

SPACE RACE PUZZLE 3 – FIRST PERSON PUZZLE GAME

OVERVIEW

Narrative

Set on a Russian spaceship during an alternate timeline 1960s. An AI has taken over the ship and the players must reset it.

Gameplay

- First-person puzzle game
- Local multiplayer game requiring exactly two players
- Players pick up objects such as a screwdriver
- Players use objects on other objects such as a screwdriver to open an air vent
- Players interact with objects such as power switches and a keypad
- The goal of the puzzle is to reset the navigation computer

Inputs and Outputs

The puzzle is started by inputting a password from puzzle 2. Once completed, the puzzle will play an audio clip on loop that is a clue for puzzle 4.

AIMS AND OBJECTIVES

- A1:** Allow a player to input the start code from puzzle 2
A2: Create a first-person puzzle fitting the escape room narrative
A3: Output an audio clue for puzzle 4 upon completion

- O1:** Create password screen
O2: Create level environment
O3: Create player model
O4: Code player movement
O5: Code player item interaction
O6: Code environmental objects
O7: Create puzzle complete screen
O7: Code multiple monitor support

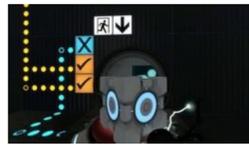
REQUIREMENTS

- F1:** Must be started by a password from puzzle 2
F2: Must be able to run on a Windows laptop
F3: Must have keyboard support
F4: Must support a game controller
F5: Must support at least two monitors
F6: Must give hints to the player after a certain amount of time
F7: Must play an audio file on loop when completed

- NF1:** Must be completable in under seven minutes
NF2: Must fit the narrative and theme of the escape room
NF3: Must be completable with no specialist knowledge
NF4: Must be completable with a minimum of two players
NF5: Must be easily resettable
NF6: Project must be maintainable
NF7: Game must not be losable (the player shouldn't die)
NF8: Must be completable by people with colour blindness
NF9: Must be completable by people with hearing difficulties

RESEARCH

Main Influences



Portal 2

- Movement system
- Picking up items
- Lines giving objective hints
- Two player co-op mode



Half-life 2

- Picking up items
- Physics based puzzles
- Laser beams
- Futuristic atmosphere



Stanley Parable

- Adventure line to follow
- Narrator giving instructions
- Sense of humour
- Isolated atmosphere

Reading

Unity Learn - <https://learn.unity.com>
 Unity Docs - <https://docs.unity3d.com/Manual/>
 GameDev.Tv - <https://gamedev.tv>

APPROACH



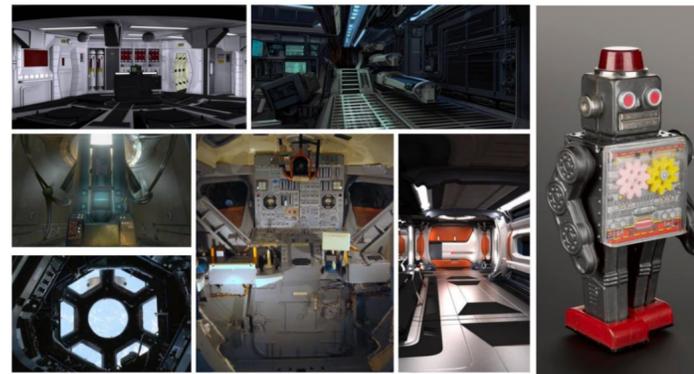
DESIGN TASK	TARGET
Design password prompt screen	February – Week 1
Create environment using layout image and placing basic cubes	February – Week 2
Create air vent model	February – Week 3
Create models for interactables	February – Week 3
Create models for props	February – Week 3
Create model for robots	February – Week 4

CODING TASK	TARGET
Code password prompt screen	March – Week 1
Research first-person character controllers	March – Week 1
Create UML diagrams to plan	March – Week 1
Player movement code	March – Week 2
Player look code MILESTONE 2	March – Week 3
Pickup and drop item code	March – Week 4
Interaction with objects code	March – Week 4
Air vent fan code MILESTONE 3	April – Week 1
Circuit breaker and lasers code	April – Week 1
Final keypad code	April – Week 2
Game complete popup and code	April – Week 2
Multiple monitor support	April – Week 3

