



<https://piwars.org/2021-vpw/challenges/up-the-garden-path/>



Garden Gnomes have rearranged the path in your garden and you get lost every time you go out there! You must find the route to your shed to continue your Raspberry Pi adventures.

### Aim of the Challenge:

To complete the maze as fast as possible using one of the methods available.

Control Method:

## Remote control or Autonomous.

Time Limit:  
5 minutes.

## Rules

The maze course will be provided to you electronically. It will fit within the 1500mm x 1500mm walled arena. It will be possible to print the course onto paper and measurements will be given if you wish to mark it out some other way (for example with 19mm electrical tape).

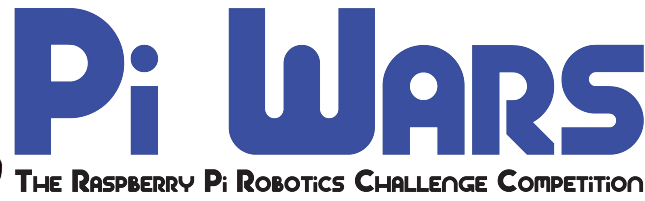
The red lines are to indicate the end of the six elements of the course (see the notes on points for how these are used). Anything in red should not be printed – a different version will be available for printing.

You can run the maze as many times as you wish. However, you should only submit the video of your fastest run, which will be used for ranking purposes, and that single run must be completed within the five minute time limit.

A successful run requires staying over the path and not getting muddy feet. (i.e. your robot must keep to the line of the maze without wandering off!)

**You must finish inside the “Shed” (marked on the course diagram). Timing of your run will finish when any part of your robot is inside the Shed.**



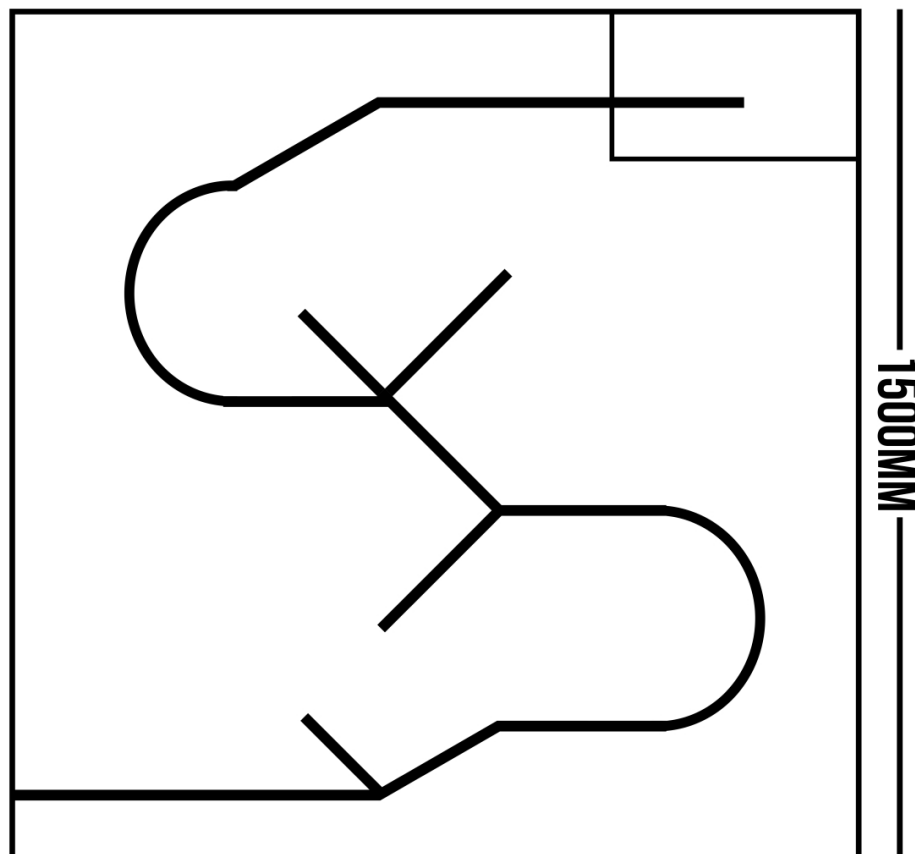


Garden Gnomes have rearranged the path in your garden and you get lost every time you go out there! You must find the route to your shed to continue your Raspberry Pi adventures.

