

ENJOY AI City 2021 Season

City Carnival Rules

1. Competition field

The size of the competition field is 90*90cm square (Fig. 1), the material is spray - painted cloth. This field is divided into A1-D4, in total 16 grids with a size of 20*20cm for each grid, and the line width is 0.5cm. A1 is the starting base of the robot, and D4 is the final destination of the robot.

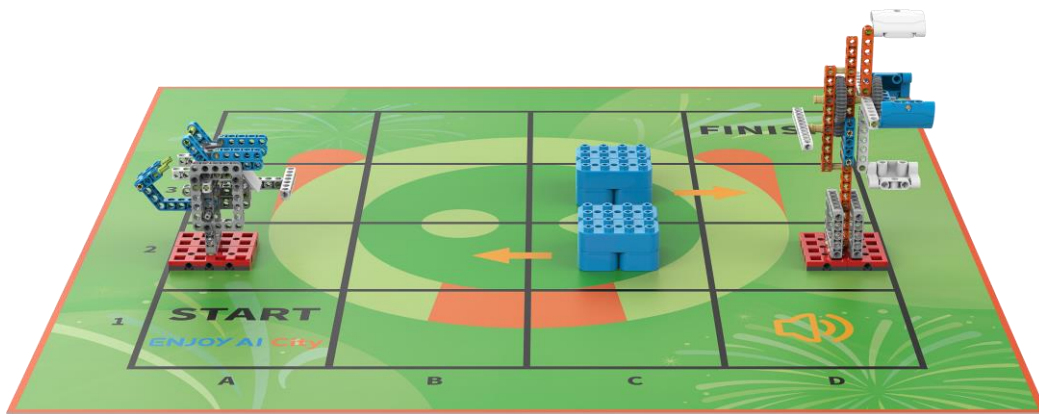


Fig. 1 Schematic diagram of the competition field

2. Competition tasks and procedures

ENJOY AI City - City Carnival requires players to build their own robots independently. The robots can travel from the starting area to the destination by card reading or using card reading programming. During the competition, scoring tasks with different scores are randomly placed on the field. The robot running process must not be interrupted, and robots can only start running in the starting area (A1). Once the robot enters the destination area (D4), the competition is over, the score and running time are recorded.

2.1 Float parade

2.1.1 After the robot starts in the starting area (A1), each time it crosses a grid, it will get 10 points, the total score is 150 points, and it will not be calculated repeatedly .

2.1.2 The criterion for the robot entering the grid area is that all the vertical project of the robot is within the grid, and then drives out from any other side. As long as the robot' s vertical project is within the D4 area, you can score points.

2.2 Whistle for the road

2.2.1 Any grid of the field will have a whistle sign posted as shown in Fig. 2. When the robot drives to the whistle grid, it needs to make a designated sound 3 times, and 80 points will be awarded after completion.



Fig. 2 Whistle sign

2.2.2 The number of whistling is specified as 3 times. Excessive or less than 3 times will not be scored. The designated sound card will be chosen from Fig. 3, and the referee will decide and inform the players about the designated sound card before the competition.

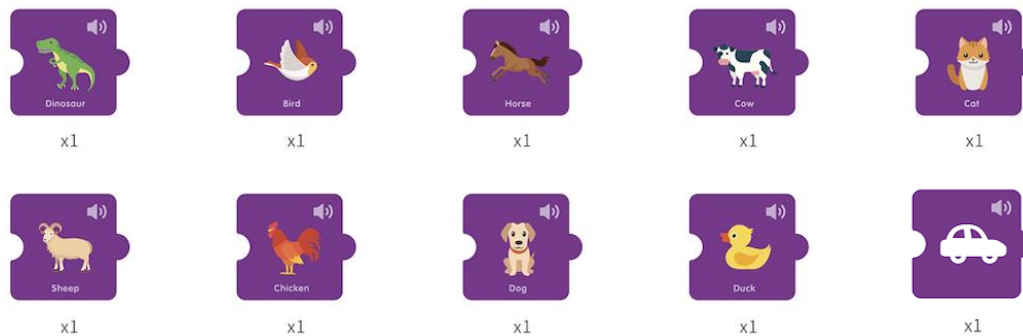


Fig. 3 Designated sound card candidates

2.3 Road control

2.3.1 There are roadblocks in any 2 grids of the field, and arrows are posted on either side of the roadblocks. The robot needs to push these roadblocks by one grid along the arrows. 80 points are awarded for each roadblock completed.

