

“LABYRINTH: THERE AND BACK, AGAIN” CONTEST RULES

Version 1.6 dated July 14, 2016

Based on the robofinist.ru and robolymp.ru versions

1 The robot

- 1.1 The maximal width of the robot is 25 cm, its length is 25 cm.
- 1.2 During the movement the robot may not exceed the specified dimensions.

2 The field

- 2.1 Labyrinth field has a size of 150x330 cm and is divided into cells with 30 ± 2 cm. Wall with height of 10 cm and a thickness of 17 ± 1 mm can be installed between the cells (see Fig. 1). Walls are also installed around the perimeter of the labyrinth. There can be gaps and overhangs up to 5 mm between the walls.

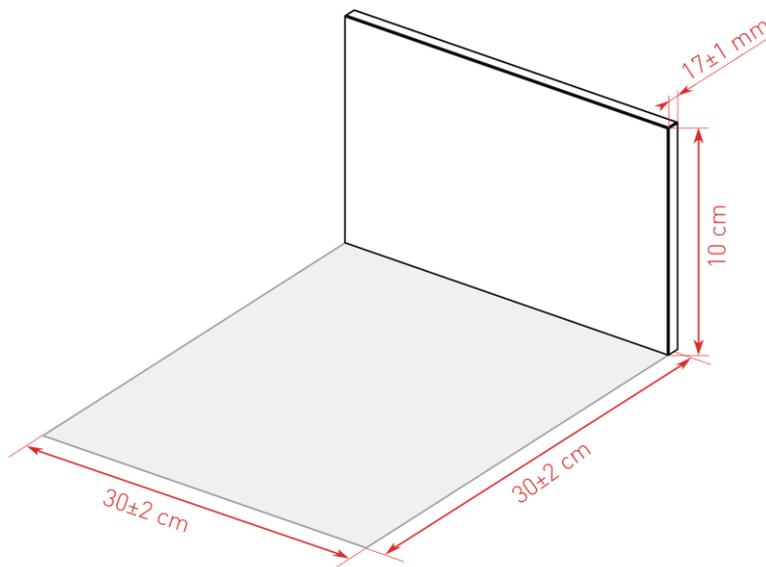


Fig. 1. Field scheme

- 2.2 Labyrinth configuration should meet the following criteria:
 - 2.2.1 there exists way between each two cells and this way is unique;
 - 2.2.2 count of cells with no walls around is not grater that three;
 - 2.2.3 inside each square of four cells there is at least one wall (see Fig. 2).
- 2.3 Start area and finish area are limited with black line. Cell with the start area (“start area”) is marked in red; the cell with the finish area (“finish area”) is marked in green (see Fig. 3).
- 2.4 The configuration of the walls changes just before the attempt.

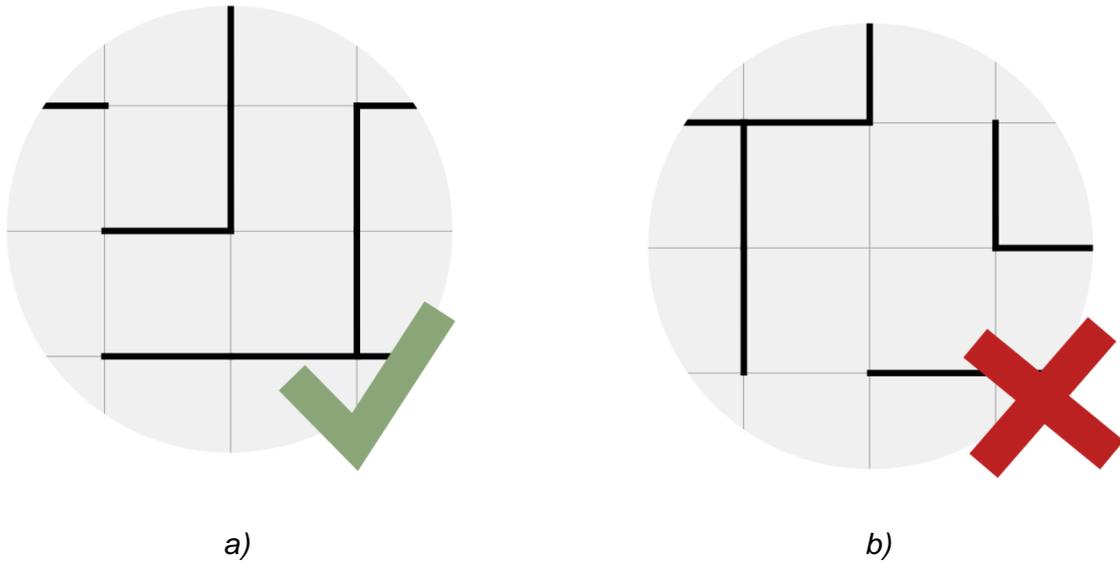


Fig. 2. Explanation for par. 2.2.3: a) permissible configuration of the walls; b) impermissible configuration of the walls – there is no walls inside the square of four cells.

