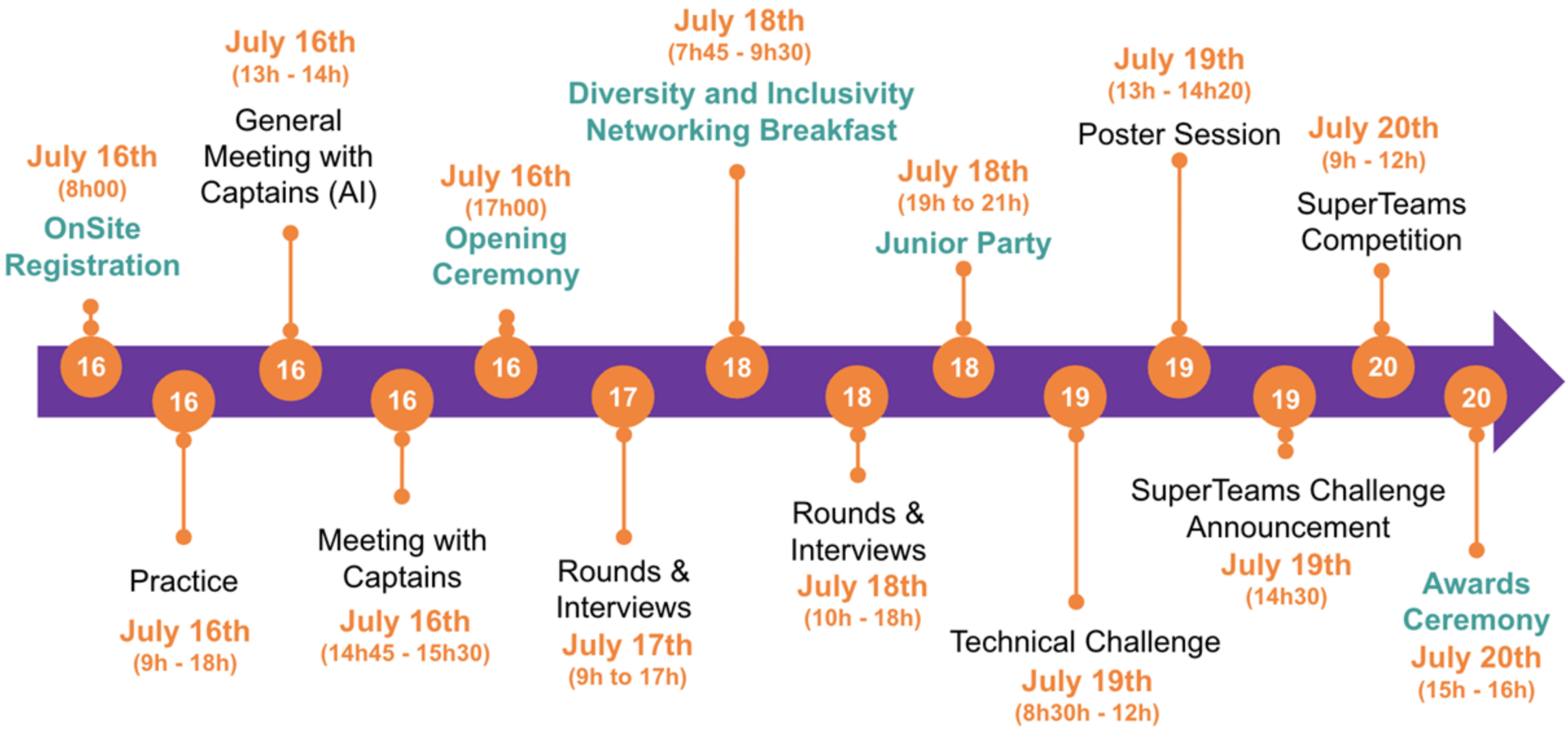
Rescue Maze Judge Training

RoboCup 2025

July 12, 2025

Schedule


July 16th
(8h00)
OnSite Registration
16
Practice
July 16th
(9h - 18h)
16
July 16th
(13h - 14h)
General Meeting with Captains (AI)
16
Meeting with Captains
July 16th
(14h45 - 15h30)
16
July 16th
(17h00)
Opening Ceremony
16
Rounds & Interviews
July 17th
(9h to 17h)
17
July 18th
(7h45 - 9h30)
Diversity and Inclusivity Networking Breakfast
18
Rounds & Interviews
July 18th
(10h - 18h)
18
July 18th
(19h to 21h)
Junior Party
18
Technical Challenge
July 19th
(8h30h - 12h)
19
July 19th
(13h - 14h20)
Poster Session
19
SuperTeams Challenge Announcement
July 19th
(14h30)
19
July 20th
(9h - 12h)
SuperTeams Competition
20
Awards Ceremony
July 20th
(15h - 16h)
20

Work distribution

Senior Judge

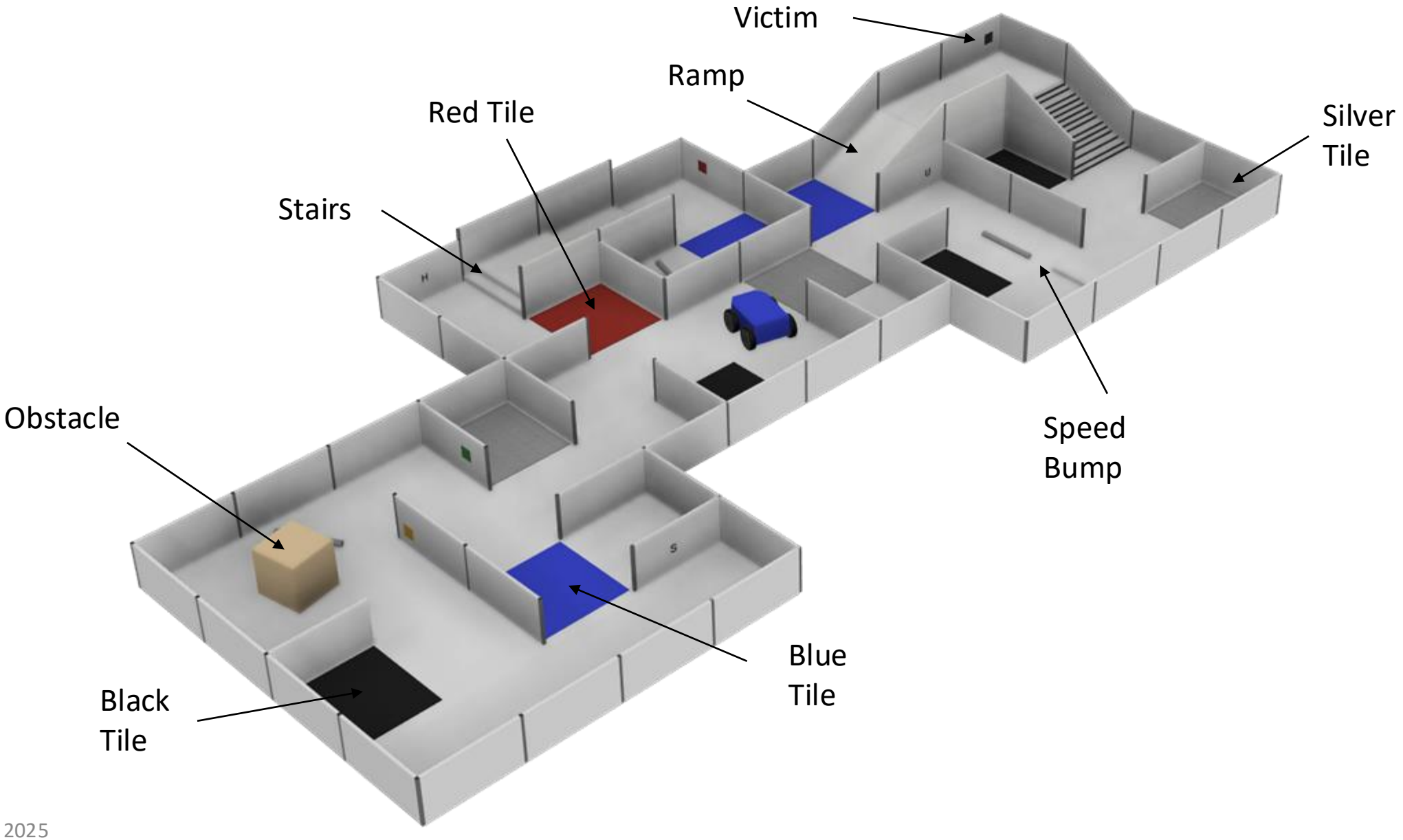
- Recognized by the committee as experienced
- At least one senior judge is always present at a field, and stays at the same field the entire day
- Responsibilities:
    - organizes tasks at a designated field
    - final say in decisions during runs
    - leads discussion with the team
    - educate junior judges

Junior Judge

- Support the senior judge in all aspects of the judging process
- Learns as much as possible, so they may be assigned a Senior Judge position in the future
- Junior judges will rotate throughout the day, and might be assigned access control duty

We strongly encourage senior judges to gradually transfer more responsibilities onto less experienced volunteers, so they can learn under their supervision.

