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Tutorial 1 :- Design of Intelligent Agent.

Aim :- To understand the concept of Agent Abstraction by studying definition of Rational Agent, Agent environment, Task Environment Description environment types.

Theory :- An Artificial Intelligent (AI) system is composed of an agent and its environment. The Agents act in their environment. An agent is anything that can perceive its environment through sensor & acts upon that environment through effectors.

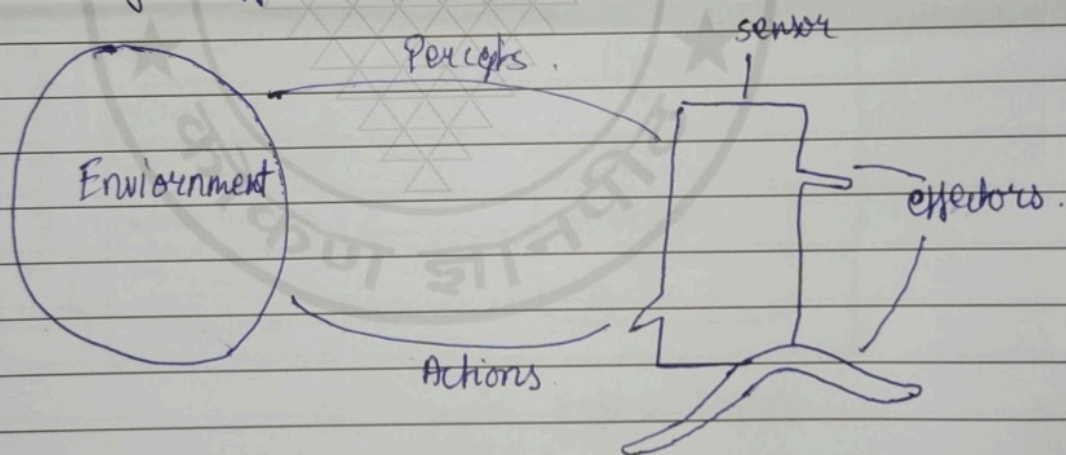


Fig 1 :- AI agent with Environment.

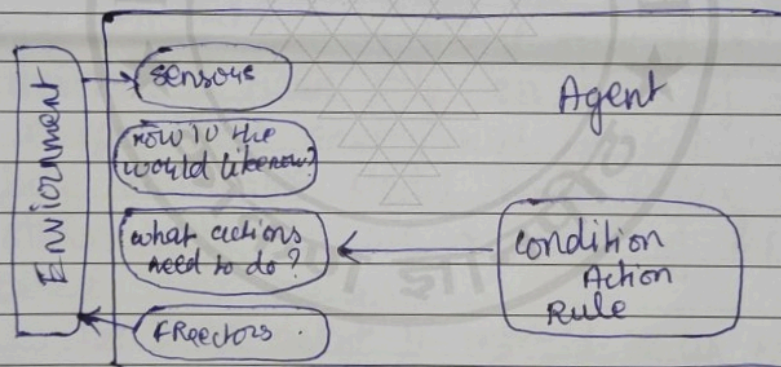
agent in particular can be :-

Human agent has sensory organs such as eyes, ears, nose, tongue and skin parallel to the sensor, & other organs such as hands, legs, Mouth for effectors.

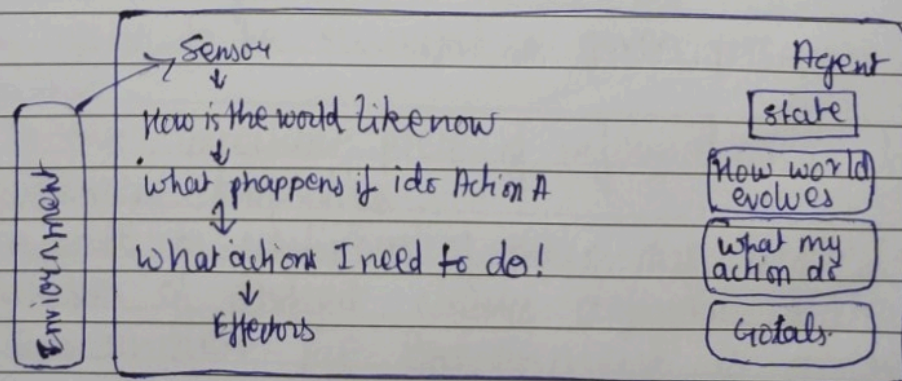
Robotics agent replaces cameras & infrared range finders for the sensor and various motors and actuator for effectors.

