

Q1

Monday, 9 March 2026 10:40

Topic 1, Unit 1: Focuses on innovation and how it can shape the world. It defines innovation as the use of a novel method or idea that differs from current methodologies or ideas to advance a given field or society[1]. By doing this, it can, over time, enhance people's lives by making things easier, healthier, saving time, or allowing others to build on the idea to further enhance lives[2]. Innovation, therefore, has shaped societies from prehistoric times to modern AI tools[3]. Further, because innovation is broadly defined, it is everywhere, and everyone can innovate[1]. This is discussed throughout topic 1 as it explores Innovation in society, Industrial revolutions, Technological waves and Creativity as a human capability.

Innovation is everywhere throughout time and history, transforming our lives even over the last 100 years alone[3]. From the invention and use of fire in our primitive era to modern languages and digital technologies, innovations have improved our lives[3]. Some major examples are the use of fire for both cooking and heating/warmth, communication through phones, email and post, connecting the world together to share knowledge and in healthcare, where we can now diagnose what we can't see through scans and tests and treat the ill with much higher survival rates than before[4]. This is due to human progress over time, as we develop our innate curiosity into knowledge and innovations, which we then improve upon. There is also an argument that our well-being has improved due to science and innovation, and the idea that progress isn't automatic and instead driven by problem-solving[5]. Even though innovation can improve quality of life, progress is not equal for everyone everywhere[6].

Throughout human history, there have been 4 distinct technological revolutions which have enhanced the world to this day. The first is the steam and mechanisation revolution, which utilised the power of steam to drive machinery and aided in moving people from local small communities that worked on land farming to mostly into larger cities where factory-based work produced goods[7].

The second revolution was electricity and mass production, which allowed homes to be heated electrically, telephones, electric lighting, and wireless communication to increase in households, and goods to be produced on a large scale at lower unit prices[7].

The third was the digital and computing revolution, which saw computers and wireless communication dominate both the workplace and day-to-day life by enabling computers personal processed to process information on a large scale and allowing raw data to be used in sophisticated ways to manage people's work and personal lives[7]. Further automation also reshaped the workforce and industries in a major way[8].

The latest revolution is the current cyber-physical system, Artificial Intelligence (AI) and Internet of Things (IoT)[7]. This is currently seeing complex computer programs resemble human thinking and speech[7]. Alongside an increasingly virtual and technological society, where day-to-day tasks are being aided heavily by smart tech[6], [7]. This also includes healthcare being heavily influenced by new computer systems aimed at improving outcomes, and wearable tech becoming the norm, aiding personal health and well-being[9]. This therefore means the line between the physical world and the digital world is increasingly blurred as they slowly become one[7], [9].

Topic 1 also discusses the Kondratieff Waves, which were part of a paper written about the next industrial revolution and how the different major innovations drive long economic cycles[7]. For example, the 1st peak is from the steam engine, the second being railway steel, the third being electricity and chemicals, the fourth being automobiles and petrochemicals, etc[7]. The graph discussed contains a predicted trend of a sixth wave, which is likely to be a focus on health, sustainability and AI[7]. This was researched by Nikolai Kondratieff, among others, and shows how innovation drives economic prosperity in regular cycles and how we may be transitioning into a new wave with an outcome more focused on wellbeing and the environment[7].

Finally, it discusses creativity and how it is not specific to the arts, as most areas need it to innovate[10]. This is because innovation starts with creativity. Although most people don't see themselves as creative, this may be because they associate creativity with the arts rather than simply coming up with novel ideas[10].

Creativity is also aided by emotions and passions such as wonder, fear, pride, desire, love, hatred,

anger, etc[11]. Feeling these emotions can aid in inspiring new ideas that no one has had[11]. This is because these feelings ignite a fire within the person, leading them to act on new ideas to help resolve negative emotions or amplify positive ones[11]. This results in a new innovation which may not have happened unless emotions or a passion was acted upon[11].

Q2

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Project 1 – Ethics of Artificial Intelligence and the potential impact of Asimov’s Laws in robotics

Project 2 - To design and develop a smart ‘magic’ mirror system that integrates a real-time digital calendar and personalised information display utilising APIs.

Project 3 – To develop an AI assistant to analyse log files and produce a report stating any discrepancies between log files.

Project 2 Brief description

This project involves designing and building a smart “Magic Mirror” that functions as an interactive information hub while maintaining the appearance of a regular mirror. Using a two-way mirror, display monitor, and microcomputer such as a Raspberry Pi, the system will present useful real-time information including date, time, weather, and a synchronised digital calendar. The calendar feature will allow users to view upcoming events and appointments automatically through API integration. The project will focus on both hardware assembly and software development, including user interface design and system testing.

