The Structure of Intelligent Agents

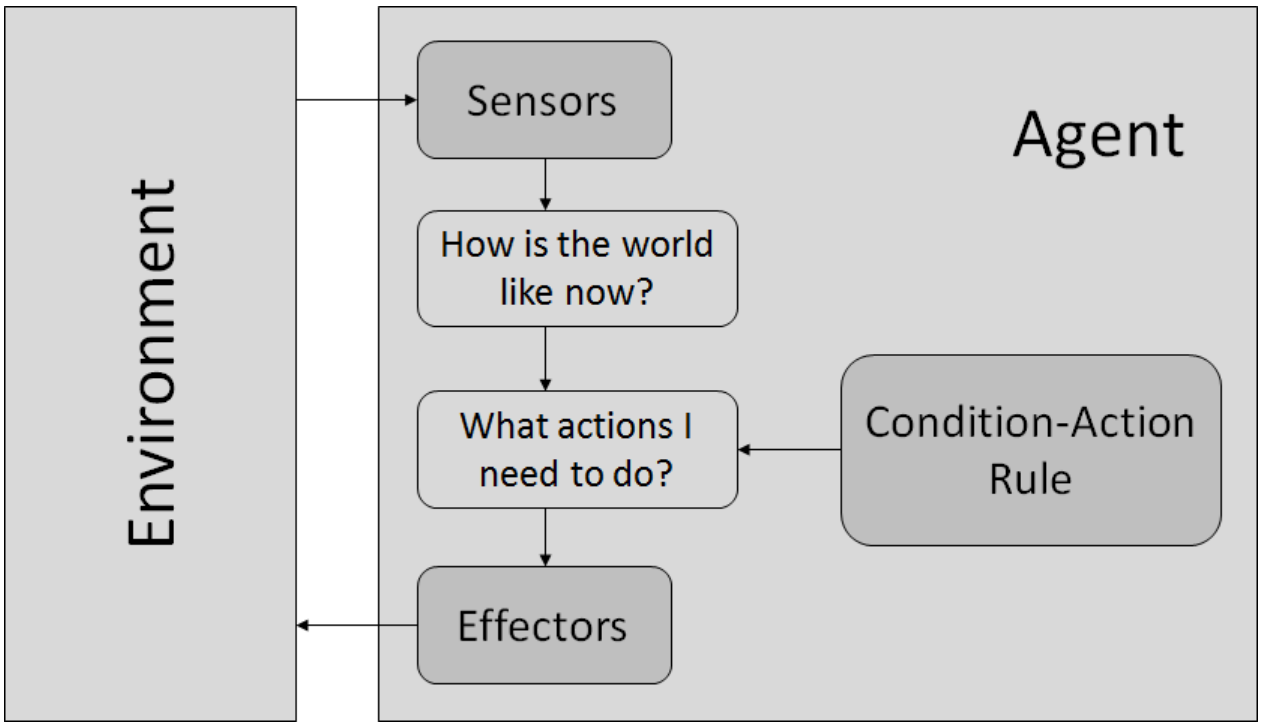
Agent's structure can be viewed as:

- Agent = Architecture + Agent Program
- Architecture = the machinery that an agent executes on.
- Agent Program = an implementation of an agent function.

Simple Reflex Agents

- They choose actions only based on the current percept.
- They are rational only if a correct decision is made only on the basis of current precept.
- Their environment is completely observable.

Condition-Action Rule – It is a rule that maps a state (condition) to an action.



Model-Based Reflex Agents

They use a model of the world to choose their actions. They maintain an internal state.

