Tricky Multi-Player Multi-Planar Maze

It’s not as complicated as it sounds we swear

We Are Team Hot Hyphen Potatoes (WATH-P)

Related Background and Inspiration

Figure 1 - Leedmees Screenshot.
http://www.siliconera.com/2011/06/09/konamis-first-downloadable-kinect-game-is-leedmees/

Figure 2 - Portal 2 Screenshot.
https://i.ytimg.com/vi/1_VMRa8BuwI/maxresdefault.jpg

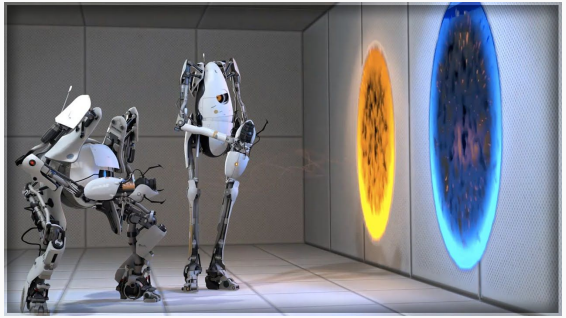


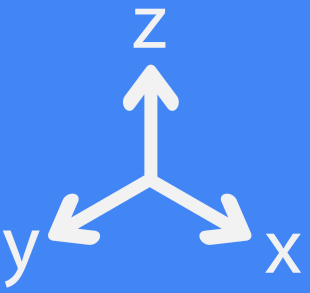
Figure 3 - The pool.
https://medium.com/re-write/enlivening-public-spaces-through-interactive-art-247fe705bf40

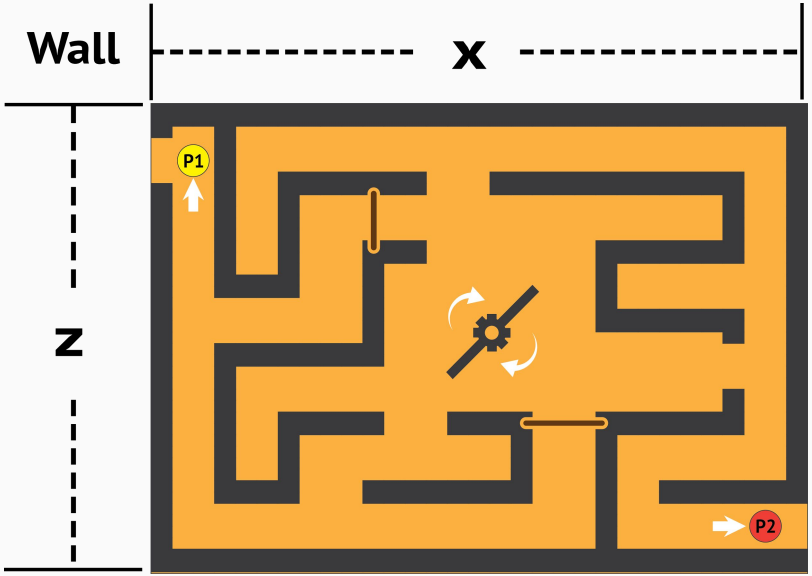
Figure 4 - 1-2 Switch
https://se7en.ws/nintendo-shows-off-goofy-multiplayer-game-1-2-switch/?lang=en