Aim – To design, build, and evaluate a fully functional "Magic Mirror" that seamlessly integrates a physical two-way mirror with a microcomputer system to serve as an interactive, real-time daily information hub.

Objectives:

- Construct a secure casing to seamlessly integrate the two-way mirror, display monitor, and microcomputer.
- Create an unobtrusive user interface to display essential information (date, time, weather) while preserving the mirror's reflection.
- Integrate a backend system to fetch real-time weather data and synchronise with a digital calendar via third-party APIs.
- Test the integrated system to ensure data accuracy, continuous uptime, and optimal display visibility through the glass

Q3

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Course 1 - JavaScript Essential

<https://www.linkedin.com/learning/javascript-essential-training/javascript-the-soil-from-which-the-modern-web-grows?u=77966930>

Course 2 - Raspberry Pi Essential Training

<https://www.linkedin.com/learning/raspberry-pi-essential-training-2024/welcome-to-raspberry-pi-essential-training?u=77966930>

Course 3 - Python Essential Training

<https://www.linkedin.com/learning/python-essential-training-18764650/getting-started-with-python?u=77966930>

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Start date is 11/02/2026 and the final deadline is the 07/05/2026 for submission

Project Stage & key tasks	Start Date & End Date
Ideation	11/02/2026 - 13/02/2026
Aim and Objectives	13/02/2026 - 15/02/2026
Project outline: description & Key sources	13/02/2026 - 15/02/2026
Project scope: timeline & resources	15/02/2026 - 18/02/2026
Project Planning: Task schedule & Gantt chart	18/02/2026 - 20/02/2026
Risk Analysis	20/02/2026 - 22/02/2026
Development methodology selection	22/02/2026 - 24/02/2026
Design phase	24/02/2026 - 02/03/2026
Prototype Development	28/02/2026 - 20/03/2026
Implementation	18/03/2026 - 1/04/2026
User Testing & feedback	28/03/2026 - 08/04/2026
Finish development work	06/04/2026 - 20/04/2026
Deployment planning / manufacture	20/04/2026 - 30/04/2026
Reflection and Report writing	27/04/2026 - 04/05/2026

Gantt Chart



Risk no.	Risks	Impact	Contingencies
1.	Time management issues	High	Use a Gantt chart and weekly planning schedule to track progress and ensure tasks are completed on time.
2.	Loss of project data	High	Follow the rule of three backups: store copies on a laptop, cloud storage (e.g., OneDrive/Google Drive), and an external device.
3.	Hardware or software failure	Medium	Ensure access to alternative devices/versions such as university computers or back up copy's to reduce the impact from a hardware failure or from software corruption.
4.	Lack of technical knowledge	Medium	Use online learning resources such as Cisco Networking Academy or Microsoft Learn to develop the necessary skills.
5.	Scope becoming too large	Low	Clearly define project scope and prioritise essential features while leaving optional features for future development.
6.	Hardware compatibility issues	Low	Research hardware compatibility before implementation and use widely supported components. Follow official setup documentation and test each component individually during early stages of the project.
7.	Software installation or configuration problems	Medium	Use online documentation and community guides for MagicMirror. Test modules one at a time and keep backup copies of configuration files to restore the system if errors occur.

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For this project, the development style that suits it best is the Agile method, due to its flexibility in how tasks can be broken down and completed, and its ability to adapt dynamically to the progress page and any unforeseen challenges or design shortfalls[12].

The Agile key methodology divides project development into small, easy-to-work-on tasks/iterations that, once completed, form a final outcome[13]. Each intermittent task is a fully functional part of the overall system. This, therefore, enables continuous testing and improvement[12]. This will also allow the project to continue progressing even if issues arise, as it can easily adapt to problems or changes in requirements[12]. For example, if there is a delay in obtaining the microcomputer or in making the display, the project can improvise and adapt to overcome this more quickly and easily than other methods, or it could be that the features are worked on while parts are delivered[12], [13].

Furthermore, due to the modularity of a smart 'magic mirror', it can be built incrementally with weather, calendar, and stocks modules added one at a time in any order[14]. This also allows issues to be resolved with the integration of the API one at a time and to identify any compatibility issues early[12], [14].

Finally it also naturally aids in the organisation, planning and execution of the overall project[12], [13]. This results in the agile method being the most suitable, given its structured planning with built-in flexibility, making it ideal for this project.