2.3.2 The task completion criterion is that at the end of the competition, all the vertical projections of the roadblocks are in the designated grids.

2.3.3 The roadblocks and arrow directions are randomly placed, but they will not block the start and destination areas.

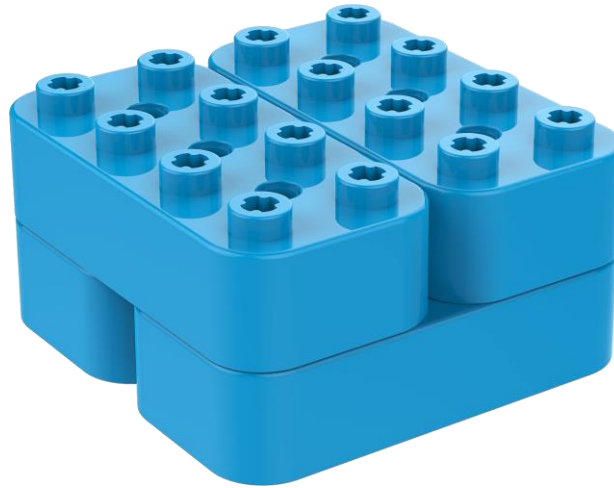


Fig. 4 Schematic diagram of the roadblock

2.4 Commemorative coins

2.4.1 There will be a commemorative coin acquisition set at one grid of the field, and the robot needs to obtain the commemorative coin by the pressure lever and bring it to the destination area. 40 points will be awarded if the commemorative coin drops. If the commemorative coin is brought to the destination area, 60 points will be awarded.

2.4.2 The direction of the punches will be placed in a direction that is conducive to the completion of the robot.

2.4.3 The falling of commemorative coin signs that there is no contact between the commemorative coin and the punches. The completion sign of bringing the commemorative coin back is that part of the car's (which carries the commemorative coin) projection is within the destination area.

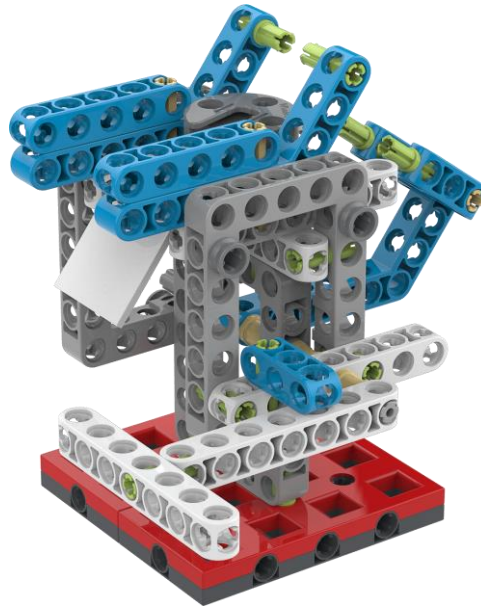


Fig. 5 Initial status of commemorative coin installation

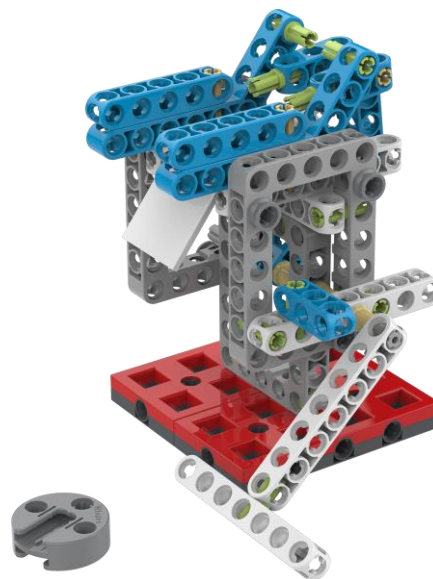


Fig. 6 Finished status of commemorative coin installation

2.5 Start the Ferris wheel

2.5.1 The Ferris wheel model will appear at one grid of the field. If the robot turns the handle to make the Ferris wheel rotate at least one circle, 100 points will be awarded.

2.5.2 The orange beam in the initial position of the Ferris wheel coincides with the

rear, and the orange beam rotates and coincides with the rear again, which means it has made one rotation.

