Rational Agent
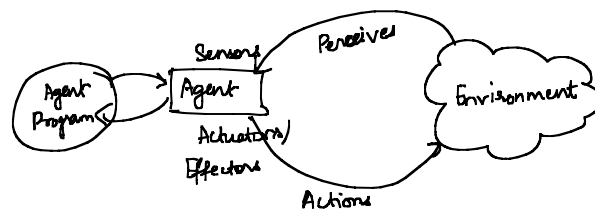
↳ always try to do the right thing.

In reality, a rational agent is not <u>omniscient</u>.

├→ does not know the actual outcome of its action.

↳→ it may not know certain aspects of its environment. }

Rationality must take into account the <u>limitations of agent</u>.
↓

[Percept sequence
  Feasible actions.
  <u>Background knowledge.</u>

Rationality

↳→ Perfect Rationality

↳→ Bounded Rationality.

↳ property of an agent that behaves in a manner which is nearly optimal with respect to its goals as its <u>resources will allow</u>.

Agent Environment

↳ in terms of what/how it appears to the agent

① On the basis of observability of environment.

↳ 1. <u>Fully observable environment</u> :-

All the environment relevant to take actions being considered is observable.
e.g. Chess

2. <u>Partially observable</u> :- Some relevant information may not be observable
e.g. Poker.

② On the basis of Determinism :-

↳ 1. Deterministic :- next state of environment is completely described by current state and action of agent
e.g. Image Analysis

2. Stochastic :- If some uncertainty may occur.
Deterministic + Partially observable = Stochastic
e.g. Ludo (Dice creates uncertainty).

3. Strategic :- next state is determined by preceding state and actions of multiple agents.
e.g Chess

③ On the basis of Episodicity.

     ↳ Episodical env. :- subsequent episodes do not depend on what actions taken in previous episode.

     ↳ Sequential env.

         ↳ Agent engages in series of connected episodes.

④ On the basis of dynamism :-

     → Static :- does not change while agent is thinking. <u>chess</u>

     ↳ Dynamic : can change   "   "   "   "   "

⑤ On the basis of continuity

     ↳ Discrete : no. of distinct percepts and actions are limited.

     ↳ Continuous :   "   "   "   " not limited.

⑥ On the basis of no. of agents

     ↳ Single agent env.

     ↳ Multi-agent env.

Complexity of Agent environment

① Knowledge - Rich :- If environment contains enormous amount of information.

② Input - Rich :- If environment contains enormous amount of input that it can send to agent.

How agents manage rich environments ?

     ↳ Sensing strategy.

     ↳ Attentional mechanisms.