C

PROJECT

OVERVIEW

01 Team

02 Results

03 Blinking LED

04 Extension

05 Demo

06 Testing

07 Reflections

01 OUR TEAM

TIMOFEY KOLESNICHENKO

ASHWIN BIJU

DORIAN TURNER

MICHAEL SONG

02 RESULTS

PART I - EMULATOR

```
____________________
Assembler Tests:
  All tests passed!
____________________
____________________
Assembler Summary:

Test                    Correct  Incorrect  Failed  Total

Total                       592          0       0    592
____________________
```

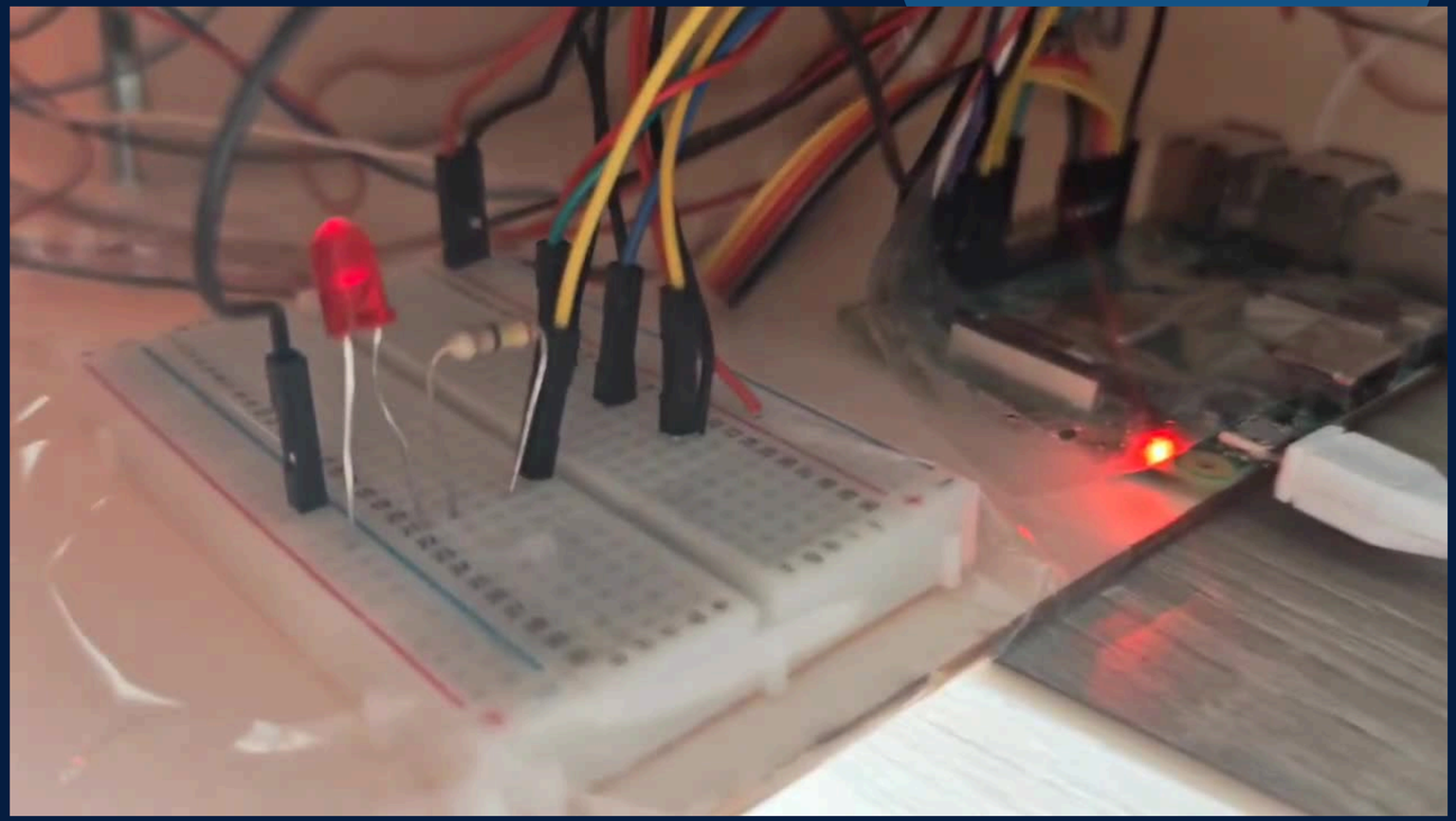
PART II - ASSEMBLER

```
____________________
Emulator Tests:
  All tests passed!
____________________
____________________
Emulator Summary:

Test                    Correct  Incorrect  Failed  Total

Total                       592          0       0    592
```

03 BLINKING LED



03 EXTENSION

SOFTWARE

- pigpio library for GPIO interaction
- Finite state machine system for menus
- Button state change callback functions
- Non-blocking call to pour drinks
- Async threads to control pumps in parallel
- LCD I2C logic abstracted into its own file
- Full error logging and handling
- Executable running as system service
- Outputs logged to journal (for debugging)

03 EXTENSION

HARDWARE

We undertook the following processes during the hardware construction:

- CAD Design using Fusion 360
- Laser Cutting chassis
- Replacement of tubing with food safe tubing in peristaltic pumps
- Wiring between pumps, raspberry pi, breadboard, LCD and power supply

04 DEMO

WHICH COCKTAIL DO YOU FANCY?

05

TESTING

SOFTWARE

- Stub pigpio files with stdout debugging for testing on Linux machines
- Fully parametric for quick changes
- Barebones breadboard prototyping to test GPIO input and output

HARDWARE

We thoroughly tested the model by:

- Testing structural integrity of the chassis
- Testing whether wiring was completed correctly
- Testing whether power supply was enough for the pumps
- Testing for significant leaks through the tubing

07

REFLECTIONS

WWW

- We decomposed large tasks into smaller subtasks then delegated effectively based on individual strengths
- The division of labour between hardware and software during the extension phase led to rapid progress.
- We maintained efficient communication through regular meetings and online updates.
- Our teamwork, communication and commitment remained strong throughout the project.

PARTICULAR EXPERIENCES

- Collaborating across software and hardware taught us how to work asynchronously.
- Resolving code duplication issues made us appreciate the value of clear cut planning.
- Adapting to individual strengths in task delegation showed us the importance of team diversity

EBI

- At times, not all members were clear on the overall project structure, leading to duplicated work.
- Some confusion could have been avoided with clearer documentation and project-wide updates.
- In future, we will implement more thorough debriefings to ensure everyone understands how individual tasks contribute to the overall goal.

THANK YOU

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