

# Competition

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Out of curiosity I have decided to run my version of the competition. If the examiners want to run their version too they can reuse parts of the setup or the whole setup altogether with different maps for example. I would be very much interested in results from a set of maps that were not designed by me.

When creating the whole setup my biggest concern was computational limitations. Running 11 groups vs. 11 groups on 5 maps 3 times on each map would require 11x11x5x3 games therefore I've split the competition into 3 parts that allow me to reduce the computational requirements.

The three parts are:

1. **Qualifications** in this part of the competition agents not capable of winning in the simplest of conditions are rejected from the further competition.
2. **Preliminaries** in this part of the competition agents selected in qualifications are challenged only by the complexity of maps. The opposing team is natural and will do nothing.
3. **Finals** in this part of the competition agents selected in qualifications are faced against each other.

The split should not reduce the quality of the overall ranking because in my tests agents of many groups are not capable of solving the simplest maps.

Both qualifications and preliminaries are using a concept of sitting ducks agents. The sitting ducks are exactly what they seem to be i.e. these are agents that do nothing. I use them to test the capabilities of each team in isolation.

You can review the competition code here: <https://github.com/Project-2-2/GameInterop/pull/32/files>

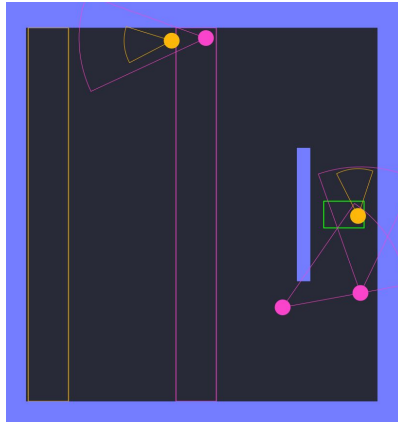
You can review the raw results here:

<https://raw.githubusercontent.com/Project-2-2/GameInterop/9d8978c86803361cdc2f3f7f0cb47ab9c95fae1f/src/main/java/Interop/Competition/Report/report.md>

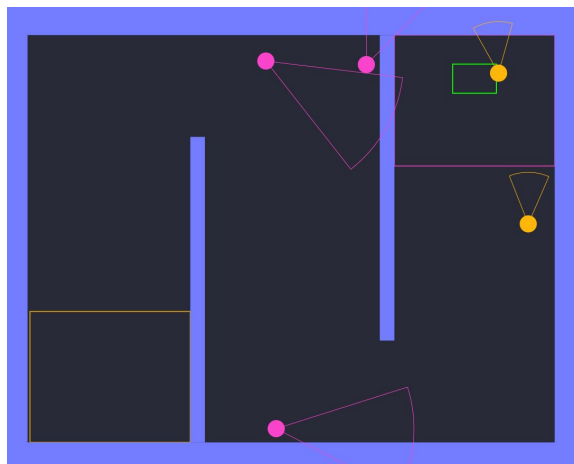
I will now discuss the setup of each part in more detail and provide the results with a quick summary.