Requirement	Description	Priority
Functional Requirements		
Display time and date	The mirror should show the current time and date in real time.	High
Weather information	The system should retrieve and display local weather data using an online API.	High
Stocks feed display	The mirror should display chosen stocks on the display.	Medium
Calendar integration	The mirror should display upcoming events from a digital calendar.	High
Non-Functional Requirements		
Performance	The mirror should load and update information without significant delay.	High
Usability	The interface should be simple, clear and easy to read when viewed in the mirror.	High
Reliability	The system should run continuously without frequent crashes or interruptions.	High
Security	API keys and configuration files should be stored securely.	Medium
Maintainability	The system should be easy to update by modifying configuration files or installing new modules.	Low
Project Constraints		
Time limitations	The project must be completed within the academic project timeframe.	High
Hardware Cost	The project depends on costs of hardware such as the Raspberry Pi and display monitor.	Medium
Technical knowledge	Some configuration and programming skills may be required to install modules and customise the mirror interface.	Medium

Top Left

Time

Date

Top Right



Weather

Temp (High and low)

Middle Left - CALENDAR (API)

- 09:30 AM - Team Standup
- 12:00 PM - Lunch w/ Sarah
- 03:00 PM - Dentist Appt
- Tomorrow - Mom's Birthday

Middle Right - STOCKS (API)

Stock 1	\$Price
Stock 2	\$Price
Stock 3	\$Price
Stock 4	\$Price

Center

"Looking good today, Boss!"

(Optional Compliment/Text)

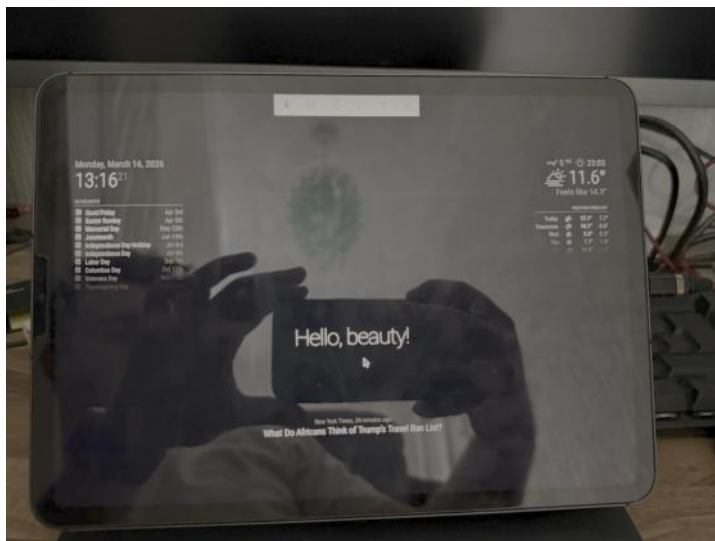
Breaking News Headline Scrolling Here...

Breaking News Headline Scrolling Here...

