

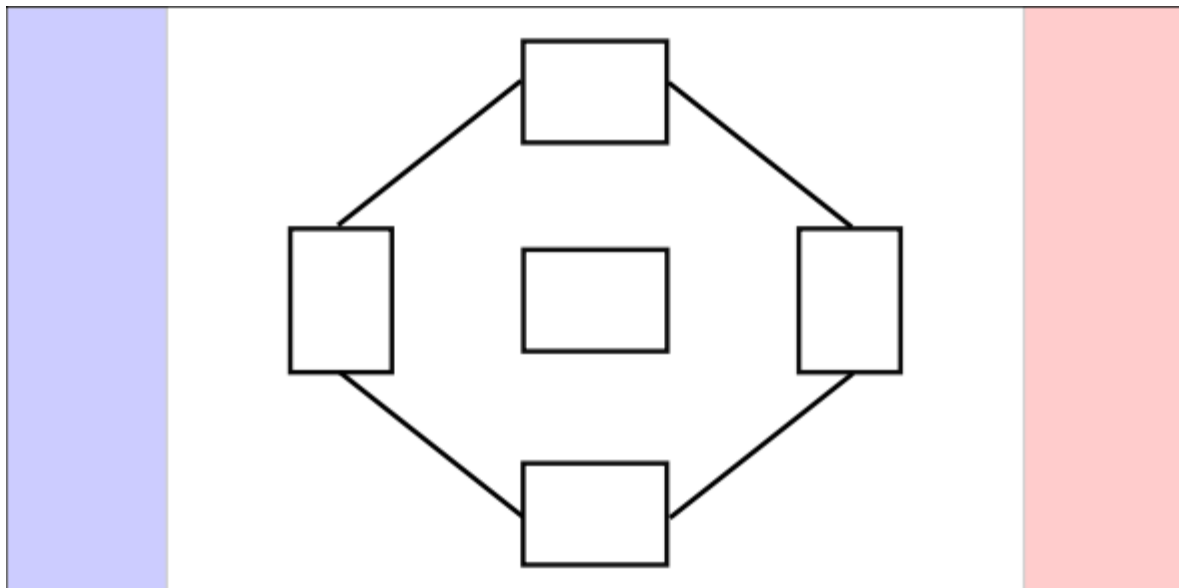


# Robo challenge

Robo challenge is a category where two robots compete against each other in a single playground. The time limit for a game is 8 minutes. Each robot will play against all the other robots. The best ones are chosen for Elimination games. Elimination games are several battles between robots using a spider topology where the winner proceeds into the next battle. The first three places are ranked.

The goal of Robo Challenge is to occupy as many zones on the playground as possible. Teams start on opposite sides of the playground (blue and red zone). Additionally, five other zones are placed on the playground. Each zone has a size of A4 paper and is surrounded by black tape. Four outside zones are also linked with black tape (thin Electrical Tape).

## The Playground:



Zones can be occupied using the following 3 methods:

- **Visiting a zone** - Robot visits a zone with more than a half of its mass, stays in the area for 10 seconds and then leaves completely.
- **Raising a flag** - Robot visits a zone and performs a 360 degrees rotation after which it stays still for 1 second.
- **Building a statue** - Robot brings a roll of toilet paper (representing a statue) to the zone. In order to successfully build a statue, it has to be placed in the zone with its entire volume while its circular base touches the playground. Each team has 6

statues at the base. Statues which left the base will be collected after the round is completed.

The battle has 3 rounds. At the beginning of a round, the robot needs to wait for a button press. The button must be visible on the robot, while changing the program after a rival's turn is forbidden. Each robot is started separately. The team agrees on the start button with a referee and starts the robot at the referee's command.

A robot may leave the base for a maximum time of one minute. After this time has expired, a team takes the robot back to the base. The team shall take the robot from the playground before time has expired after upon request. When the team touches the robot, the round ends.

Zone occupation:

At the beginning of the round, all zones are clean and do not belong to anyone. In each round, teams can try to occupy a zone. The strength of the occupation is determined by the following table.

Method of occupation	Crown obtained	Number of attacks
Visiting the zone	Bronze crown	Number of visits in a round
Raising a flag	Silver crown	Number of spins in a round
Building a statue	Gold crown	Number of statues placed in a round

The following types of zones can be taken:

1. Unoccupied zone - can be occupied by visiting the zone, raising a flag or building a statue.
2. Occupied zone - teams have to occupy the zone with a stronger method (if the zone was occupied by visiting the zone, the rival has to raise a flag or build the statue) or use the same method more times.

The occupation is done under the following rules:

- Bronze crown < Silver crown < Gold crown (More valuable metal wins)
- If both teams own the same crown, the team with more zone attacks wins (more visits, more rotations or more statues)

## Zones evaluation

Taken zones are evaluated after each round. Should there be a draw, the zone remains in control of the team which controlled it before the round. The total count of controlled zones is determined at the end of the round. The team with the highest number of controlled territories wins. If two or more teams have the same number of points, the one with the

strongest control wins (more precious crowns, more occupations). Shouldn't it be possible to determine the winner, jury will choose the one with better code quality.

## Restrictions

A robot must have an easily visible start button. The button must be red, 3x3 centimeters big and used solely for starting a previously selected program. The robot has to be able to fit on A4-sized paper at any time. The height of the robot is not limited.