Rescue Maze Field



Pre-mapping

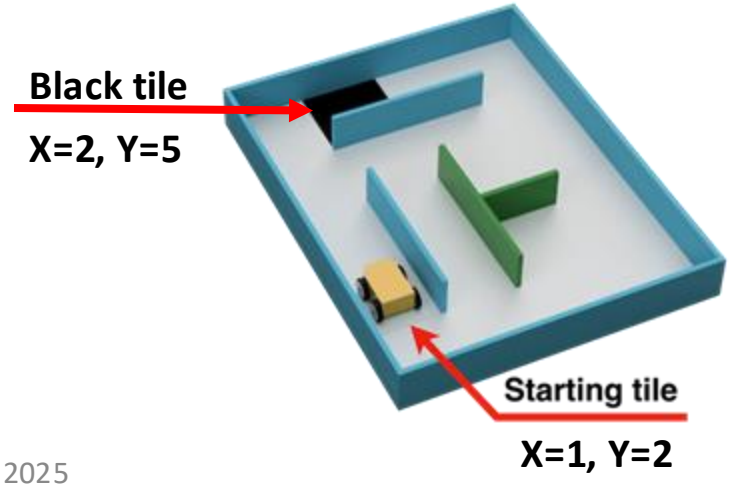
Teams are not allowed to provide their robot with any information about the field in advance.

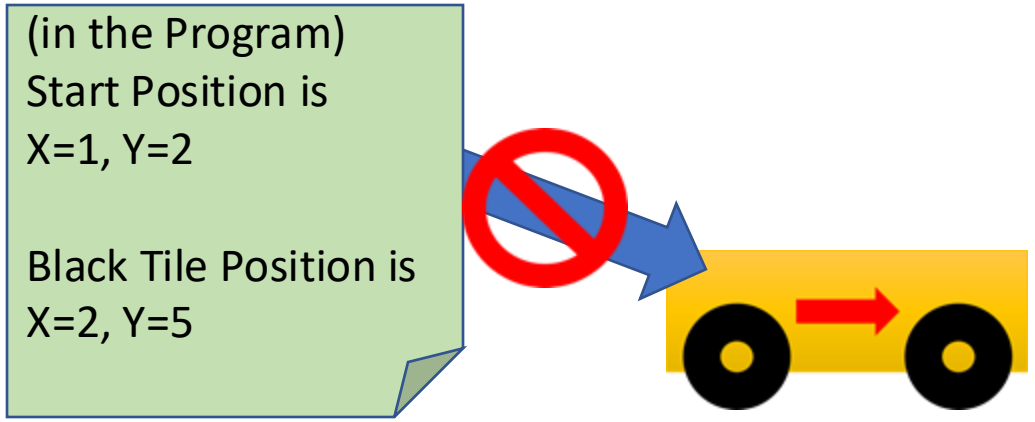
Information that is **ALLOWED** to be used in the robot's algorithm beforehand:

- The width of the passages, the height of the walls, the temperature range of the victims, etc.
- The information that is static and the same in every run during the tournament can be used in the algorithm.

Information that is **NOT ALLOWED** to be used in the robot's algorithm:

- The location of victims, walls, checkpoints, black-tiles, if it is favorable to follow the right or left wall in a particular maze, etc.
- Everything that changes between different runs should not be provided to a robot prior to a run.





Forbidden hardware & software

4.3.5 Teams are **not permitted** to use **commercially produced** robot kits or sensor components specifically **designed or marketed to complete any single primary task of RoboCupJunior Rescue**. Robots that do not comply will face immediate **disqualification** from the tournament. If there is any doubt, teams should **consult** the RoboCupJunior Rescue Committee **before the competition**.

Examples of illegal kits:

- line followers - plug directly into motors, **no need for programming**.
- AI camera software - students are expected to create their own dataset and train their network
  - Optical character recognition (OCR) - pretrained networks for letter recognition
  - color, object etc. detection (e.g. HuskyLens, PixyCam) - such cameras are allowed, their **software is not**

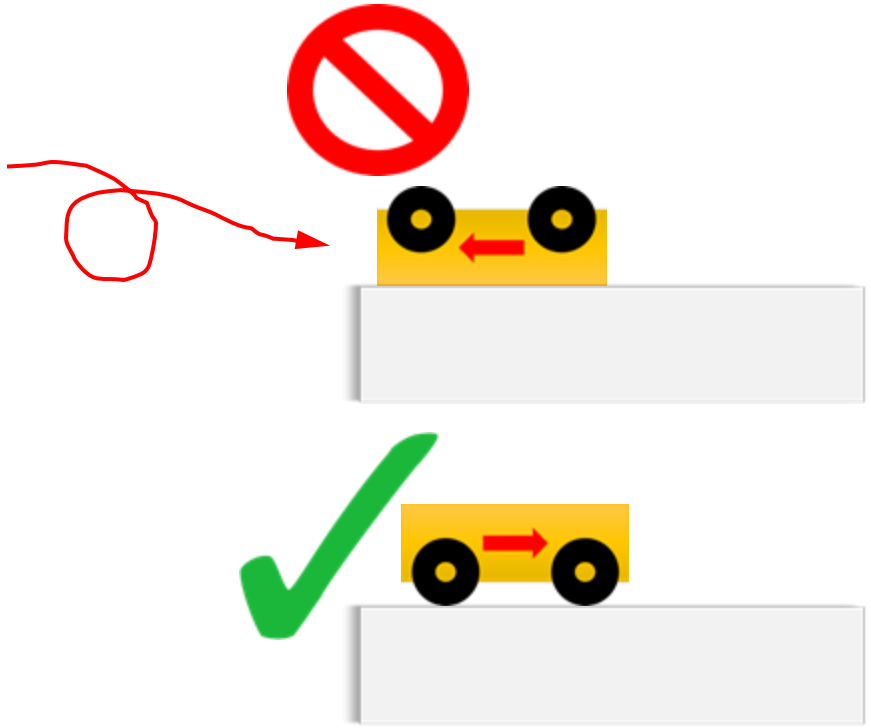
Examples of legal kits:

- cameras - no built-in features, all algorithms for data analysis made by the students
- “helper” libraries - allowing students to develop their own machine learning models and computer vision algorithms from scratch
  - libraries providing machine learning framework - e.g. pytorch, tensorflow
  - libraries providing basic computer vision methods, without ML - e.g. openCV

Visited Tile

5.4.4 A 'visited tile' means that more than half of the robot is inside the tile when looking from above.

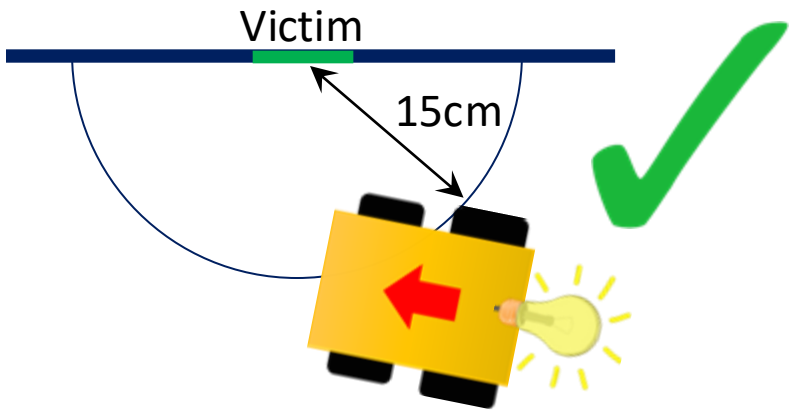
More than a half of the robot's body is in the tile.



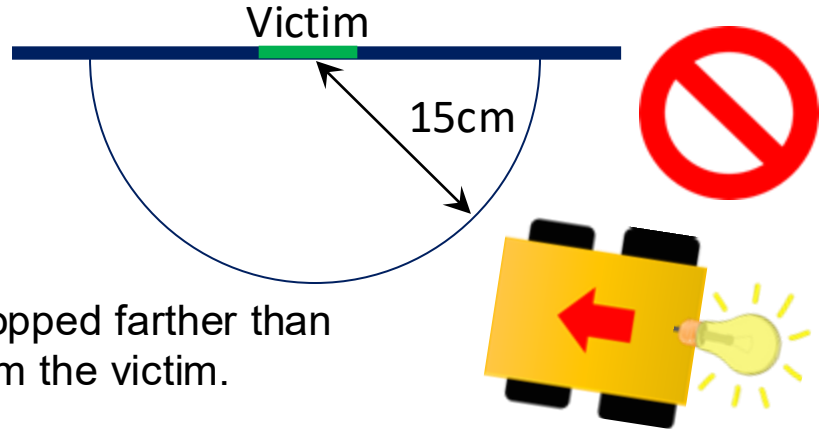
The robot must be able to continue moving forward after landing on the tile.