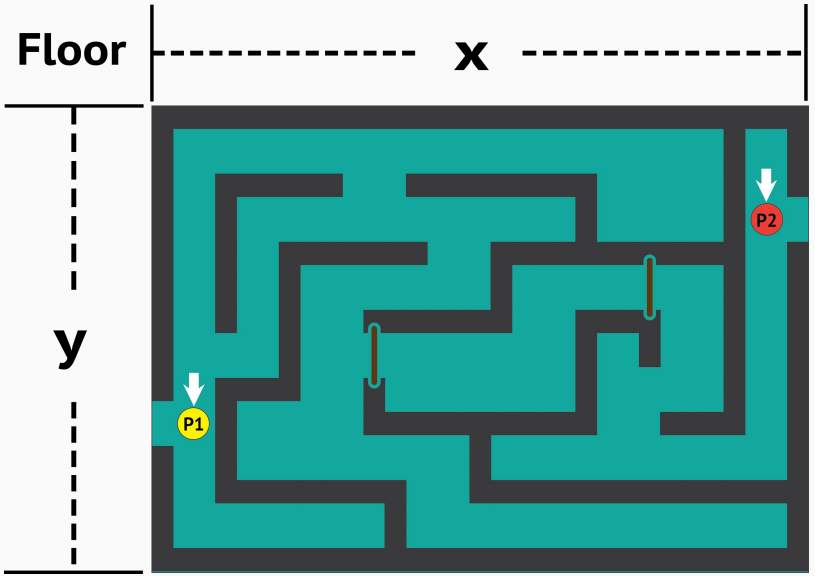
The Project

- Designed as an early learning tool to help develop teamwork and cooperation via an interactive medium.
- Demonstrators would be able to take it to schools and use it as an activity in team building exercises, alongside other traditional methods such as reflections.

