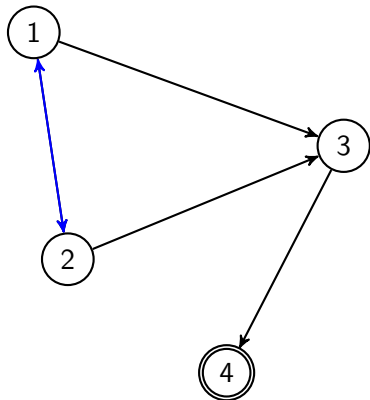
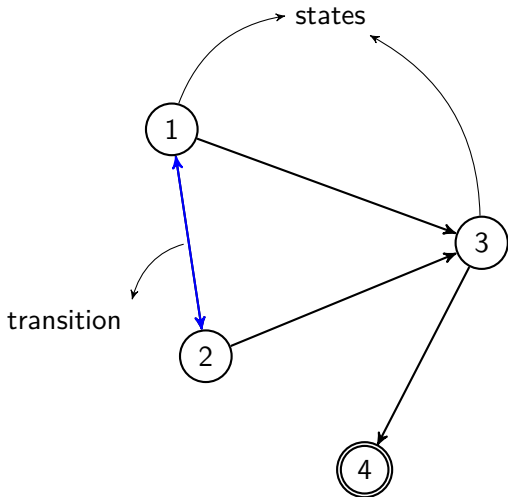


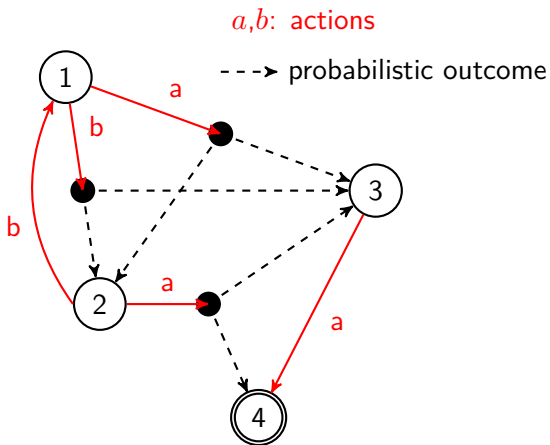
# Transition Systems



# Transition Systems

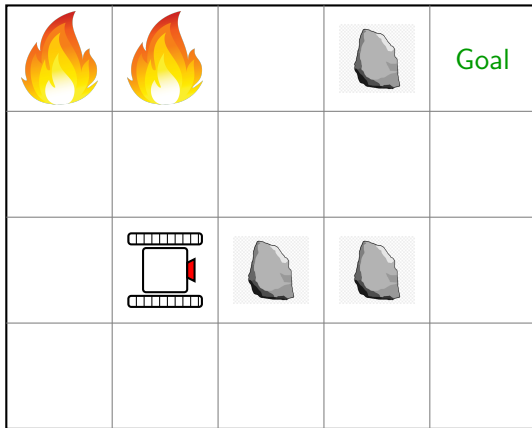


# Finite State Markov Decision Process



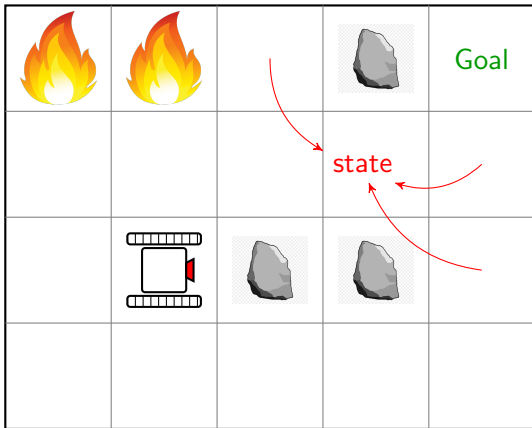
# Sequential Decision Making

Basic Formulation: States, Actions, and Rewards.



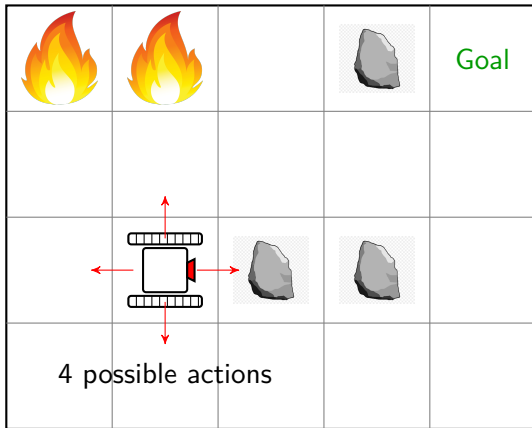
# Sequential Decision Making

Basic Formulation: **States**, Actions, and Rewards.









# Sequential Decision Making

Basic Formulation: States, **Actions**, and Rewards.









# Sequential Decision Making

Basic Formulation: States, Actions, and Rewards.

|   |   |   |   |               |
|---|---|---|---|---------------|
|  |  |   | <br>-200 | Goal<br>+1000 |
|   |   |   |   |               |
|   |  | <br>-200 | <br>-200 |               |
|   |   |   |   |               |

# Sequential Decision Making




















Basic Formulation: States, Actions, and Rewards. Basic Problem: Identify **best action** in each state to collect rewards.

|   |   |   |   |               |
|---|---|---|---|---------------|
|  |  |   | <br>-200 | Goal<br>+1000 |
|   | →   | →   | →   | ↑             |
|   |  | <br>-200 | <br>-200 |               |
|   |   |   |   |               |






















# Sequential Decision Making

Basic Formulation: States, Actions, and Rewards. Basic Problem: Identify **best action** in each state to collect rewards.

|   |   |   |   |   |
|---|---|---|---|---|
|  |  |  |  | Goal<br>+1000   |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

# Sequential Decision Making

Basic Formulation: States, Actions, and Rewards. Basic Problem: Identify **best action** in each state to collect rewards.

|   |   |   |   |  |
|---|---|---|---|--|
|  |  |  |  | Goal<br>+1000  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Possibility of sideways slip **changes** the optimal policy.