

ICKEPS 2024

Real-Time Strategy Scenario

Real-time strategy (RTS) games have been a very popular type of videogames for well over a couple of decades (recall games such as Dune 2, Command & Conquer, Age of Empires, etc.). One of the key elements of RTS games is the process of building a base and training units that can then be used to secure resources and gain territories. ICKEPS 2024 will focus on this aspect of RTS games as it is a good example of use of AI planning technologies in practice (e.g. game AI, automated game testing).

Specification

Our RTS considers four types of **buildings**:

- **Base**
- **Barracks**
- **Tech Facility**
- **Tank Factory**

Our RTS considers five types of **units**:

- **Worker**
- **Light Infantry**
- **Heavy Infantry**
- **Tank**
- **Siege Tank**

Each building has to be **built** by a **worker**. A worker cannot build more than one building at a time.

Barracks and **Tank Factory** can have two levels – **basic** and **advanced** – such that after the building is built, it is in the **basic level**. The building (on the basic level) can be **upgraded** if the player has **tech facility** (for upgrading the building, the player does not need a worker)

Units can be **trained** in respective buildings (the player has to have a required building to train a given unit):

- **Worker** in a **base**
- **Light Infantry** in **barracks** (any level of barracks)
- **Heavy Infantry** in **barracks** (**advanced level** of barracks)
- **Tank** in **tank factory** (any level of tank factory)
- **Siege Tank** in **tank factory** (**advanced level** of tank factory)

The player can have multiple buildings and units of the same type.

The number of buildings and units has an upper bound.

Problems to solve

Problem 1: The player initially has a base. The player needs to train light infantry.

Problem 2: The player initially has a base. The player needs to train light infantry and a tank.

Problem 3: The player initially has a base. The player needs to train light infantry, and two siege tanks.

Problem 4: The player initially has a base. The player needs to train two heavy infantry, one tank and one siege tank.

Problem 5: The player initially has a worker. The player needs to train two light infantry, one tank and two siege tanks.