PROJECT COMPLETE

ILLUSTRATIONS

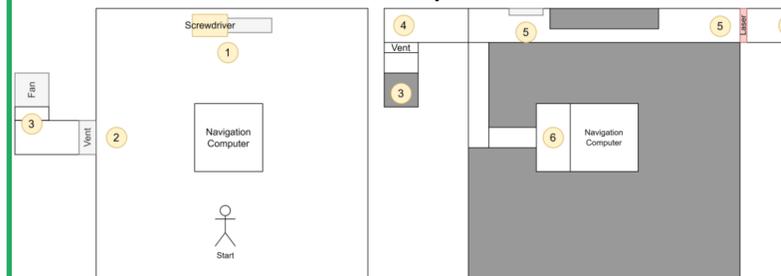
Moodboard



Ground Floor

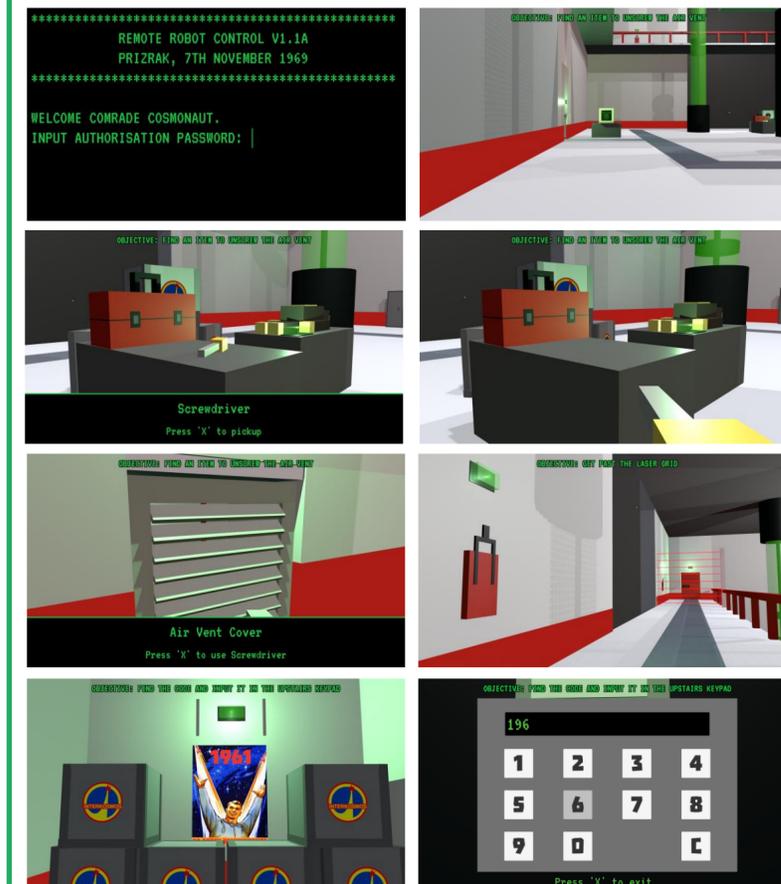
Level Layout

1st Floor



- 1 Pickup screwdriver
- 2 Use screwdriver on vent
- 3 Move to fan and get lifted to next floor
- 4 Blown through vent and into corridor
- 5 Circuit breaker is pulled and disables the laser for two seconds
- 6 A player reads keycode and the other types it into keypad to complete puzzle

Gameplay Screenshots



FORSEEN CHALLENGES

CHALLENGE	MITIGATION
Second monitor not working	Single monitor mode
Controller Bluetooth issue	Use wired controller
Controller running out of battery	Use wired controller
Controller not working	Keyboard only mode
Player not progressing	Hint messages and puzzle auto completion
Player or item out-of-bounds	Objects reset to initial position
Puzzle won't run and can't be fixed	Play MP3 file with puzzle 4 clue

TESTING STRATEGY

Do the individual components work?

#	INPUT	EXPECTED OUTPUT	ACTUAL OUTPUT	RESULT

Can it be completed in under 7 minutes?

MILESTONE	EXPECTED TIME	ACTUAL TIME	RESULT
Entered password	1		Pass / Fail
Found screwdriver	1		Pass / Fail
Unscrewed vent	1		Pass / Fail
Exited vent	1		Pass / Fail
Pulled circuit breaker	1		Pass / Fail
Secret code found	1		Pass / Fail
Code inputted	1		Pass / Fail
TOTAL	7		Pass / Fail

REFLECTION

The project was completed on-time. Next time, I will start testing early on so features aren't being cut near the end of the project in order to reach the 7 minute time limit.

Future Work

The current puzzle meets all the requirements. However, it's only a prototype. The following features would be added in the future so that it could be used in a commercial setting:

- Improve graphics by adding textures
- Voice over for the AI computer giving hints
- Ability for a game master to send hints to players
- Background music and ambient sounds
- Add support for up to four players