## Qualifications

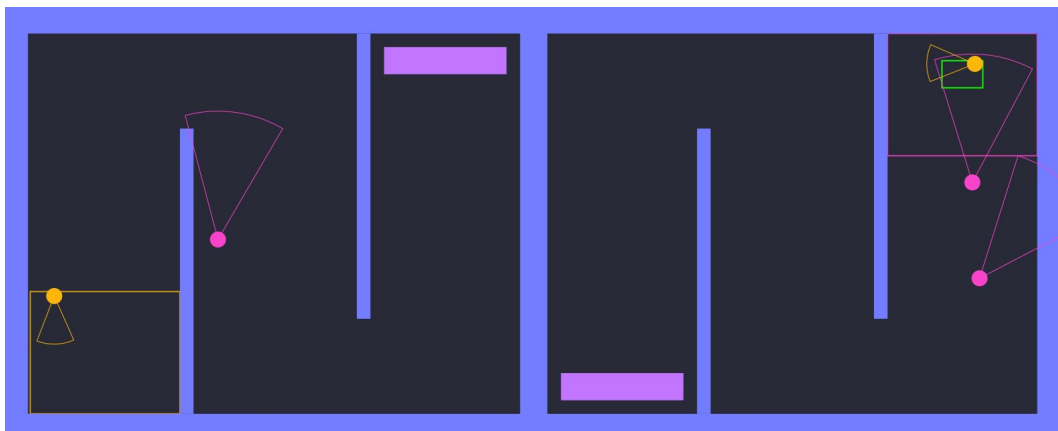
The qualifications consisted of 3 rounds for guards and intruders of each group separately. In each round agents were given 10 games in order to succeed on very simple, but progressively more difficult maps. The groups were not faced against each other, but against sitting ducks - agents that do nothing. Agents of groups that managed to win at least one round out of 10 were qualified for the next rounds. Agents that passed all 3 rounds qualified for preliminaries and finals. The qualification of guards was separate from intruders. So guards of one group could pass to the next round while intruders not or the other way around.



Round 1 was played on a very simple and small map with only one minor obstacle.



Round 2 was played on a little bit bigger map with 2 obstacles.



Round 3 was played on twice as big a map as round 2 and involved a teleport.

# Results

Qualification on: simple.map

Qualified intruders of groups: Group2 Group3 Group4 Group5 Group6 Group11

Qualified guards of groups: Group2 Group3 Group4 Group5 Group6 Group9 Group11

Qualification on: simple2.map

Qualified intruders of groups: Group3 Group4 Group6 Group11

Qualified guards of groups: Group3 Group5 Group6 Group9 Group11

Qualification on: simple3.map

Qualified intruders of groups: Group3 Group6

Qualified guards of groups: Group3 Group6

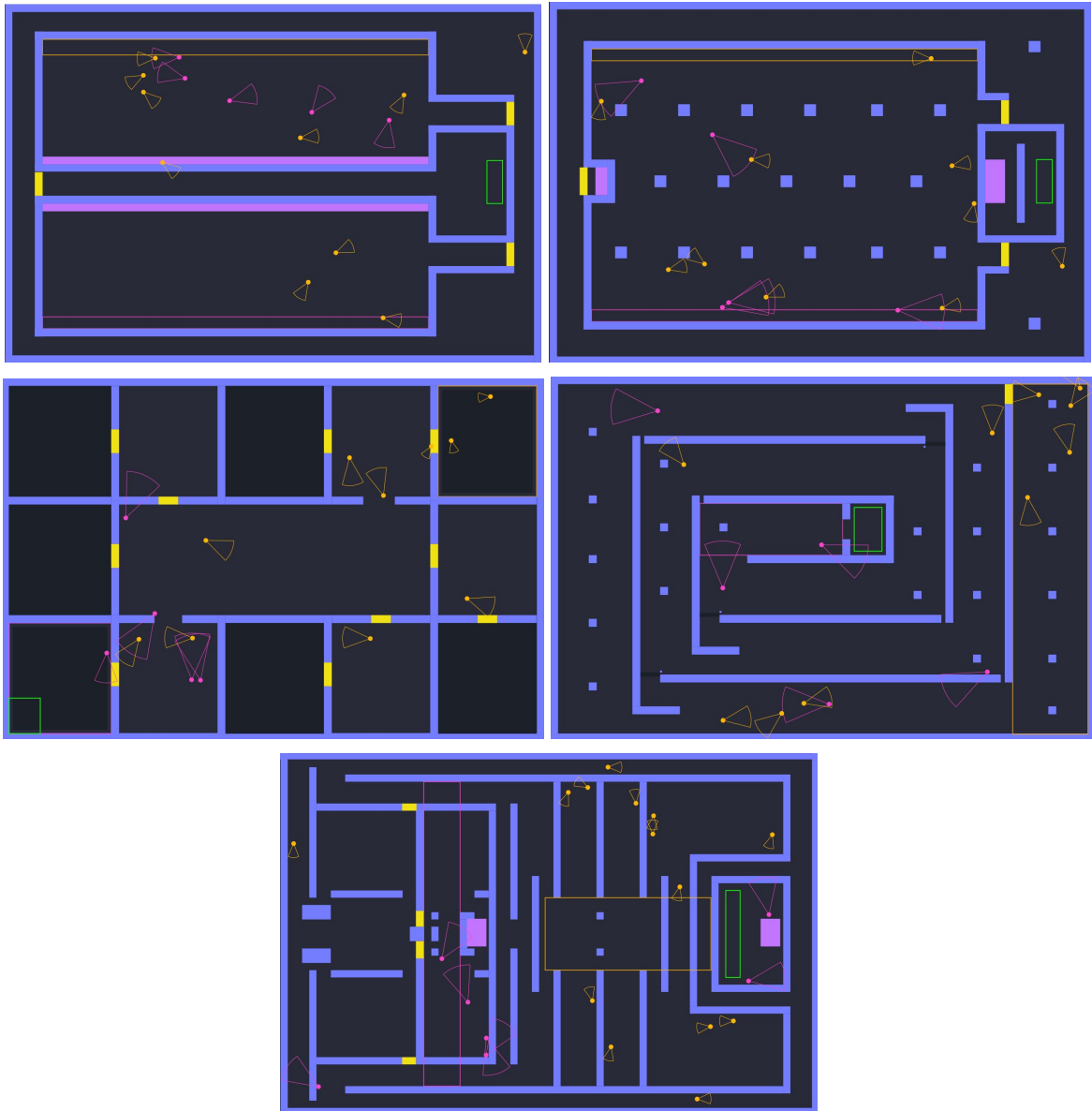
## Preliminaries:

The preliminaries as well as finals were played on 3 simple and 5 complex maps.

The complex maps are (see below for screenshots):

- Mirror: a map with a big teleport in the middle. Intruders need to go around the main room in order to reach the target through a narrow tunnel.
- Opem: a map similar to the mirror map but without the teleport in the middle of the main room. The teleport is replaced with walls inside the main room. Intruder again needs to go around the main room but this time the intruder must use a teleport instead of a tunnel to reach the target.
- Rooms: a map designed so that there are a lot of dead ends that may need to be explored. The dead ends and spawn areas of agents are hidden in shadows. The target is hidden in shadows as well.
- Spiral: this map is designed to test efficient exploration. Intruders need to follow a spiral of walls with the target in the middle of the map and the spiral.
- Temple: a map with a lot of narrow passages and dead ends. Intruders need to be able to enter a room in the middle of the map and find a teleport. Guards are spawned in that room, so intruders need to be efficient at avoiding guards. There is one false passage to the target area on the edges of the map.

Agents of groups that passed qualifications were faced 3 times on each map against sitting ducks. Each game was capped at 5000 rounds.



## Preliminaries Results:

Please review raw results here:

<https://raw.githubusercontent.com/Project-2-2/GameInterop/9d8978c86803361cdc2f3f7f0cb47ab9c95fae1f/src/main/java/Interop/Competition/Report/report.md>

## Finals

The finals were using the same setup as preliminaries, but this time agents of each group are faced against each other. In the implementation agents of the same group can compete against each other, however the results are ignored in the final evaluation.

## The finals results:

Please review raw results here:

<https://raw.githubusercontent.com/Project-2-2/GameInterop/9d8978c86803361cdc2f3f7f0cb47ab9c95fae1f/src/main/java/Interop/Competition/Report/report.md>

### As intruders:

- Group 3 wins: 11
- Group 6 wins: 15

### As guards:

- Group 3 wins: 8
- Group 6 wins: 10

There were also 4 draws.