Successful Victim Identification

5.6.1 To successfully identify a victim, the robot must stop within 15 cm of a victim and blink with the specific LED or Display that is cleary visible to the referee for the full 5 seconds while stationary. The blink interval (ON: 500ms, OFF: 500ms) must be followed to successfully identify a victim.

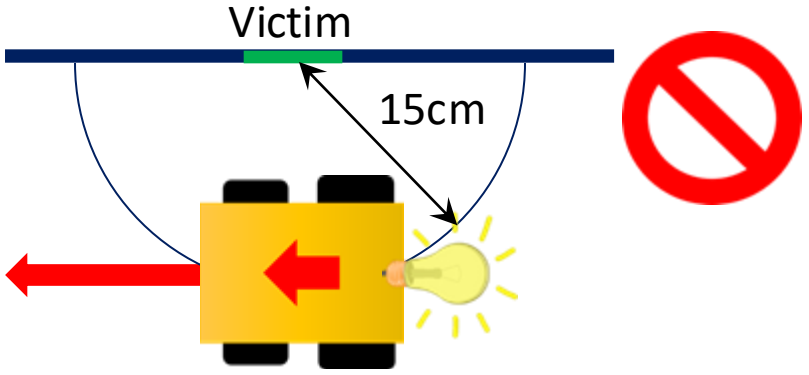


Robot stopped at a point within 15cm from the victim and blinked a visual indicator in the correct interval for 5 seconds.



Robot stopped farther than 15cm from the victim.

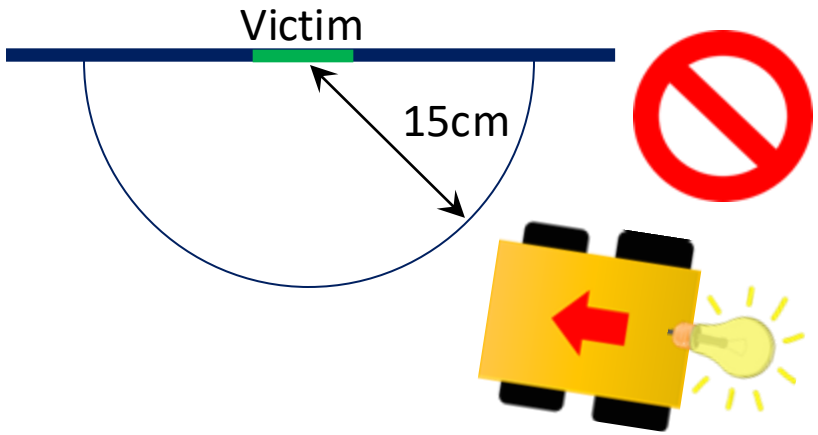
- Visual indicator has to blink! (ON: 500ms, OFF: 500ms)
- Inform the referee about the location of your indicator before the run.



Robot did not stop.

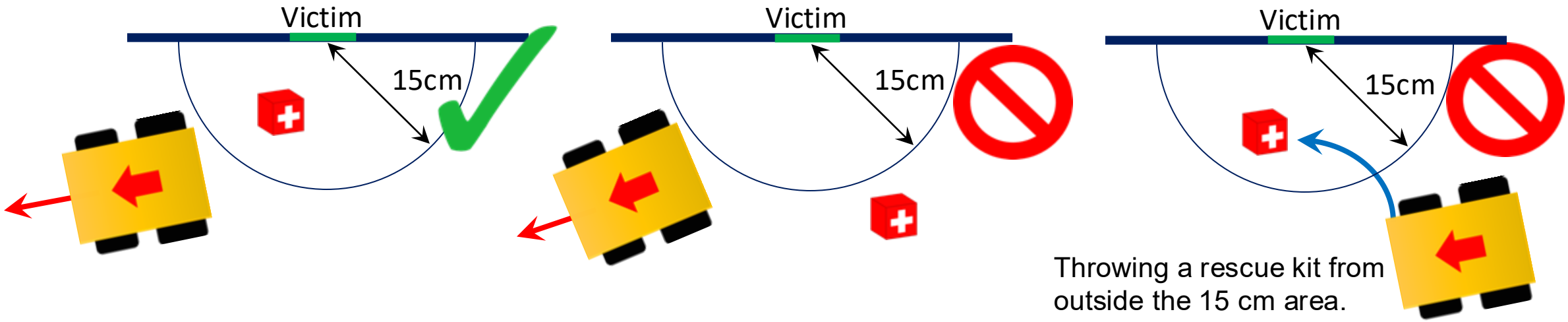
Misidentification

5.6.13. Misidentification. If a robot identifies a victim but is outside the 15 cm radius of any victim, 5 points will be deducted. This scenario doesn't apply to delivering the incorrect number of rescue kits to victims. The total points will never go below zero points.



Successful Rescue Kit Deployment

5.6.3. A robot must deploy a rescue kit entirely within 15 cm of the victim to successfully deploy a rescue kit. The deployment point is determined by the location of the rescue kit when the robot moves entirely out of the 15 cm boundary of the victim.



5.6.4. No points will be awarded for delivering a rescue kit to a victim that wasn't successfully identified first.

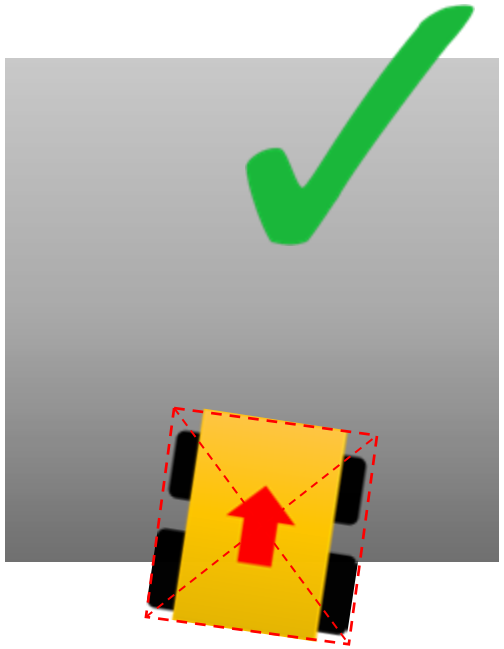
3.7.3. Each rescue kit must have a minimum size of 1 cm in each dimension and have a minimum volume of 1 cm^3 after deployment.

Successful victim identification & kit deployment

Type	Victims	Required number of rescue kit
Letter	**U**	**0**
	S	**1**
	H	**2**
Colored	**Green**	**0**
	Yellow	**1**
	Red	**2**

Successful Checkpoint Navigation

5.6.10. Successful Checkpoint Navigation. A robot is awarded 10 points for each visited checkpoint. Refer to Section 5.4, “Scoring Run” for definition of visited tile

