



Let's play a game.

Description

Bolvatians (offence) are trying to conquer the Deboryans (defense) territory. To conquer the territory, all the strategic resources must be destroyed.

Bolvatians have multiple tanks, planes and ships. They want to destroy all the Deboryans buildings and units.

Deboryans have multiple anti-tank, anti-air and anti-ship systems. They want to protect all their buildings and units.

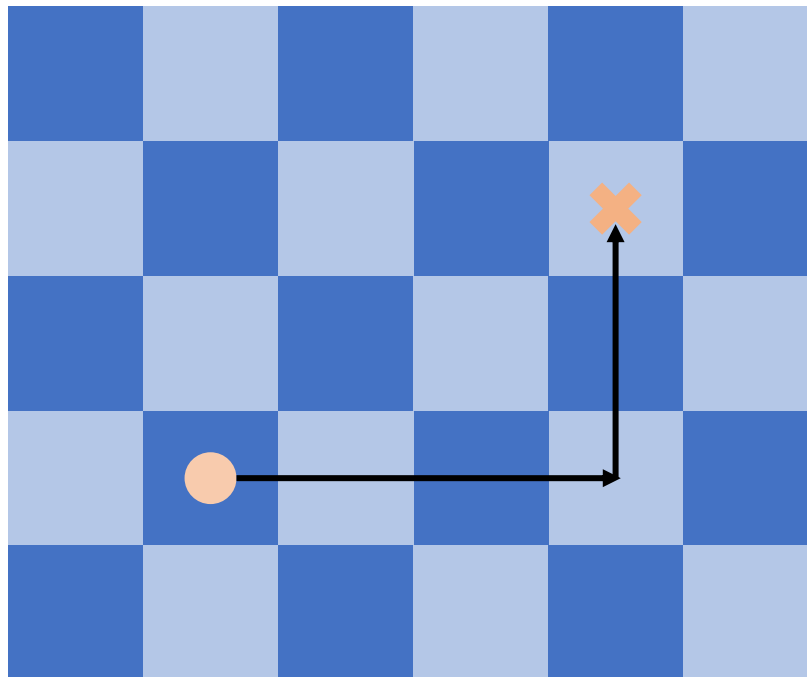
Help them fight.

Definition

Map

The battlefield takes place on a 100x100 size area (two-dimensional grid).

Movement



Units can move only along X and Y axis (diagonal movement is not allowed).

Units

For simplicity, each unit can shoot another unit without referring to the type of this unit, as long as both units are in the different armies. For example, a tank can



shoot an anti-air system and a building but can't shoot an airplane. An anti-tank system can shoot all the offence units instead of shooting just the tanks. No friendly fire!

Airplane	Anti-air, anti-tank, anti-ship systems, building
Tank	Anti-air, anti-tank, anti-ship systems, building
Ship	Anti-air, anti-tank, anti-ship systems, building
Anti-air system	Airplane, tank, ship
Anti-tank system	Airplane, tank, ship
Anti-ship system	Airplane, tank, ship

1. Offence units:

- Position.
- Target position.
- Range - the distance from which the unit can hit.
- Speed - the distance the unit can cover in one turn.
- Probability to hit the target.

Each offense unit has a single target, which is assigned before the game starts (in the configuration files). When the target is eliminated, the unit stops functioning (the unit is removed).

Each unit can attack in all directions. However, it can move only in one direction (towards the target) and can't turn back. Therefore, if the offense unit passes its target and the target is out of reach, the unit can't turn back and is removed.

2. Defense units:

- Position.
- Range - the distance the unit can protect.
- Probability to hit the target.

Each defense unit can attack a single unit in range (in all the directions). The targets can change on each turn.

Defense units can't move - they are stationary.

3. Buildings:

- Position.

The Building can't attack, defend or move.



Turn

1. **Offence units:**

- If the target is in the range - attack it according to the given probability. When the target is destroyed - remove it and the offence unit.
- If the target is not in range - advance towards the target with the given speed.

2. **Defense units:**

- If there is an offence unit in range - intercept it according to the given probability. When the offence unit is destroyed - remove it.

Game

- The game starts with placing the figures on the map.
- First turn belongs to the Offence units that is trying to attack, second turn belongs to the Defense units that is trying to protect and so on.
- The game ends when there are no Offense units.

Implementation

1. You have received a Visual Studio project that includes several code and text (configuration) files. Please implement and submit the missing functionality.
2. *OPTIONALLY*, you can extract the files from the folder and work in an environment that suits you. If you use a makefile, please attach it as well.
3. In addition, you are required to use the following configuration files (attached in the project):

- Attack.txt - Bolvatians unit configurations.
- Defence.txt - Deboryans unit configurations.
- UnitsProperties.txt – General unit configurations.

4. You can use any library you choose.
5. *BONUS*: Improve unit attack: units can shoot only the opposite type. For example, a tank can shoot only anti-tank systems and buildings, an anti-air system can shoot only airplanes.

Airplane	Anti-air system, building
Tank	Anti-tank system, building
Ship	Anti-ship system, building
Anti-air system	Airplane
Anti-tank system	Tank
Anti-ship system	Ship



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