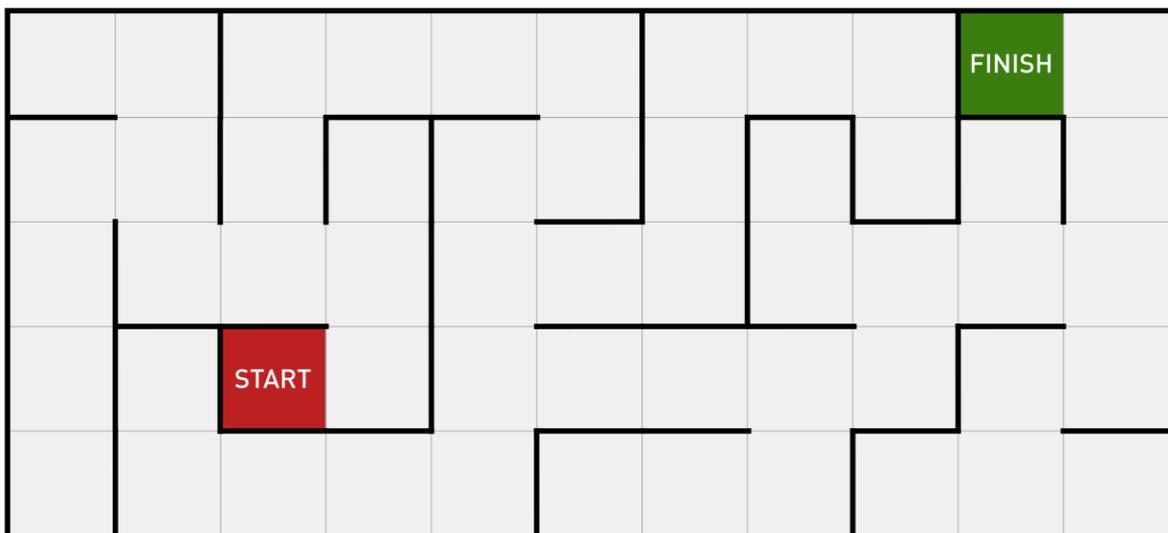


Fig. 3. Field shceme example

3 Competition procedure

- 3.1 Each participant attempt lasts 8 minutes. During this time the robot of the participant may make an unlimited count of heats.
- 3.2 During the attempt the participant cannot change robot design and program, but the robot can make rides under different programs.
- 3.3 During the rides the robot need to get from start area to finish area and back from the finish area to the start area.

- 3.4 If the robot does not leave the cell within 10 seconds, the referee asks the participant if the heat should be stopped. The heat is stopped, if the participant agrees by saying "Stop!".
- 3.5 If the robot does not leave the cell within 30 seconds the ride is stopped.
- 3.6 Scoring is performed as follows.
- 3.6.1 It is determined the number of cells at the field that make up the shortest route from start to finish (hereinafter referred to as the length of the shortest route).
- 3.6.2 Robot motion at the field consists of two consecutive stages - route from start to finish (hereinafter referred to as the route "forth") and route from finish to start (hereinafter referred to as the route "back"). Route "back" begins after the robot was in the finish cell.
- 3.6.3 For completing of each route a robot gets points according to Table 1, which in sum equals the result of the heat.

Table 1. Scoring points

No.	Evaluation criterion	Number of points	
		Each	Maximum
1	There Route	Maximum: N points	
	The robot remains in the start zone	-	0 points
	The robot fully enters the section which is in the shortest path (except for the start zone)	1 point	Number of points
	The robot fully enters the section which is not in the shortest path	0 points	0 points
2	Back Route	Maximum: N points	
	The robot remains in the finish zone	-	0 points
	The robot fully enters the section which is in the shortest path (except for the finish zone)	1 point	Number of points
	The robot fully enters the section which is not in the shortest path	-1 point	-[32-(N+1)] points
Total maximum:		2×N points	
<p><i>Designation:</i> <i>N - the number of the sections in the shortest path</i></p>			

- 3.7 Each participant is given one attempt, unless otherwise ruled by the referee panel on the day of the competition.

- 3.8 The heat with maximal result is considered as the best heat of the attempt. If there are several heats with the similar results heat robot took the less time to perform is considered as best.
- 3.9 Result of the best heat in the attempt is announced as result of the robot in the attempt.
- 3.10 The best one of the results of the attempts (or result of the only attempt if there was only one attempt on the contest) is announcing as the final result of the robot.
- 3.11 The robot with the best (maximal) final result is announced as the winner of the contest.
- 3.12 If there are two or more robots with the similar final results, result of the robot took the less time for performing its best heat is announcing as best.
- 3.13 If robots took the same time to perform their best heats, their next heats should be compared in order of decrease. Heats should be compared in terms of par. 3.8: results of the heats are compared firstly, after what times robots took to perform these heats are compared.
- 3.14 If two robots performed all their heats with similar results in similar time, weights of the robots should be compared. The robot with the less weight is announcing as the best.

4 Change Log

- 4.1 Changes into sections 2 and 3 were introduced in version 1.6 of these Rules.
- 4.2 Version 1.5 of this regulation is changed in terms of par. 2.2, 3.1 and Section 3. Table 1 is added.
- 4.3 Version 1.4 of these Rules is changed in terms of Clause 3.4.3.
- 4.4 Par. 3.4.7 removed; par. 3.6 added in version 1.3 of the present rules.
- 4.5 The section 3 is changed in version 1.2 of the present rules. Attempts at version 1.1 replaced by heats, which are merged into one attempt.
- 4.6 The paragraph 3.1 is changed in version 1.1 of the present rules. The maximum time for heats is changed from 120 to 240 seconds.
- 4.7 Version 1.0 of this rules is established at April 30, 2015 and is based on the version 2.0 of the "Labyrinth" competition rules from the robofinist.ru site. Paragraphs relating to the return of the robot are developed on the basis of the version of the rules from the robolymp.ru site.