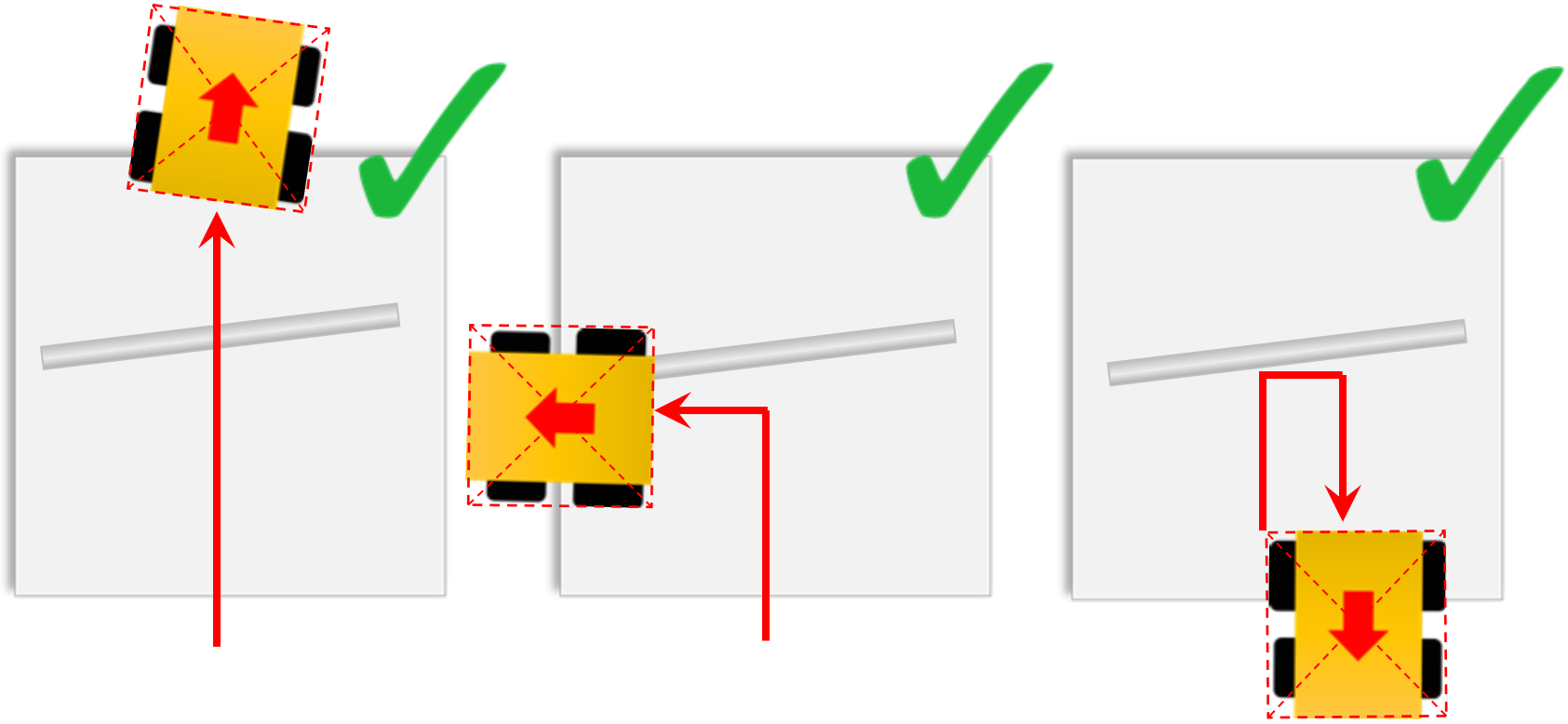


More than a half of the robot’s body is in the tile.