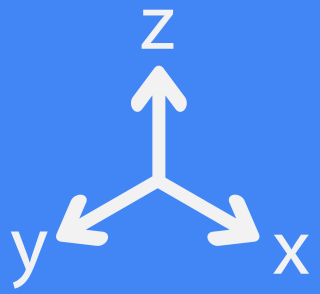
Demonstration - 2D & 3D Prototype





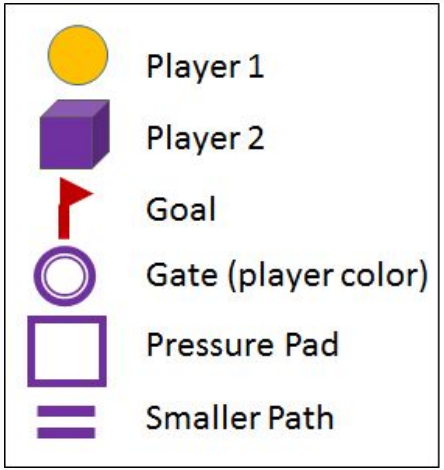


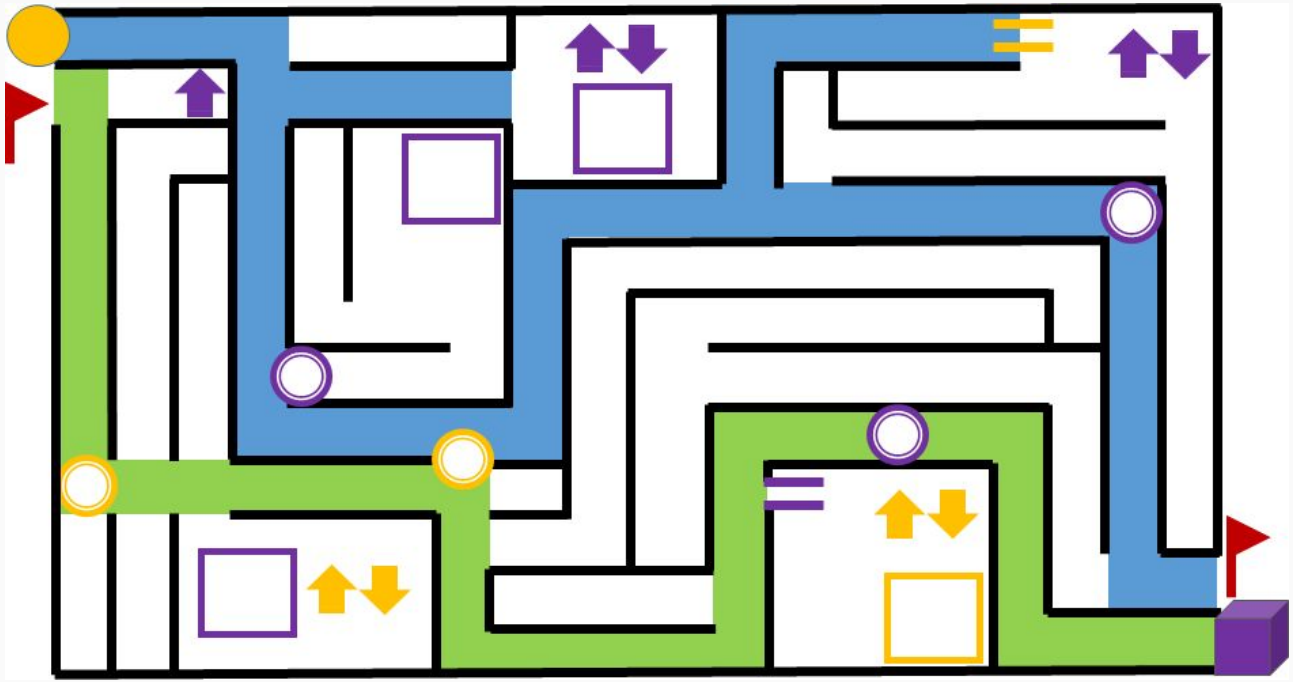
Interaction Concept



- 3D space displayed as two 2D planes
  - The interaction occurs within the space bounded by the planes.
- Single shared axis
  - Moving from left to right will change the x position on both planes.
  - Moving higher or lower will change only the z axis on the xz plane.
  - Moving forwards and backwards (towards and away from the xy plane screen) will only change the y axis on the xy plane.

Scalable Difficulty





Target Audience

- Primary users will be school students participating in the teambuilding exercise / workshop
  - Scalable difficulty depending on grade / aptitude
  - The ones that will be learning something and taking something away from the experience
- To be used by “demonstrators” as an activity in an event / function
  - Participants reflect on the challenge
  - Presenters provide feedback on group dynamics
  - Participants should come away with a lesson in teamwork and team dynamics

Intended Experience (Participants)

- Forced to communicate, collaborate, and synchronise with team members
  - Discuss problems and solutions with your team member
  - Do actions at the same time, eg: pass/throw cube to each other, mimic motions, stand on pressure pads etc…
- Interact with your team not the screen
  - Switch between looking at screen, floor, and team members
  - Have the most amount of time looking at team members as possible
- Interact in different ways
  - Stomp on floors, throw cubes at people, it is all about manipulating physical objects

Intended Experience (Demonstrators)

- Be able to step back and observe participants
- Allow them to work together without instructions / intervention
- Meaningful exercise to reflect on and begin discussions

Why use it again (Participants)

- Mazes have several solutions.
- Team scoreboard.
  - Score based on time and amount of errors and amount of ‘steps’
  - Beat your own or other teams times
  - ‘How many stages can you do in a row without any errors’ mode
- Different stages with increasing difficulty
  - Random maze generator???
  - Preset levels
- Entertaining
  - Try again with different friends/colleagues/ new people you don’t know
  - Good way to get to know people

Why use it again (Demonstrators)

- Attract more people (marketing?)
- Make the program / event / curriculum more interesting
- Provide a more engaging experience
  - Practical exercises
- Measure performance on the fly
  - How do they work as a team
- Provide something for students (participants) to reflect on
- Tool to prove / demonstrate points

Proposed Installation

- Projectors: maze will be displayed in a wall and the floor.
- Pressure Paths: depends of the number of obstacles created (open gates, resize objects, restart).
- Transparent ball or cube or plank with vibration motors and lights
- HTC Vive “lighthouse” sensors: track position of the physical objects (ball or cube).
- Speakers: sounds effects.

Constraints

- Reduced space/area
  - Smaller puzzle areas may be too difficult for users to navigate without hitting the maze walls.
  - Smaller spaces make it difficult to fit in multiple participants.
- User participation
  - User-shadows may be cast over the maze which can be problematic depending on the position of the projector.
- Height of participants
  - Users need to be able to reach the top and bottom of the maze.
- Age
  - May affect the user's ability to solve challenges i.e. too young it is too hard, too old it is too easy.
- User behaviours
  - If a user is bossy, it may reduce enjoyment for other participants.
- Environment Brightness
  - A clear projection may be affected if the room is too bright, or the projector is not bright enough.

Team Roles:

- Woody Hill (wondertroy)
  - Programmer
- Daya Kern (kernage)
  - Programmer (Unity)
- Xu Liu (leo)
  - Maze Graphical Designer
  - Physical developer
- Raul Revelo (raurev)
  - Maze Element Gameplay Designer
  - Programmer

Thank You