coordinated method**; a **procedure**.
  
- Features/properties of system:
  - All systems have attributes and these allows something to be defined or seen as system
  - A system will exist in an environment or within a larger system. Systems will generally operate within larger environment, interacting with it
  - A system will take in from outside, process it and produce something that will go outside again. Usually in different form
  
- + Virtuous cycle: Where reinforcing the behaviour of system leads to desirable consequence
- + Vicious cycle: Reinforcing behaviour leads to negative consequences
  
- Learning: the use of feedback to adapt to new situation
  - Deutero feedback: uses a second feedback loop.
  - Single loop learning: feedback loop involves only monitoring action and consequences
  - Double loop: whole system itself is monitored and feedback applies to whole system. So two system 1 system for whole system and another for parts
  
- Closed system: does not exchange information/material with its environment
- Open system: interacts with its environment, receiving inputs and producing outputs
  
- Ecology concepts can be applied to computing:
  - Niche: Organisations provides a specific product or service to consumers for specific taste
  - Symbiosis: organisations can work together for mutual benefits
  - Perturbation: systems are connected so change in one part of system can affect whole system
  
- System thinking:
  - is looking at the interactions of components as much as the quality of the components themselves.
  - Requires the analytic or reductionist so it breaks the system into parts.
  - The system behaviour in the environment must also be considered
  - Looking at the quality of whole car rather than components

- Self-organisation: display the intelligence to reorganise their components into forms that allow them to adapt to changes in the environment.