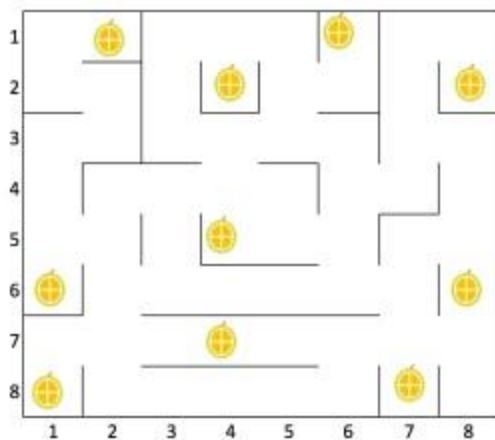


## Rules & Regulation

### 1. Introduction

1.1 The Challenge of the competition is for an autonomous (self-directed) robot 'mouse' or called The Hungry Mouse race against the clock to collect as much as possible within a 8 cell by 8 cell maze. The fruit photos are placed randomly on the floor of the maze.

1.2 The mouse maze shall comprise 8 x 8 multiples of an 23cm x 23cm unit square (Figure 1) (subject to  $\pm 0.5\text{cm}$  error). The walls constituting the mouse maze shall be 5cm high and 1.2 cm thick. Passageways between the walls shall be 23cm wide (subject to  $\pm 0.5\text{cm}$  error). The outside wall shall enclose the entire mouse maze.



1.3 The side of the mouse maze walls shall be white, and the top of the walls shall normally be red. The floor of the mouse maze shall be made of MDF and finished with a matt variety of black paint (blackboard paint). The coating on the top and side of the wall shall be selected to reflect, and the coating on the floor shall be selected to absorb, visible and infra-red light.

1.4 The start of the mouse maze shall be located at one of the four corners. The starting square shall have walls on three sides. There is no predetermined destination as the mouse are allowed to roam within the maze in a predetermined time.

1.5 Square posts, each 23cm x 23cm x 5cm high, shall be placed at the four corners of each unit square (the lattice points).

1.6 The dimensions of the mouse maze shall be accurate to within  $\pm 0.5\text{cm}$  error, whichever is less. Assembly joints on the mouse maze floor shall not involve steps or gaps of greater than 1mm. The change of slope at an assembly joint shall not be greater than 5 degrees. Gaps between the walls and posts shall not be greater than 1mm.

1.7 A start sensor may be placed at the boundary between the starting unit square and the next unit square.

1.8 Discovery of fruit photo:

- The robots are allowed to roam randomly within the maze.
- Upon discovery of the fruit photo:
  - The judge shall appoint mark for one fruit photo.
- The robot shall continue to move for the next discovery.

Multiple paths to the maze are allowed and are to be expected. Points will be given to the mouse that explored random fruit photo within the maze, located at the floor of the maze. Points will be calculated once for each fruit photo.

## **2. The mouse**

2.1 A mouse is subject to the following size constraints - maximum width 20cm, maximum length 20cm. There is no height limit. A mouse must be completely self contained and must receive no outside assistance.

2.2 The method of wall sensing is at the discretion of the builder; however, the mouse must not exert a force on any wall likely to cause damage.

2.3 The power source will normally be batteries and electric motors.

2.4 If the judges, consider that a mouse has a high risk of damaging the maze it will be disqualified from the competition.

2.5 The mouse must negotiate the mouse maze; it must not climb or jump over the walls of the mouse maze.

2.6 Nothing may be deposited in the mouse maze.

2.7 Each mouse may be fitted with a suitable hook or look, for lifting the mouse out from the center of the maze, should this prove necessary. Contestants may not be allowed to climb over the mouse maze.

## **3. The competition**

3.1 The time taken to travel from the start is called the "run" time. The total time taken from the first activation of the mouse until the start of each run is also measured. If the mouse requires any manual assistance at any time during the contest, it is considered 'touched'. Scoring is based on these two parameters.

3.2 Each mouse is allowed a maximum of 3 minutes to perform. This may be reduced if time is limited. The judges have the discretion to request a mouse to retire in the event that it seems unlikely to perform any action in the allocated time.

3.3 If the mouse stops or having moving difficulty, it may be lifted out, manually, and restarted by the handler, but the time remains within 3 minutes and the fruits calculation restarted to zero.

3.4 The time for each run (run time) shall be measured from the moment the mouse leaves the start square.

3.5 If the judges consider that a mouse has a high risk of damaging the maze it will be disqualified from the competition. Time on the mouse maze shall be measured from the time the mouse is first activated.

3.6 The time taken to negotiate the mouse maze shall be measured manually by the contest officials.

3.7 The starting procedure of the mouse shall be simple and must not offer a choice of strategies to the handler. The starting procedure shall be briefed to the judges when the mouse is registered on the day of the contest.

3.8 The mouse handler is given 1 minute, from the moment the mouse is required to start, to make adjustments to the mouse sensors (calibration).

3.9 If a mouse "gets into trouble" the handlers can ask the judge for permission to abandon the run and restart the mouse at the start square. A mouse may not be restarted merely because it has taken a wrong turning. Time will not be reset.

3.10 The judges will use their discretion to award prizes, which in addition to the major prizes may include prizes for specific classes of mouse -e.g. lowest cost, most ingenious, best presented, most entertaining etc. A tie-breaker rematch may be conducted between two teams which share the same Score and Time.

3.11 Before the mouse maze is unveiled, the mice must be accepted and kept in view of the contest officials. The handlers will place the mice at the start under the officials' instructions.

3.12 The judges reserve the right to make changes to any of the above in the interest of fair play and sportsmanship, and to ensure that all competitors have an enjoyable competition. In the event of ambiguity, the judges' interpretation of any clauses of the rules shall prevail.

### Example Scoreboard

Scenario 1: All robots discovered all fruits within the time

Team	Time (min)	Objects	Score	Verdict
Alpha	2	10	10	First
Gamma	2.5	10	10	Second
Beta	3	10	10	Third
Eta	3	10	10	Fourth

Judge's verdict: Alpha First, Gamma Second. Since there is a tie between Beta and Eta, tiebreaker rematch between the two was done to identify fourth and Third.

Scenario 2: All robots used up all the time

Team	Time (min)	Objects	Score	Verdict
Alpha	3	9	9	First
Gamma	3	8	8	Second
Beta	3	7	7	Third
Eta	3	7	7	Fourth

Judge's verdict: Alpha First, Gamma Second. Since there is a tie between Beta and Eta, tiebreaker rematch between the two was done to identify fourth and Third.