Software agent has encoded bit strings as its programs and actions.

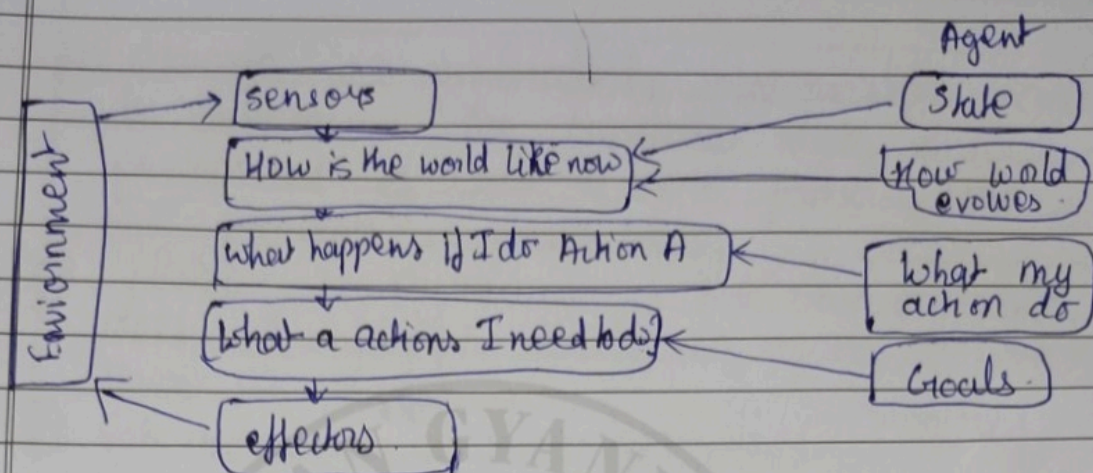
Agent structure can be viewed as a combination of agent architecture & agent programs. Fig 2 show the important types of agent architecture.



(a) Simple Reflex Agent.



(b) Model Based Reflex Agent.



(c) Goal Based Agent -

As seen in fig 2a. Simple Reflex agents choose actions only based on the current percept only. They are rational only if a correct decision is made only on basis of current percept. Agent environment for such agents is fully observable Model Based Reflex Agents as shown in fig 2b use a model of the world to choose their actions.

An AI agent is referred to as Rational Agent. A rational agent always performs right action where the right action means the action that the agent to be successful in given precept sequence.

Another important piece of information is task environment properties.

- ① Discrete or continuous if there are limited number of distinct clearly defined states of environment the Environment is discrete.

- Working Search internet for AI based application in following scenarios to identify who is agent for that application. finally try to classify task environment properties.

- ① Autonomous ~~Linux~~ Rover
- ② Deep Blue chess playing computer program
- ③ Eliza the natural language processing computer programs created from 1964 to 1966 at MIT.
- ④ Automatic ~~port~~ Portfolio Management
- ⑤ Sophia is a social Automatic robot developed by Hong Kong based company Hanson Robotics.

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- ⑤ Sophia is a social humanoid robot developed by Hong Kong based company Hanson Robotics.
- ⑥ Alpho is a social humanoid robot developed by Hong Kong based company Hanson Robotics.
- ⑦ Apples Virtual assistance Siri.
- ⑧ Endurance : A companion for Dementia patients
- ⑨ Casper : Helping Insomniacs Get through the night.
- ⑩ Marvel : Guarding the Galaxy with comic-Book crossovers.
- ⑪ Automated cross word solvers.