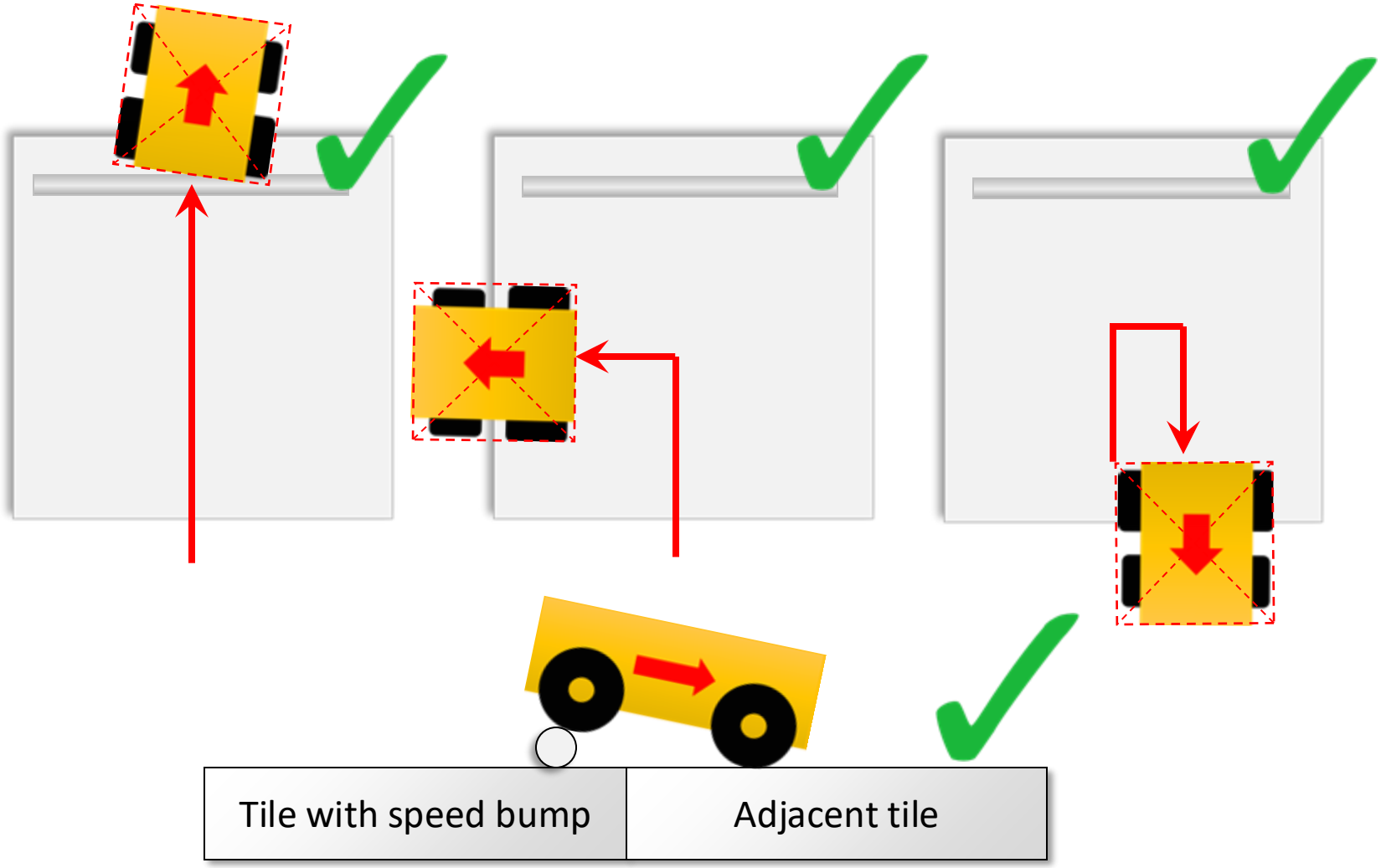
Successful Speed Bump Crossing

5.6.7. Successful Speed Bump Crossing. For each tile with speed bumps passed, a robot is awarded 5 points.

1. The robot visits a tile with speed bumps.
2. The robot visits a tile adjacent to the tile with speed bumps.

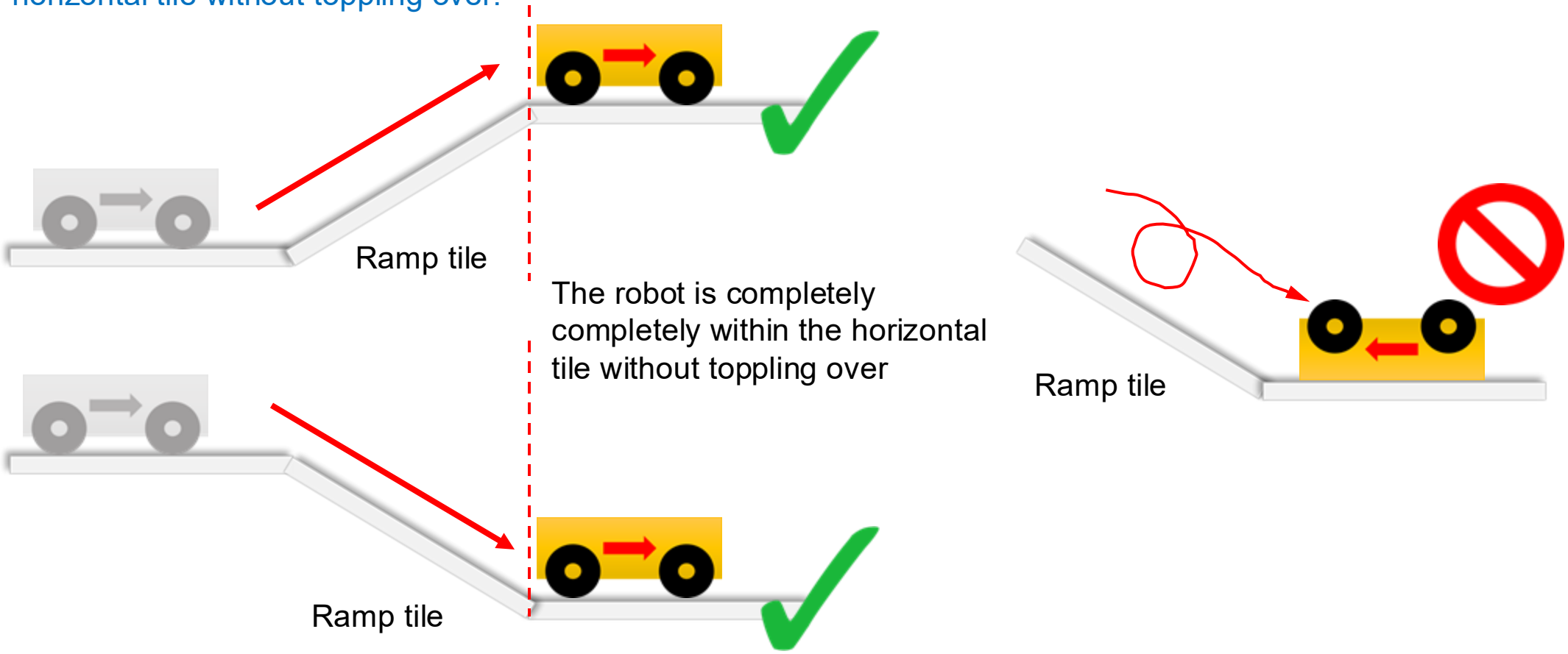


Successful Speed Bump Crossing



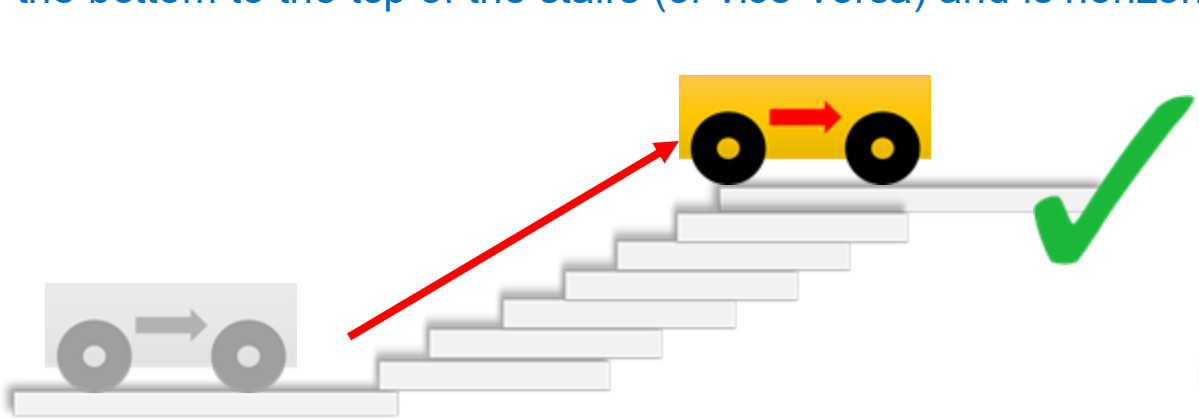
Successful Ramp Navigation

5.6.8 Successful Up or Down Ramp Navigation. A robot is awarded 10 points for a successfully navigating up or down a ramp (i.e.: the robot can score a maximum of 10 points per ramp). The robot has successfully navigated through the ramp when it moves from the bottom to the top tile (or vice versa) and is completely within the horizontal tile without toppling over.

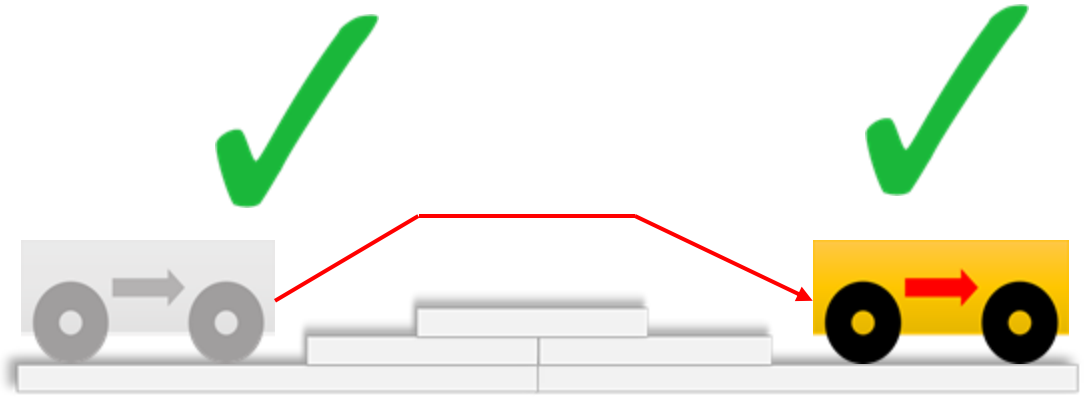


Successful Stairs Navigation

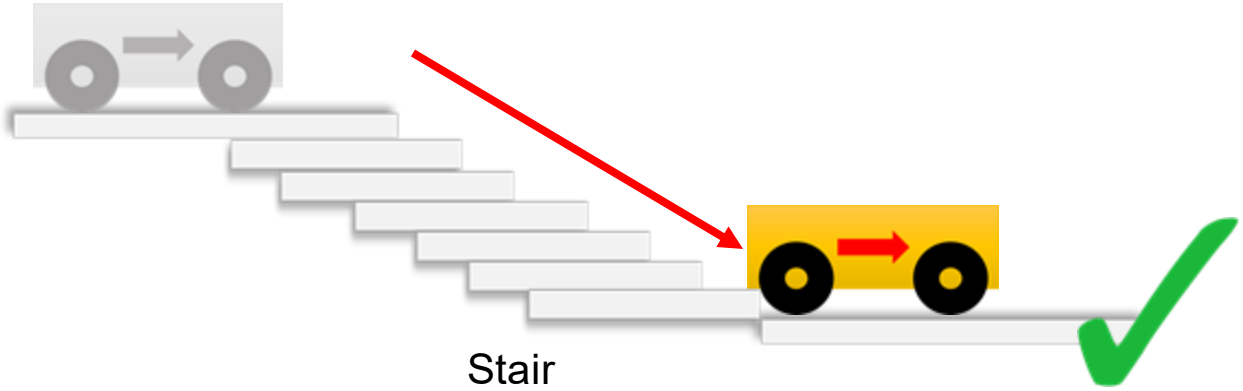
5.6.9 Successful Stair Navigation. A robot is awarded 10 points for navigating up or down the stairs (i.e., the robot can score a maximum of 10 points per direction (up or down)). Successful navigation means the robot moves from the bottom to the top of the stairs (or vice-versa) and is horizontal.



