MTRX2700 Major Project

Group: *Name undetermined*

Meeting 1

30/04/2024 7:30pm
Zoom

Attendees

Annabelle Flannery (AF)
Devagya Budhiraja (DB)
Varun Varshan (VV)
Zahi Al-Aker (ZA)
Mike Delano (MD)
Shirley Wong (SW)

Apologies

Absent

Previous Action Items

Action	**Owner**
No previous actions	

Agenda

1. Review the assignment
2. Discuss ideas for the assignment
3. Establish internal teams
4. Assignment breakdown
5. Create a general timeline with internal deadlines
6. Plan for upcoming lab
7. AOB

Minutes

1. Review the assignment
    a. Reviewed assignment criteria
2. Discuss ideas for the assignment
    a. Initial brainstorming:
        i. Pinball machine
        ii. Dividing the assignment into software and hardware modules
        iii. Using RFID sensors as an admission mechanism (membership card?)
        iv. Consideration of points (scoring): detection and recording
            1. Sensing of ball: LDR/HALL-EFFECT sensors
        v. Consideration of physical properties (not the focus but important as the basis of other specifications)
            1. Mechanism for flipping: solenoids? Sound effects?
            2. Side buttons, mechanical vs not-mechanical
            3. Inclusion of laser-range sensor
        vi. Software considerations:
            1. Language: C and python for the GUI
3. Establish internal teams

Software	Hardware
DB, MD, and ZA	AF, VV, and SW

4. Assignment breakdown

Software Modules		**Hardware Modules**	
RFID + motors interface	DB	Module to turn on/off the game with RFID and motors	SW
GUI to start and exit the game, will also include scoreboard and name system	ZA	Spring Mechanism to throw the ball in the playfield -> The shooter lane	VV
Overall timer counter (5 min) + interfacing with the overall machine	MD	The Playfield (overall structure) of the entire game board	AF
Flipper mechanism (Servo/solenoid/spring)	DB	Flipper mechanism (design + implementation)	VV
Scoring Interface and how are we counting our points (need to know the modules and the playfield) + interact with GUI scoring	MD	Individual module designing that are to be used for the playfield	AF
How do we know the overall position of the ball (LDR? -> Interface?)		Making the board's modules on the hardware side (3D printing/Laser cutting)	AF

PDU and board integration (how many boards are we having + interface? UARTS?)		Underneath the playfield placing/ holding everything neatly (Cable management system)	AF
Sound Module? (buzzer)		Sound interface? (How many buzzers + interfacing them)	SW
LED and Lighting		Lighting of the playfield	AF
Individual modules coding -> sensors for scoring points and counting points for GUI	MD	Casing of the game + where will GUI (Dev's laptop go? + need to consider charging it lol)	AF

5. Create a general timeline with internal deadlines
    a. Week 10 lab:
        i. Initial prototype design for physical model and integration of hardware feature ideas
    b. Week 11 lab:
        i. Decided on hardware components and placement, 3D printed parts finalised and scheduled for printing
        ii. RFID motors, flipper and sound mechanisms, PDUs, and timers established and configured to hardware parameters
        iii. Individual modules confirmed and 50% completed
    c. End of Week 11:
        i. GUI completed
    d. Week 12 lab:
        i. Finalised, prepare presentation
6. Plan for upcoming lab
        i. Initial prototype design for physical model and integration of hardware feature ideas
7. AOB

Action Items

Action	**Owner**
Initial board layout and hardware considerations	AF
Initial prototype designs for spring and flipper mechanisms	VV
Initial RFID and sound mechanism designs and considerations	SW
Software aspect of RFID, motors and flipper mechanism	DB
Initial ideas for timers, and scoring and sensor interfaces	MD
Initial designs and layout for front end GUI	ZA