To complete the maze as fast as possible using one of the methods available.

## Remote control or Autonomous.

**- 1500MM**



## UP THE GARDEN PATH

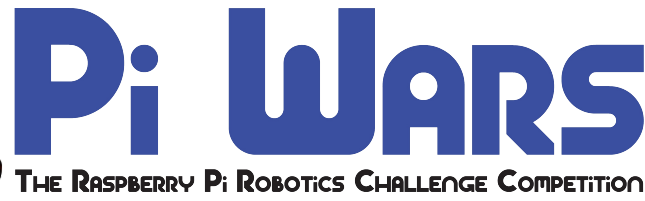
There are multiple ways of completing the course. You must **choose only one** method for your runs. These are in order of difficulty:

You can use only a **remote control** to manually navigate the maze.

You can use pre-programmed moves (aka **dead reckoning**) to navigate the maze on a pre-programmed route.

You can use **line following** sensors to follow the course and autonomously navigate the correct path. You may optionally use audio commands to direct the robot should it need assistance at any point.

You can use a **camera** attached to the core Raspberry Pi to follow the line using image recognition. You may optionally use audio commands to direct the robot should it need assistance at any point.

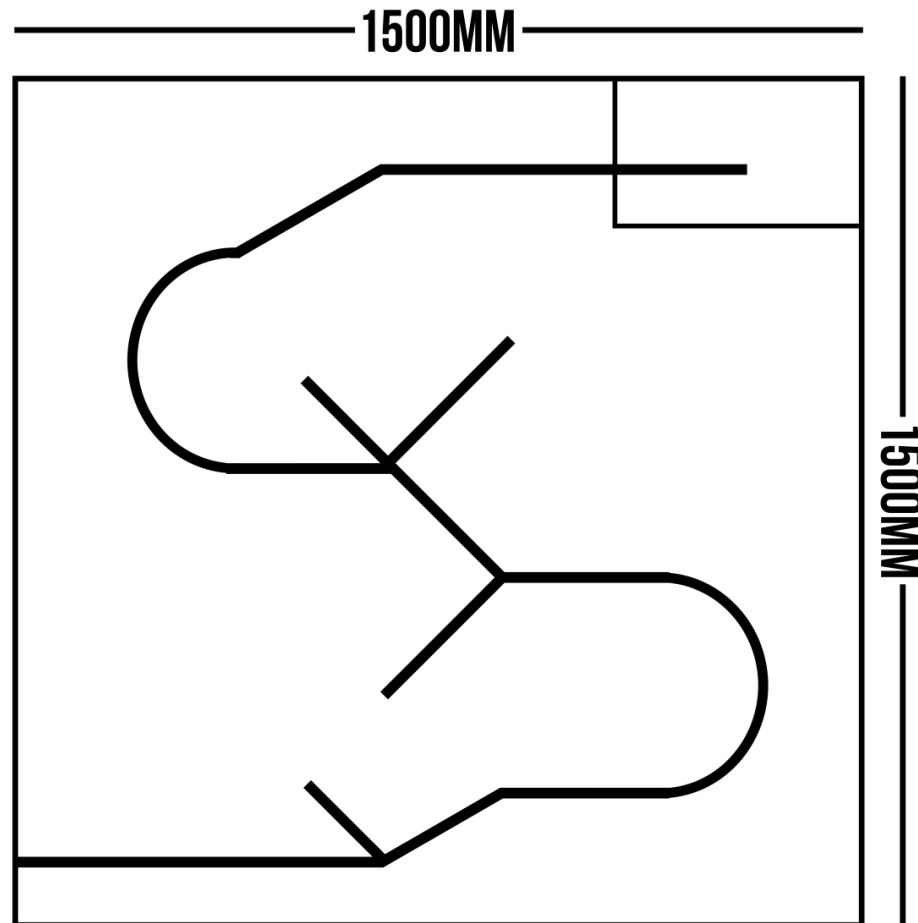


Garden Gnomes have rearranged the path in your garden and you get lost every time you go out there! You must find the route to your shed to continue your Raspberry Pi adventures.

To complete the maze as fast as possible using one of the methods available.