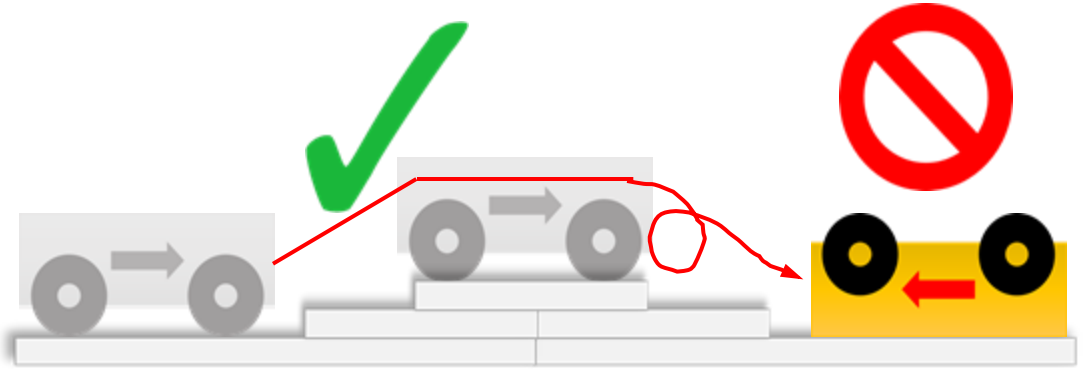
Stair



The robot is completely level across the stair



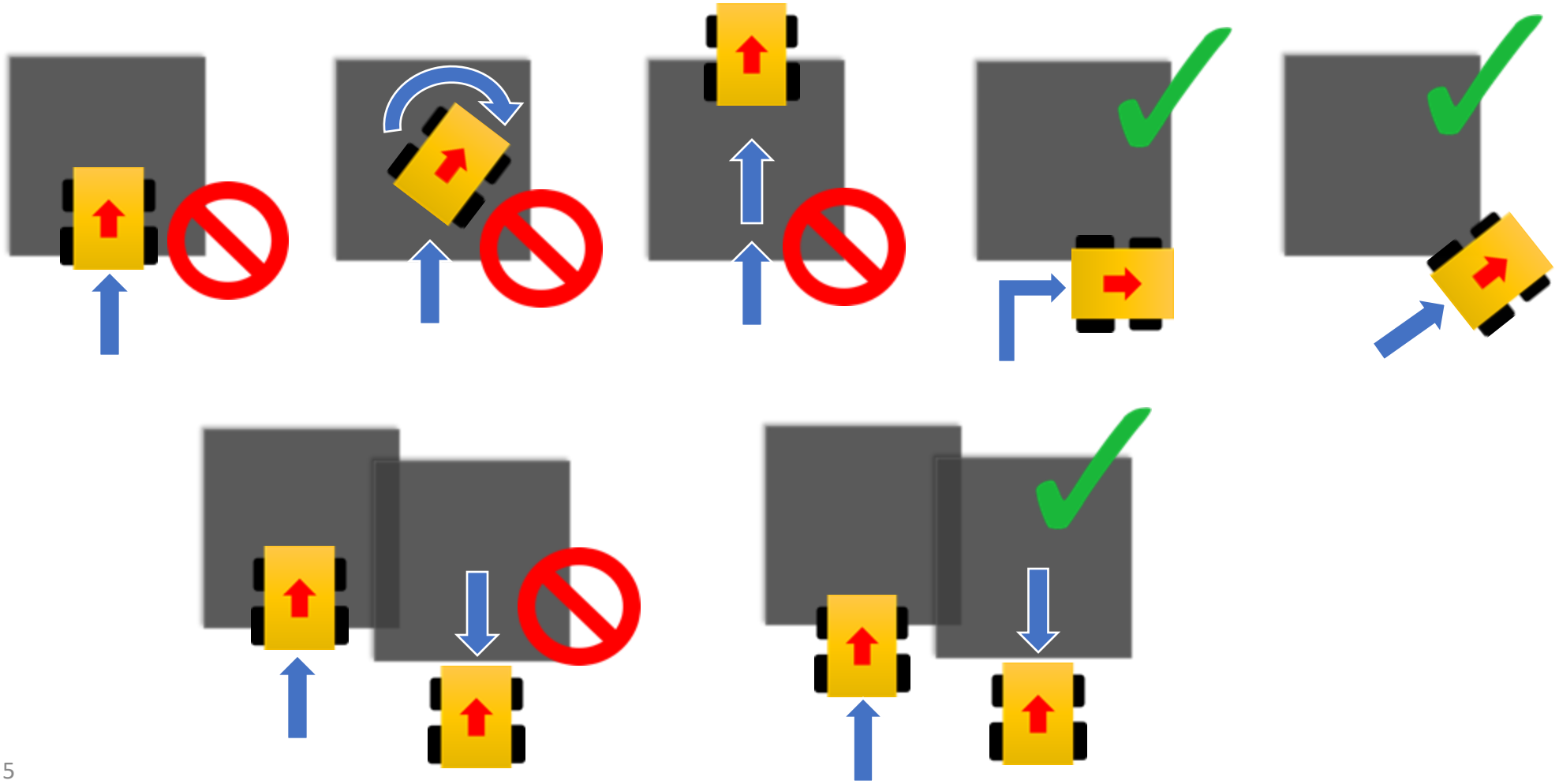
Stair



Black tiles

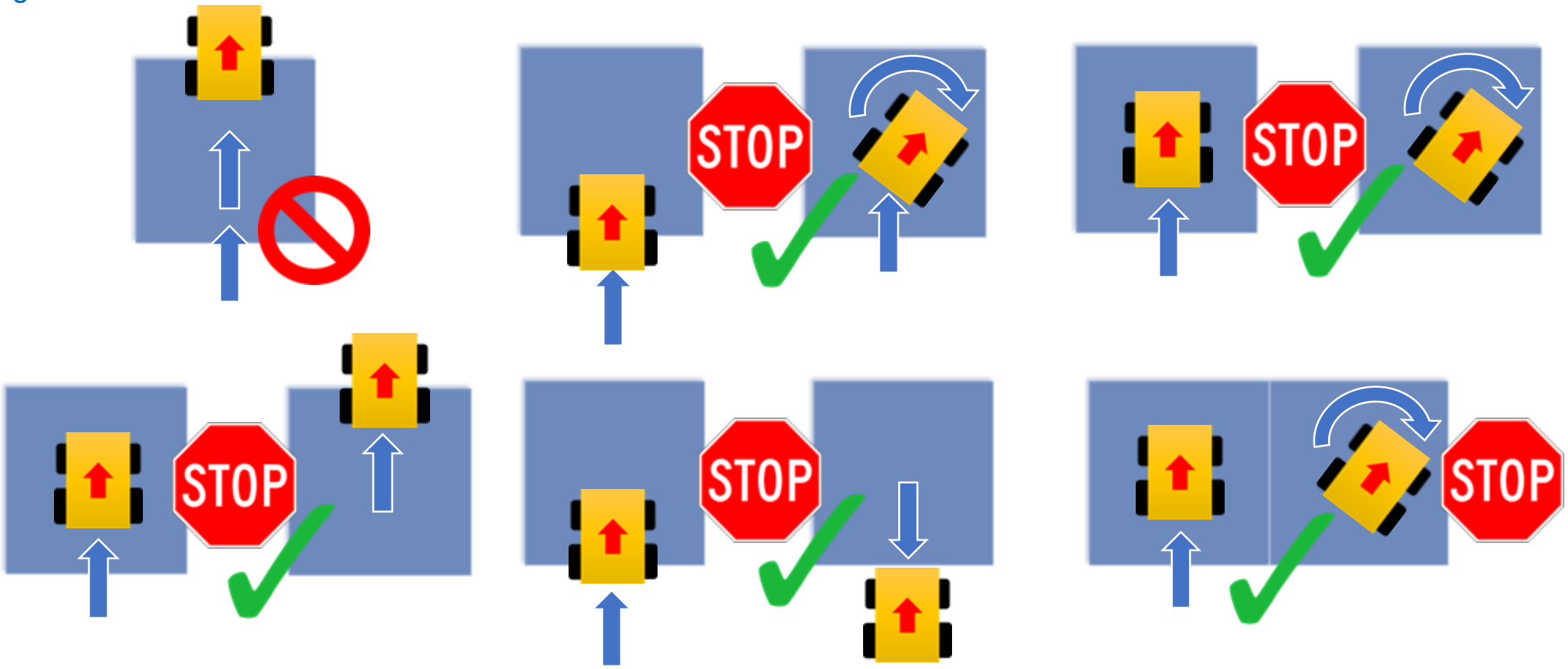
5.5.1 A lack of progress occurs when a robot visited the black tile.

