Arena competition

July 2, 2018

Assignment:
Now that you have played with the robot for a couple of weeks you will have to write a programme that allows the robot to pickup cubes and bring them back to your home base. Each team has their own home base at either end of the arena. The corners of the arena are special areas where you can place the other team's cubes.

Your cubes are scattered around the arena and your task is to pickup your cubes and bring them to your home base (marked with a QR code representing 98 or 99). You are allowed to hinder the other team by picking up their cubes either from the arena floor or from their home base and bring them to the special areas.

You will have 10 minutes time to collect as many cubes as you can. Every cube you bring to your home base and is still there at the end of the match is worth 1 point but only if it is you own cube. Every cube of the opponent that you have moved to one of the corners and is there at the end of the match is worth 1 point.

It is possible that your robot gets stuck. You will have to detect if this is the case and try to make your robot move accordingly. You need to make your robot say "bring me home" before you can move it to your home base. The walls of the arena are marked with a QR code representing a number to help your robot in determining its location.

Rules and regulations:

- All robots will be tested for doping (i.e. your code will be checked for remote control possibilities). If your robot is found to have/use doping **your opponent will be awarded 3 points**.
- You are not allowed to move the box in the middle of the arena nor are you allowed to brake down its walls. (-1 point per wall or movement of the box, to the discretion of the referee).

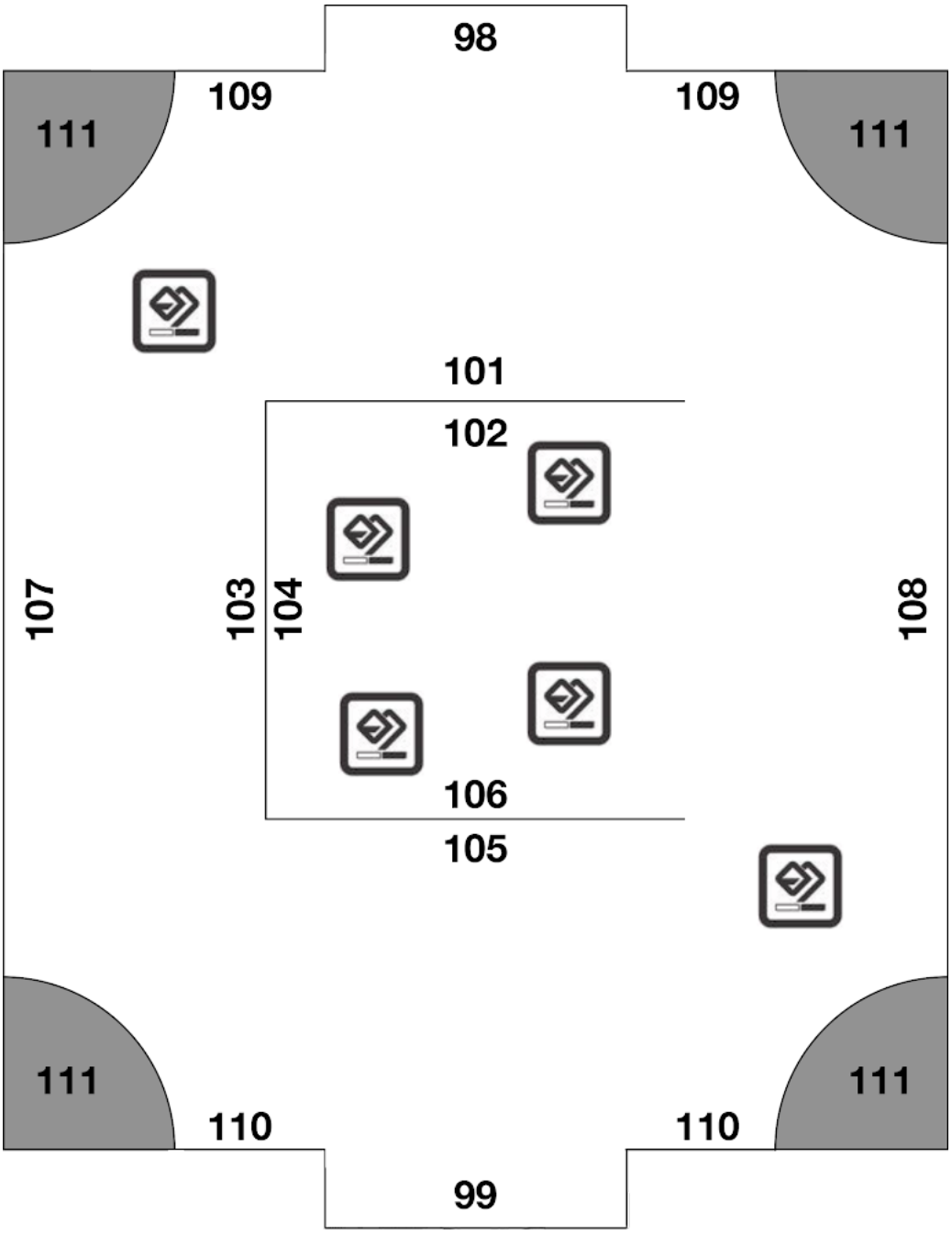

Figure 1: the arena

- Your robot is allowed to hinder the other team's robot in any way it can however, you are not allowed to do that. (+2 points to the other team per incident).
- If your robot gets stuck and says "bring me home" you are allowed to move it back to your home base but you are not allowed to place it in the arena.
- For every cube that is yours and you bring to your home base and is still there at the end of the match you get 1 point
- For every cube that is not yours and you bring to the corners of the arena and is still there at the end of the match you get 1 point.

Milestones:

1. Make your robot drive to a cube using the look around behaviour and the wait_for_observed_light_cube function and pick it up.
2. Let your robot pronounce the number on a card.
3. Make your robot drive to a cube using look_for_cube function and pick it up.
4. Make your robot drive towards one of your cubes using the two different methods.
5. Make your robot drive to your home base.
6. Pickup the cube and bring it back to the home base.
7. Make your robot drive around the box and pickup a cube.

Presentation:
You are also making a short presentation in which you describe which challenges you faced and how you solved them. This presentation should be about 5 to max 10 minutes long. We do not want to see any lines of code in the presentation except when they help you explain concepts.

Marking:
Completion of the milestones = 1/3
Presentation = 1/3
Place in the competition = 1/3

4th place 1 points

3rd place 2 points
2nd place 4 points
1st place 6 points