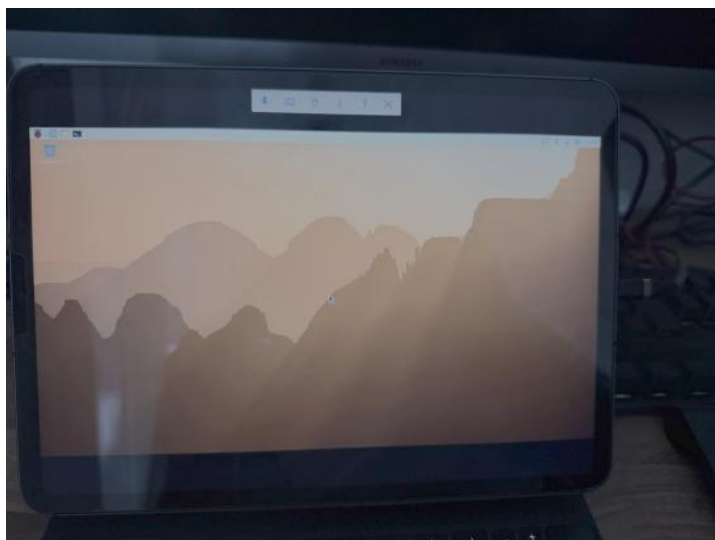


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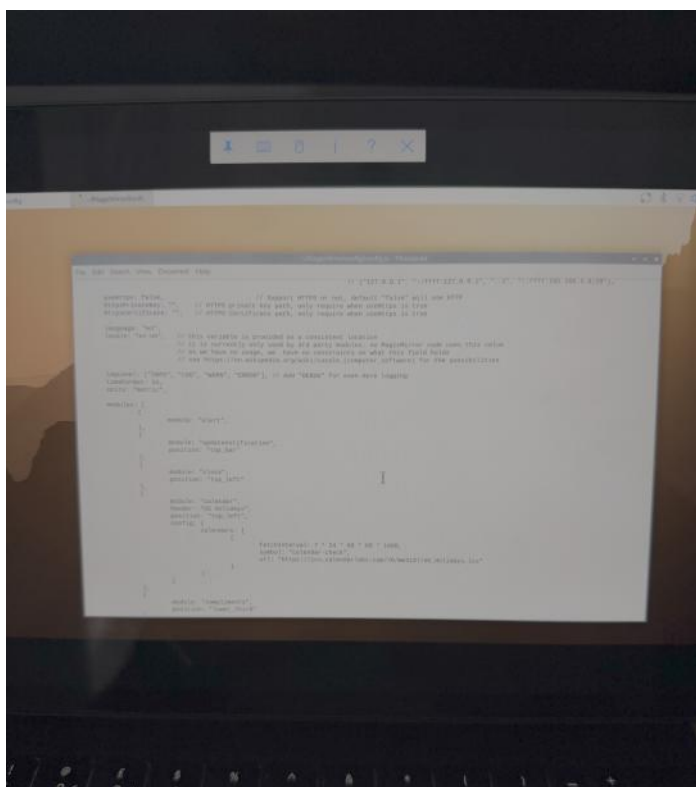
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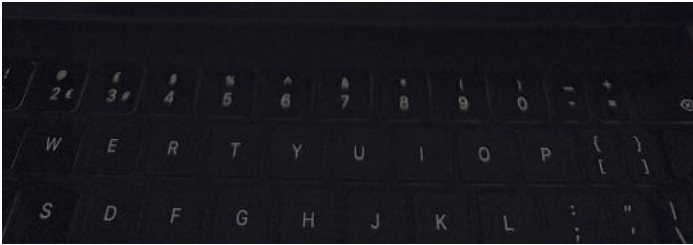
This photo shows the basic standard configuration of the magic mirror git code. Which will be configured and built upon with APIs to meet the wireframe diagram.



This photo shows the initial final result of the setup of the Rasbery pi's Operating system.



This photo shows some of the code which is contained in the code Magic Mirrors config file.



This photo shows the raspberry pi micro computer which will be used though the project.

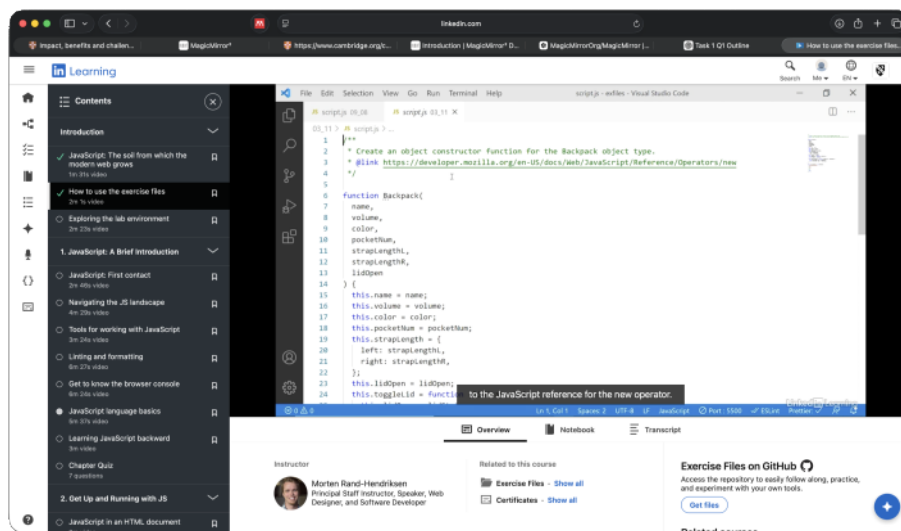
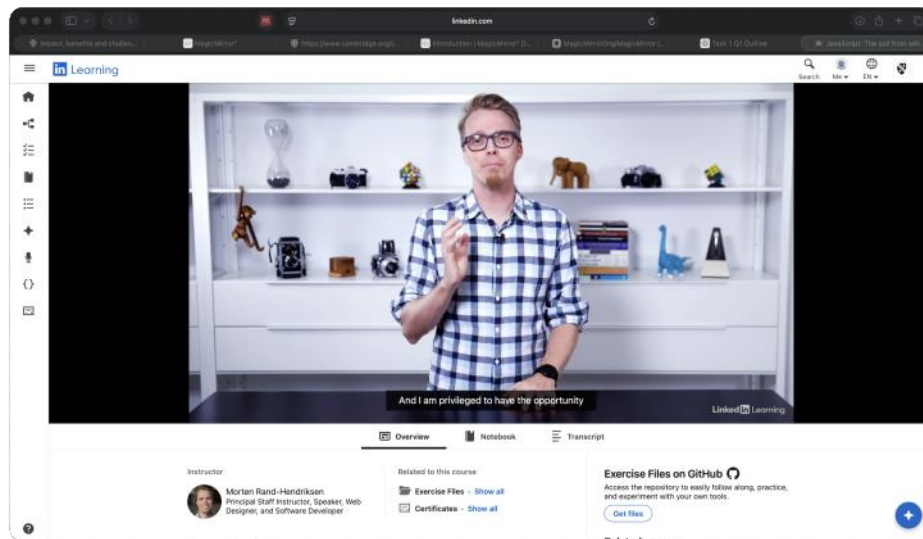
Reference list