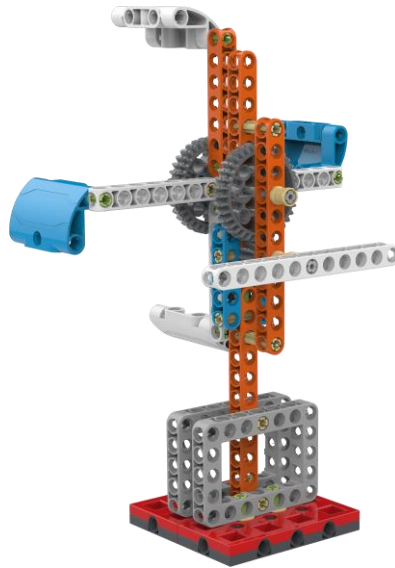


Fig. 7 1 Schematic diagram of Ferris wheel installation

3. Robot

3.1 Robot size: before each departure from the base, the robot size shall not be greater than 20cm*20cm (length*width); after the robot completely leaves the base, the robot's structure can stretch on its own.

4.2 Controller: in a single round of competition, only one machine per each group of students is allowed, only one controller per robot is allowed. No replacement of controller is allowed during each round of competition.

4.3 Actuator: there is no limit on the type and number of actuators allowed for each robot.

4.4 Sensor: there is no limit on the type and number of sensors allowed for each robot.

4.5 Structure: the robot must use splicing structure made of plastic, and can not use tie, screws, rivets, glue, tape and other auxiliary connecting materials.

4.6 Power supply: each robot must have its own independent battery box, and no external power supply shall be connected. The battery voltage shall not be higher than 5V, and no circuits such as voltage boost, voltage drop and voltage stabilization shall be used.

4.Competition

4.1 Team

4.1.1 Each team shall consist of 1 student. Students must still be school students until June 2021.

4.2 Competition rules

4.2.1 The competition is for pre-school category only.

4.2.2 There is only one round of the competition, no preliminary and semi-finals. The organizing committee will ensure that each team will play the competition the same number of times.

4.2.3 During the competition, players can only use card reading or using card reading programming to control the robot to complete tasks.

4.2.4 At the end of all rounds, the sum of scores of each round for the team will be the total score of the team, and the teams will be ranked according to their total score.

4.2.5 The organizing committee may change the competition system according to the actual situation of the field and the registration.

4.3 Competition process

4.3.1 Robots building and programming

4.3.1.1 Programming and debugging can only be conducted in the debugging area.

4.3.1.2 Team members can carry their pre-built robots into the preparation area.

Team members are not allowed to carry USB drives, CD, wireless routers, mobile phones, cameras and other storage and communication equipments. After all participating students are seated in the preparation area, the referee will notify the team of the task models' placement and related designated tasks.

4.3.1.3 Participating members are not allowed to surf the Internet and download any materials in the debugging area, nor to use cameras or other equipment to film the competition field, nor to contact coaches or parents by any means.

4.3.1.4 The students had 1 hour to debug and compile the program during the whole competition.

4.3.1.5 After each round, teams are allowed to repair the robots and modify the programs in the preparation area, but can not disrupt appealing order in the next round.

4.3.2 Pre-competition preparation

4.3.2.1 When ready to go on the field, the team members shall get their robots and enter the competition area under the guidance of the guide. The pre-competition participating teams have 1 minute to check the placement of the task models on the field.

4.3.2.2 The players on the field should stand near the standby area.

4.3.2.3 Team members should put their robots into the base. No part of the robot and its projection on the ground can exceed the base before the robot runs.

4.3.2.4 After finishing the preparation work, the player should signal to the referee.

4.3.3 Start

4.3.3.1 After the referee confirms that the participating teams are ready, he/she will issue the countdown command of "3, 2, 1, start". As the countdown begins, players can start their robots.

4.3.3.2 Starting the robot before the "start" command will be regarded as "false start" and will be warned or punished.

4.3.3.3 Once the robot has started, it can only be controlled by the instruction/program. Team members must not touch robots, otherwise they will be treated as "retry" and be asked to carry it back to the initial position.

4.3.3.4 After starting, the robot shall not deliberately separate parts or drop mechanical parts on the field. If the robot's parts fall off accidentally, players need to bring them back by themselves.

4.3.3.5 Robots completely run out of the field, record as a retry, team members need to bring the robots back to the initial position and restart.

