

Battle of the Threads

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1 Introduction

This document describes rules for a variant of the game BattleThreads suggested in [Hil+03]. This game variant aims for the following learning objective: Explain race conditions.

2 Preparations

2.1 Build Teams

Build teams with 6 players each, number players from 1 to 6.

2.2 Position Ships

As team, fill out the file [our-ships.org](#) representing your ships in a text editor of your choice. The sample file already contains some ideas of what to write down in individual fields: “X” for an own ship (one ship with three fields is shown in A1, A2, A3), “h” for a hit, “m” for a miss, “d” for the final hit destroying a ship. You may want to move that first ship and erase the miss in B1. Position 5 ships (two with 4 fields, three with 3 fields).

2.3 Create Shared Folder

Create a folder in Sciebo (which is an [ownCloud](#) instance; [Nextcloud](#) could also be used), and share that folder among team members (with edit permissions).

2.4 Upload

Upload the file recording your ships to the shared folder.

In the file [their-territory.org](#), you record your own shots into the opponent’s territory. That file contains marks showing a hit at A1 and a miss at B1. Per team, erase those, and upload the file to your team’s shared folder.

2.5 Take Positions

Find another team with which to play, one is team A, the other one team B. Build 6 pairs of players, each consisting of players from the two different teams. Find neighboring seats for each pair such that pairs are spread throughout the lecture hall (for independent playing of individual pairs).

3 Gameplay

The two players of each pair talk (in low voice) about shots and outcome. Team members shoot concurrently. Before taking a shot, the shooter downloads the team's current state of the opponent's territory, selects a field, and asks the neighbor. The neighbor downloads the state of their own ships, marks whether that is a hit, miss, or destruction, uploads the file again, and informs the shooter about the outcome. The shooter enters the outcome into their file and uploads it to the server. Then both neighbors switch roles (the other one shoots now).

In the first round, actions will be coordinated by external signals, with shots taken in turn (for this purpose, teams have letters A and B, and members are numbered). Afterwards, pairs of neighbors proceed according to their own pace.

4 Acknowledgment

This game variant with files as shared resources and physically distributed players causing and experiencing race conditions was proposed by Adrian Lison in response to an open JiTT question related to Mutual Exclusion (asking for questions or feedback or novel contents) in summer term 2017.

[Hil+03] John M. D. Hill et al. "Puzzles and Games: Addressing Different Learning Styles in Teaching Operating Systems Concepts". In: *SIGCSE Bull.* 35.1 (Jan. 2003), pp. 182–186. ISSN: 0097-8418. DOI: [10.1145/792548.611964](https://doi.org/10.1145/792548.611964). URL: <https://dl.acm.org/citation.cfm?doid=792548.611964>.

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