5.4.4 A 'visited tile' means that more than half of the robot is inside the tile when looking from above.



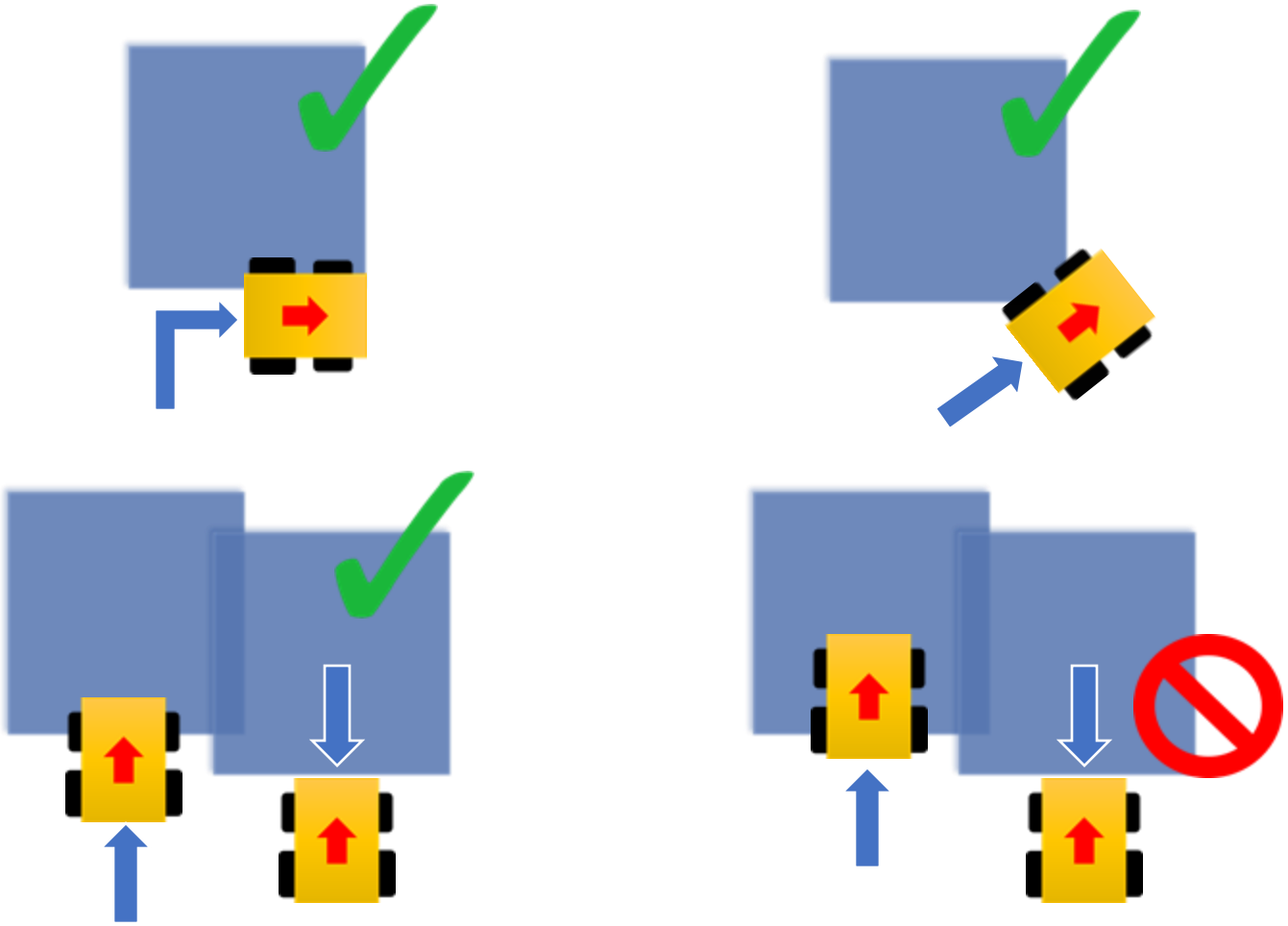
Blue tiles

5.5.1 A lack of progress occurs when a robot visits another tile without stopping for 5 consequent seconds after visiting a blue tile.



Blue tiles

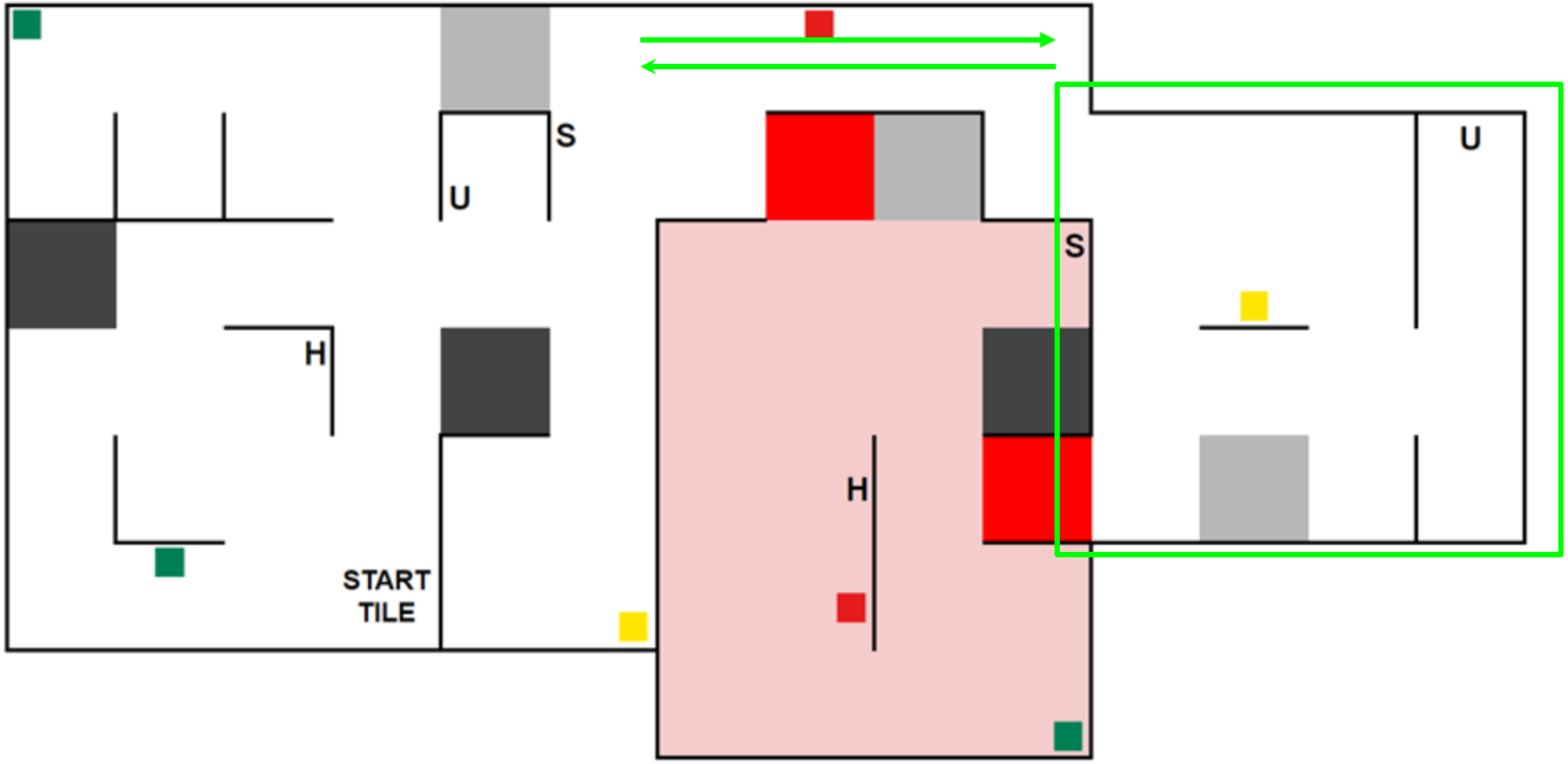
5.4.4 A 'visited tile' means that more than half of the robot is inside the tile when looking from above.



Dangerous Zone

3.5.2 The Dangerous Zone is marked by a red tile at the entrance and completely surrounded by walls.

3.5.3 The Dangerous Zone does not block the path for completing the entire map. Therefore, the rest of the field can be completed without entering the Dangerous Zone.



Lack of Progress

5.5.1 A lack of progress occurs when:

a. the team captain declares a lack of progress.

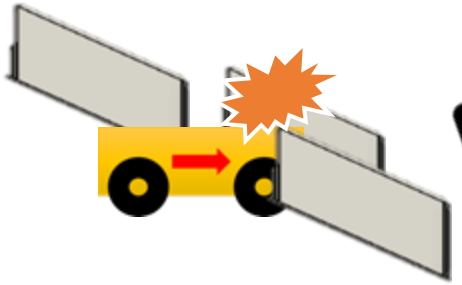
b. a robot visits the black tile.

c. a robot visits another tile without stopping for 5 consequent seconds after visiting a blue tile.

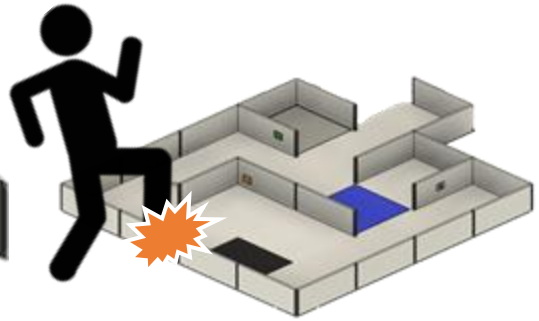
d. a robot damages the field.

e. a team member touches the field or their robot without permission from a referee.

The team captain declares



A robot damages the field.



A team member damages or touches the field.

A team member touches the field or their robot without permission from a referee.

In these cases, the referee declares a Lack of progress or any penalty.

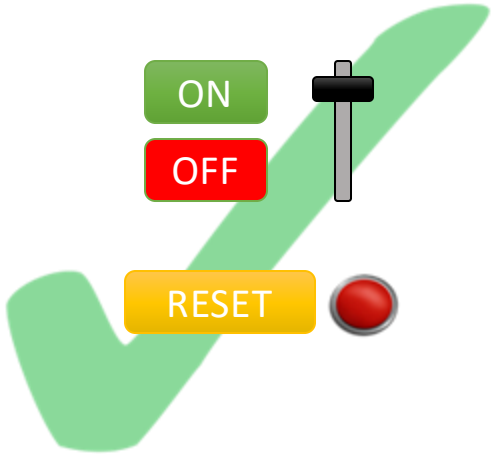
After Lack of Progress was declared

5.5.3. After a lack of progress, only the LoP procedure explained to the referee before the run start is allowed to be performed.