## Remote control or Autonomous.

Time Limit:  
5 minutes.



## UP THE GARDEN PATH

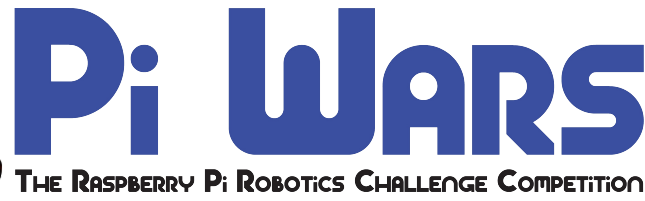
You can issue **purely audio commands** such that your robot listens and behaves accordingly. We suggest these instructions should be limited to simple commands such as “forward”, “back”, “left”, “right”, “stop” etc. You may use any method of getting audio commands to your robot, for example a paired Bluetooth headset or even just shouting the commands at your robot!

### Ranking and Points

All details and scorings are to be confirmed. **These scores have not been balanced against the other challenges yet, but expect the structure to be broadly as follows.**

Competitors will be grouped into the method they choose to complete the course and then ranked according to the **single shortest time** taken to drive the course across all their attempts. The robot with the shortest time in their group will take first place.

Points will be awarded to the top ranked robots in each group according to the Formula Scoring System.



Garden Gnomes have rearranged the path in your garden and you get lost every time you go out there! You must find the route to your shed to continue your Raspberry Pi adventures.

To complete the maze as fast as possible using one of the methods available.

## Remote control or Autonomous.

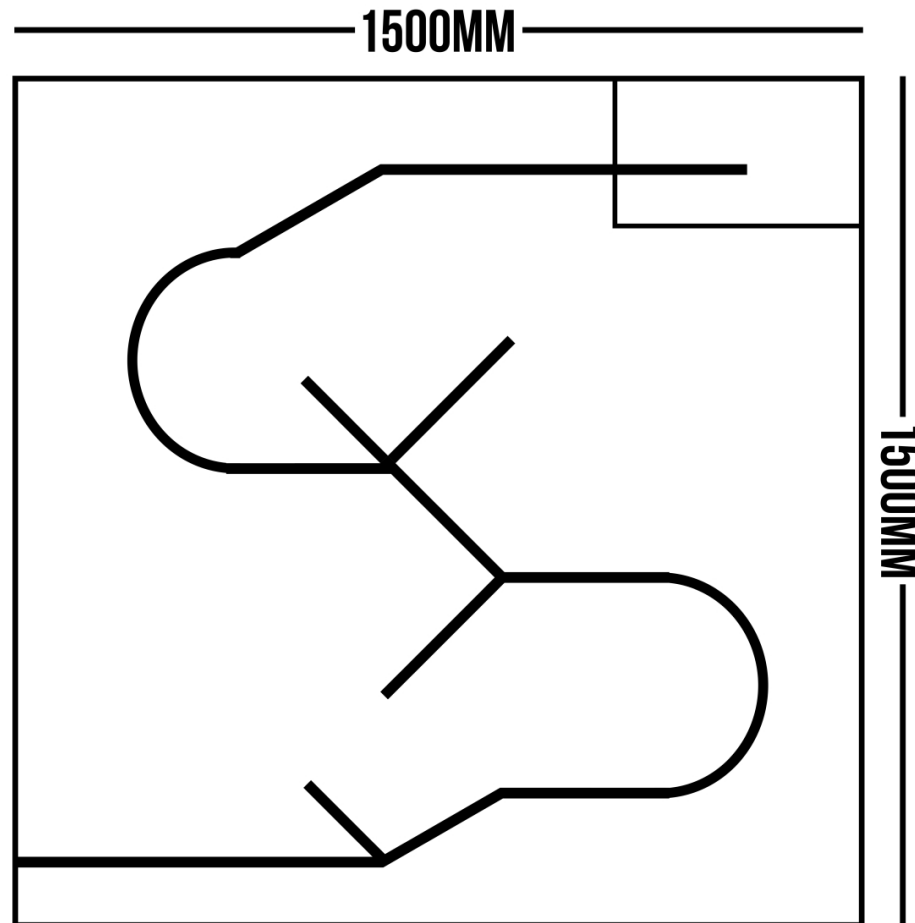
### Additional Points

If you successfully run the entire course using one or more line follower sensors, you will receive an additional 100 points.

