Project Specification:

Problem Domain:

- Current solutions that synchronise music with lighting are inbuilt and often expensive.
- They can be impossible to expand on if the user wishes to add more lights.
- They may also tie a user to a specific brands ecosystem, meaning that they must buy their products regardless of the price.
- Audiophiles looking to enhance the experience of listening to music would love the chance to synchronise their lighting with their music.

How the problem will be addressed:

- Currently there are few solutions that allow a user to easily synchronise music with their wireless smart bulbs.
- This Web Application will initially allow users who use the Wiz brand of bulbs to synchronise multiple bulbs with their music.
- The Web Application will be a user-friendly user interface that allows users to control the synchronisation of their music, they will be able to choose colours, brightness, and intensity.

Proposed system features:

- Authentication – Many bulb brands require authentication, to make the user experience more fluid handling this authentication in the Web Application will be the goal
- Non-Music Control – The Web Application will have the ability to control the lights without music, meaning that the user can set a static lighting.
- Music Control – The Web Application will have the ability to synchronise the music with music being played in the room that the server running the application is in.

Proposed Interface Elements:

- The Web Application is being designed with Mobile and PC views in mind
- The user will be greeted with an interface showing them default settings
- The user will be able to turn on or turn off the music synchronisation setting
- The user will be able to change the lights (brightness, colour, etc.) from the application
- The user will be able to edit the default settings, which would be stored in a database
- The user will be able to create ‘scenes’ which contains a pre-set version of the settings for easy access

Technology Investigation:

Bulb brands:

- Wiz
- TP-Link Kasa
- TP-Link Tapo
- YeeLight
- Shelly
- Philips Hue
- Athom.tech
- SwitchBot

From these brands Wiz was selected for these reasons:

- Wiz is cheaper than many of the other brands
- Wiz has an open API unlike some other brands (TP-Link Tapo)
- Wiz bulbs do not require a hub to work unlike some other brands (Philips Hue)
- Wiz was also highly recommended by other users for similar use-cases

Frontend Frameworks:

- As I will be working with a raspberry pi I will be working with Linux, Apache, PHP, and SQL
- This is a popular framework, so there is a lot of advice available online

Backend Framework:

- In the backend of the application I will be using Java to run the API calls to the bulbs

PROJECT: WiFi Bulb Music Sync

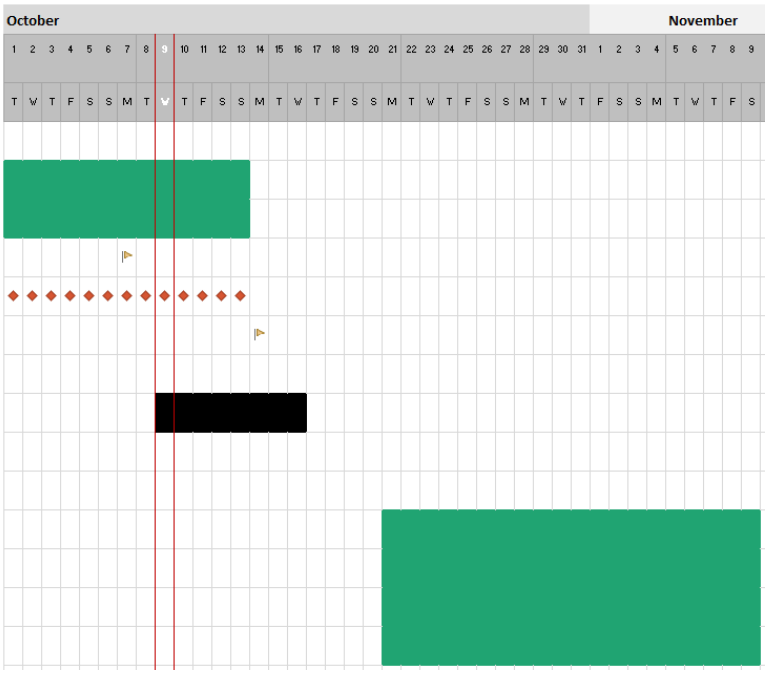
Ryan Urquhart

WiFi Bulb Music Sync

Project start date: 01/10/2024

Scrolling increment: 0

Legend: On track | Low risk | Med risk | High risk | Holiday



Milestone description	Category	Progress	Start	Days
Project Research				
Develop Project Specification	On Track	50%	01/10/2024	13
Develop Gantt Chart	On Track	50%	01/10/2024	13
Meeting with Project Supervisor	Milestone	100%	07/10/2024	1
Order bulbs	Goal	100%	01/10/2024	13
Upload Project Outline and Plan	Milestone	0%	14/10/2024	1
Holidays				
Wedding	Holiday	0%	09/10/2024	8
Honeymoon	Holiday	0%	10/01/2025	31
Initial Investigation				
Brainstorm additional features and functions	On Track	0%	21/10/2024	20
Create initial scripts to manipulate bulb	On Track	0%	21/10/2024	20
Explore using microphone with raspberry pi	On Track	0%	21/10/2024	20
Develop initial UI	On Track	0%	21/10/2024	20
Integration Development				
Integrate microphone audio parsing with bulb control	On Track	0%	10/11/2024	20
Integrate UI with backend	On Track	0%	10/11/2024	20
Develop Authentication	On Track	0%	30/11/2024	20
Develop pairing of bulbs with application	Goal	0%	30/11/2024	20
Project Testing and Submission				
Project Testing	Milestone		01/04/2025	14
Project Report	Milestone		15/04/2025	14
10 Minute Project Recording	Milestone		03/05/2025	2
Project Interview	Milestone		06/05/2025	1
Final Submission of Project	Milestone		06/05/2025	1