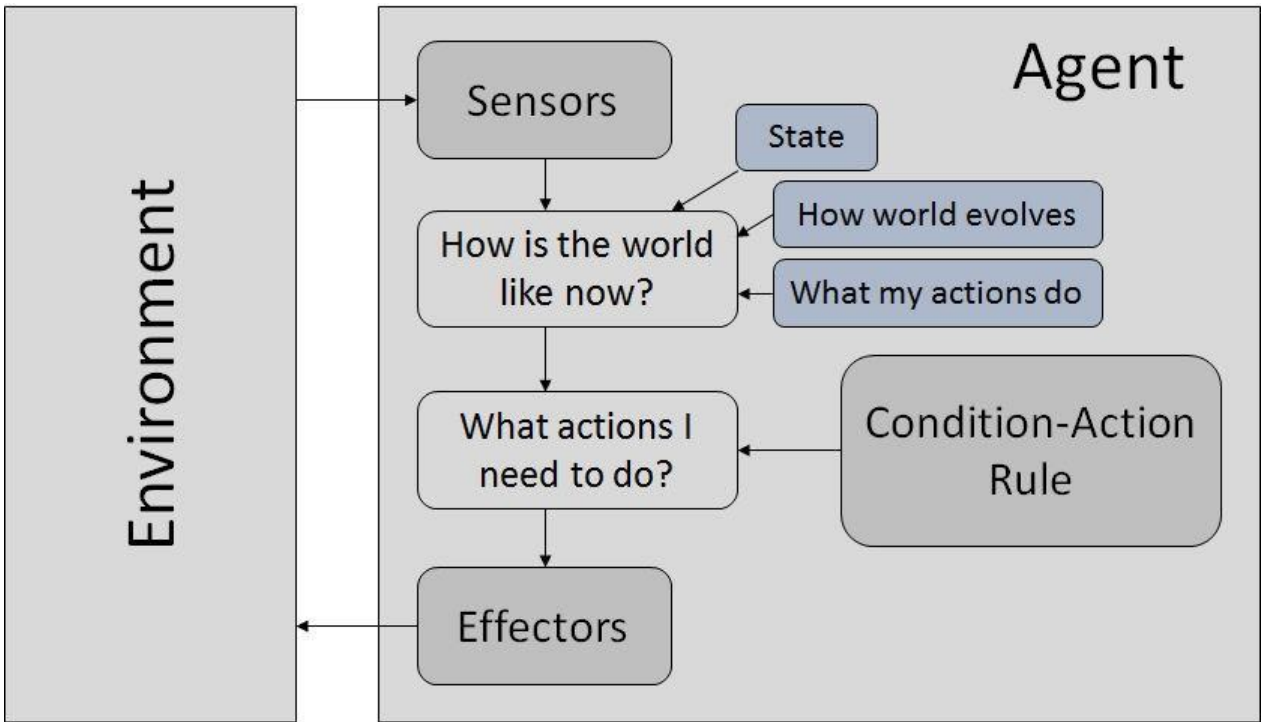
Model: knowledge about "how the things happen in the world".

Internal State: It is a representation of unobserved aspects of current state depending on percept history.

Updating state requires the information about

- How the world evolves.

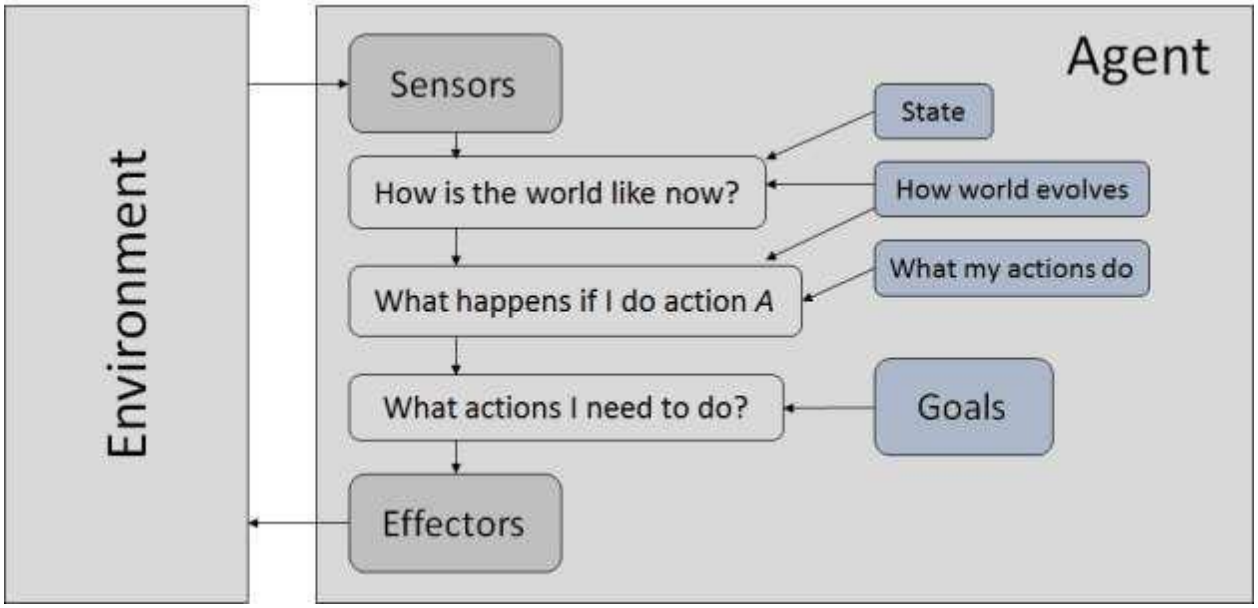
- How the agent's actions affect the world.



Goal-Based Agents

They choose their actions in order to achieve goals. Goal-based approach is more flexible than reflex agent since the knowledge supporting a decision is explicitly modeled, thereby allowing for modifications.

- **Goal:** It is the description of desirable situations.



Utility-Based Agents

They choose actions based on a preference (utility) for each state.

Goals are inadequate when:

- There are conflicting goals only some of which can be achieved.
- Goals have some uncertainty of being achieved and one needs to weigh likelihood of success against the importance of a goal.