4.3.4 Retry

4.3.4.1 After the robot totally leaves the base, it is regarded as "retry" if the player touches the robot by hand.

4.3.4.2 After retry, the status of the field shall remain unchanged. If a task is retried because it has not been completed, the item status for that task remains the same. When they try again, the team members should bring the robot back to the base and restart.

4.3.4.3 There is no limit on the number of retries per round.

4.3.4.4 During the retry period, the timing shall not be stopped or restarted. The task completed by the robot before retry is valid. But the scoring model the robot was carrying failed and should be restored by the referee until the end of the competition. The timing does not stop during this process.

4.3.5 Back to base

4.3.5.1 The robot can return to the base under the control of command, it won't be considered as retry.

4.3.5.2 The criteria for robot to return to the base: the vertical projection of any structure of the robot is within the range of the base.

4.3.5.2 After the robot returns to the base, the team members can touch the robot and change or repair the structure of the robot.

4.3.5 Competition ends

4.3.5.1 The time limit of each competition is 180 seconds.

4.3.5.2 If the participating team fails to reach the destination after finishing some of the tasks, the task score is valid, but the time is recorded as 180 seconds.

4.3.5.3 Once the robot reaches the destination, the timing stops and all the obtained task scores will be locked. No subsequent program can be run.

4.3.5.4 The referee is obliged to inform the players of their scores. Players shall have the right to correct any possible errors in the scoring operation of the referee and shall sign to confirm that they are aware of their scores. Any dispute should be submitted to the chief referee for arbitration. The referee should fill in the score sheet and the players should confirm their scores.

4.3.5.5 Participants shall restore the field to the pre-start status and immediately move their robots back to the debugging area.

5. Record scores

5.1 After each match, the score will be determined according to the completion of the tasks on the field. If a completed task is accidentally destroyed by a robot or team members before the end of the match, the task does not score.

5.2 The order of task completion does not affect the score of a single task.

5.3 If there is no retry in the competition, 40 points will be rewarded for fluency.

Reward 30 points for one retry; Reward 20 points for 2 retries; Reward 10 points for 3 retries; Reward 0 points for 4 or more retries.

6. Foul and disqualification

6.1 Teams that fail to show up on time will be penalized 10 points for each minute. If they do not show up after 2 minutes, the team will be disqualified.

6.2 The first false start will be warned by the referee, and the robot need to get back to the standby area to be started again, restart the timing clock. A second false start will result in disqualification.

6.3 Disconnecting parts for tactical purposes is a foul and may be disqualified depending on the seriousness of the situation.

6.4 The robot will be warned by the referee for damage caused by high-speed impact on the ground facilities, and will be disqualified from the match for the second time.

6.5 A warning will be given if damage to the match model is caused, intentionally or unintentionally, by a team member or robot. The task does not receive any score, even if the task has been completed.

6.6 During the match, players who intentionally touch the task models outside the field will be disqualified from the match. Occasional contact is not a foul unless it directly affects the final score of the match.

6.7 Disobeying the referee will result in disqualification.

6.8 Players who contact coaches or parents without the permission of the referee will be disqualified.

7. Award

7.1 Each category group is ranked according to overall scores.

If there is a local tie, the order is as follows:

- (1) The team with less total time in all matches ranks higher;
- (2) The team that has completed more tasks in all matches ranks higher;
- (3) The team with the first highest lowest score ranks higher;
- (4) The team with the second highest lowest score ranks higher.

7.2 The award level will be determined according to the ranking of the participating teams (zero points and abstention will not be counted into the ranking), and there will be champion, runner-up, third runner-up, first prize, second prize and third prize respectively.

Attachment:

ENJOY AI City 2021 Season City Carnival - Scoring Sheet				The ____ round	
No.		Team name		Group	

Task	Description	Points	Scores obtained	
Float parade	10 points for crossing each grid	150		
	A4	B4	C4	D4
	A3	B3	C3	D3
	A2	B2	C2	D2
	/	B1	C1	D1
Whistle for the road	Play designated sound for 3 times	80		
Road control	Push 1 roadblock into the designated grid	40		
	Push 2 roadblocks into the designated grid	80		
Obtain commemorative coins	Commemorative coin drops	60		
	Bring the commemorative coin to the destination area	100		
Start the Ferris wheel	Make at least 1 rotation	100		
Fluency award	40-(retries)*10, and >=0			
Total score				
Time per match				

Score confirmation

I have confirmed that the above score records are true and valid without any objection.			
Team members:		Referee:	
Issues & remarks			
Chief Referee:		Recorder :	