Team captain can:

- Power Off & On
- Reset the program

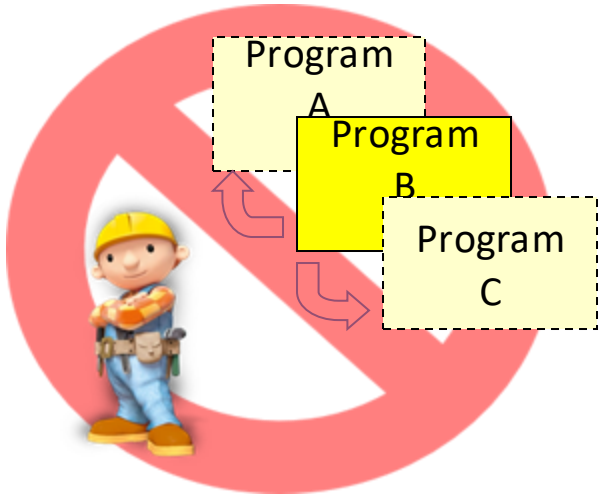
Same operation at every LOP



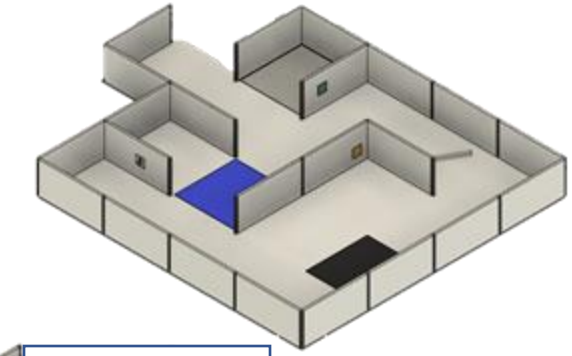
When a robot loses parts in the field, nobody is allowed to remove them.

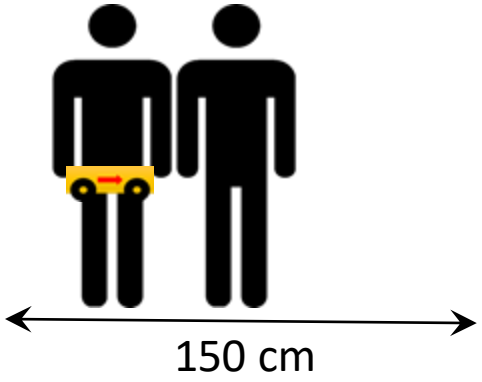
Team captain cannot

- Change program
- Modify the program
- Repair the robot
- Input a re-start position
- **Manually modify the robot**



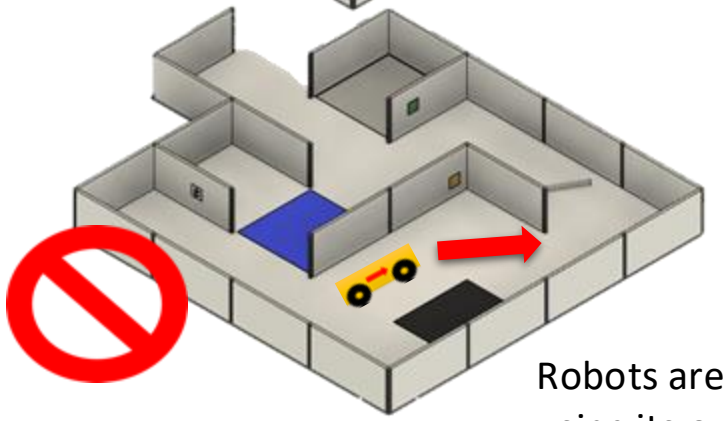
Start of Play





Teams should designate a team member as ‘captain’ and ‘co-captain’. Only these two team members will be allowed access to the competition fields.
Other team members within the vicinity of the rescue field have to stand at least 150 cm away from the field.

Calibration is defined as the taking of sensor readings and modifying a robot’s program to accommodate such sensor readings. **Pre-mapping activities will result in immediate robot disqualification for the round.**



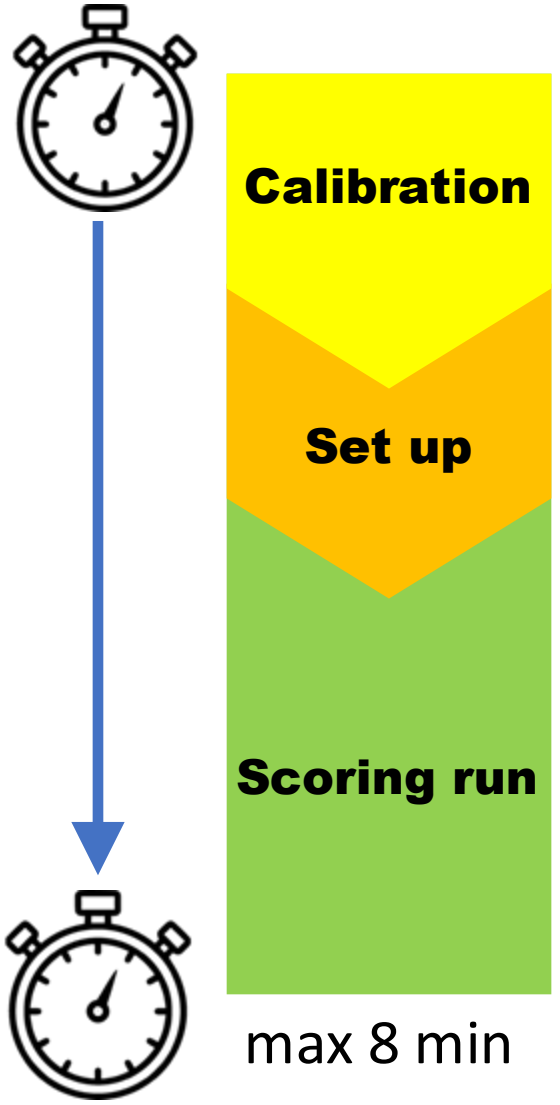
Robots are not permitted to move using its own power while calibrating.

Once the game has begun, the robot playing is not permitted to leave the competition area for any reason.

Start of Play

Each team has a maximum of 8 minutes for a game.

1. Dice is rolled.
2. The judge can choose to change any walls of the field.
3. Start tile is determined by judge.
4. Scoring run begins.
5. Robot starts to move.
6. Judge changes locations of black, silver and blue tiles according to the dice roll.



End of Play

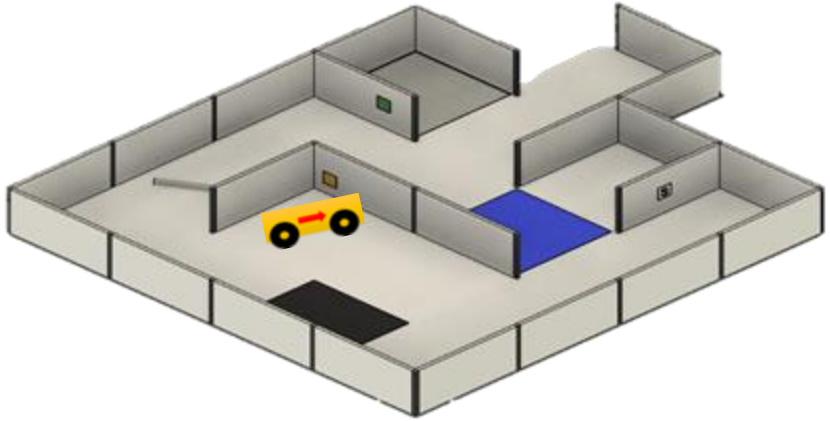
5.7.2 The game ends when:

a. the 8 minutes of allowed game time expires

b. the team captain calls end of game

c. the robot returns to the start tile and is awarded the exit bonus

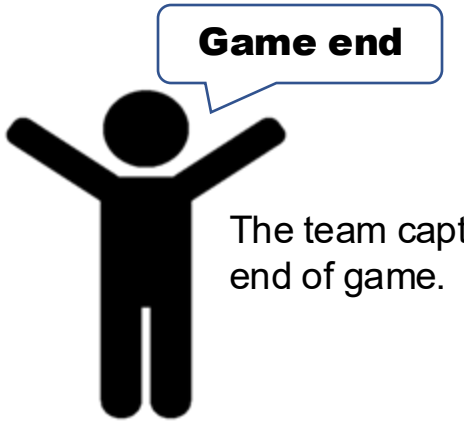
5.6.11 Successful Exit Bonus. A robot is awarded 10 points for each victim successfully identified. The 'exit bonus' condition is satisfied when the robot returns to the starting tile. On the starting tile, the robot has to blink (ON: 1s, OFF: 1s) with the same LED or display that is used to identify a victim for at least 10 seconds.



The robot returns to the start tile and gets the exit bonus.

The time expires

8 min



The team captain calls end of game.

Scoresheet

- Judges record points a team scores on a **scoresheet**.
- The **judge's decision** on the scoring of a runs is **final**.
- If a team **disagrees** with the score, the team captain has to **write a comment in the designated part of the scoresheet** and **sign** it.
- The scoresheet will be reviewed **later**, and the team will be approached to present **video evidence** to their claim.

The teams **are allowed** to film their runs, but video evidence will **only be accepted during the review**.

No videos are to be discussed at the field.

Videos will **only** be inspected if a **comment was written** in the **signed scoresheet**.