If you successfully run the entire course using a camera attached to the Raspberry Pi, you will receive an additional 250 points.

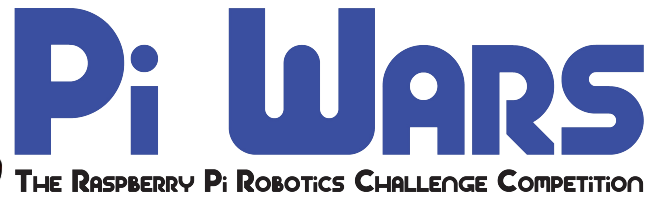
If you successfully run the entire course using only audio command, you will receive an additional 500 points.

Using audio commands in combination with either line following or camera/image recognition will earn you an additional 400 points. **Please note:** You must issue at least three audio commands to be eligible for the additional points.



## UP THE GARDEN PATH

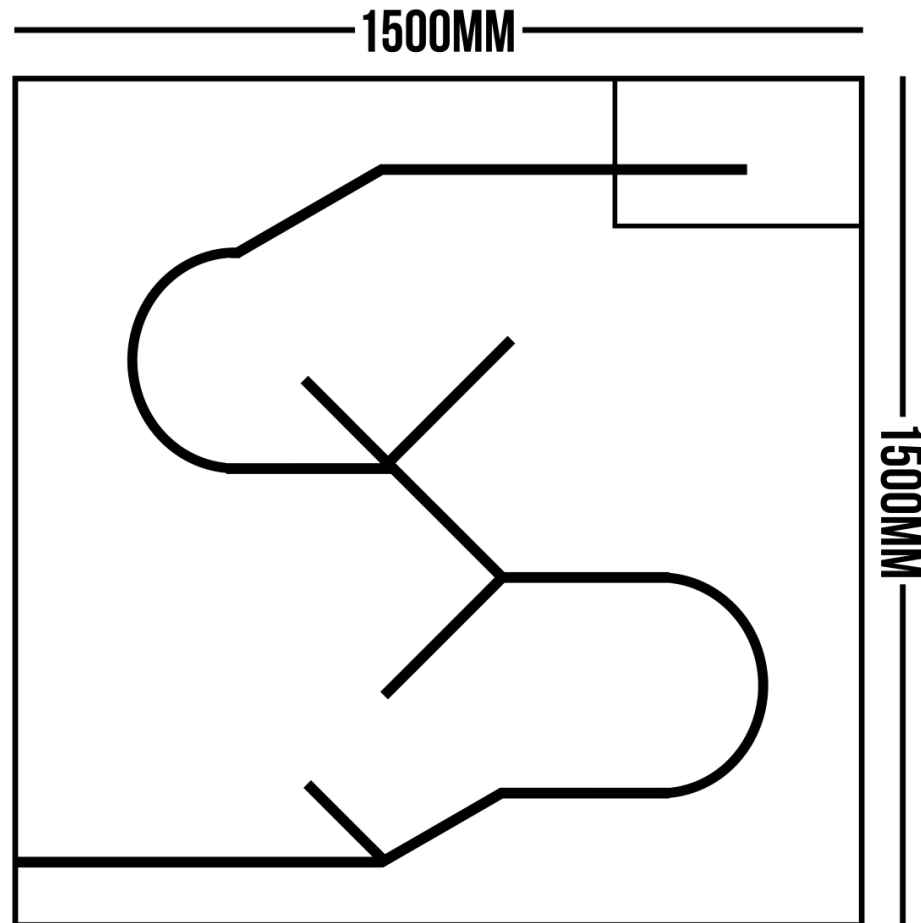




A large, colorful figurine of a smiling dwarf. He has a large, rounded nose, rosy cheeks, and a wide, happy grin showing his teeth. He has a thick, white beard and mustache. He is wearing a brown pointed hat with a small tassel. His outfit consists of a blue long-sleeved tunic with gold buttons, red pants, and brown boots. He is holding a pickaxe with both hands, and the pickaxe is stuck into a small pile of brown, textured material at his feet. The figurine is set against a plain white background.

Time Limit:  
5 minutes.

Notes:



## UP THE GARDEN PATH