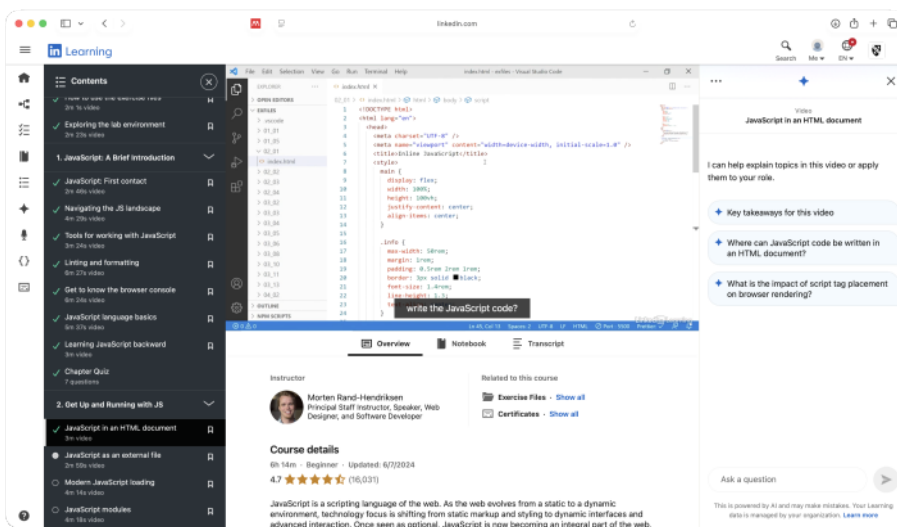
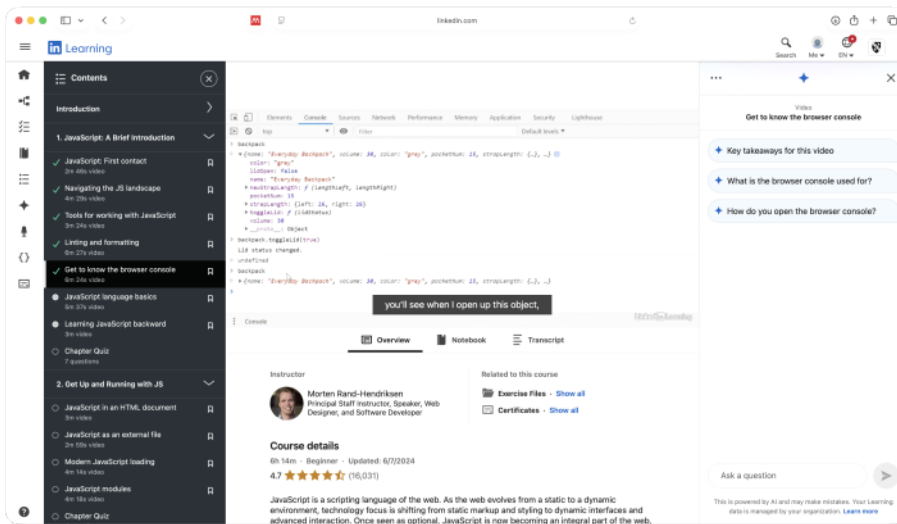
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- [12] L. Siewert, K. Gericke, N. Siller, J. Rusin, and D. Göhlich, "Impact, benefits and challenges of agile development-an explorative study on physical products", doi: 10.1017/pds.2025.10220.
- [13] L. Williams, "Agile Software Development Methodologies and Practices," *Advances in Computers*, vol. 80, no. C, pp. 1–44, Jan. 2010, doi: 10.1016/S0065-2458(10)80001-4.
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CPD course evidence

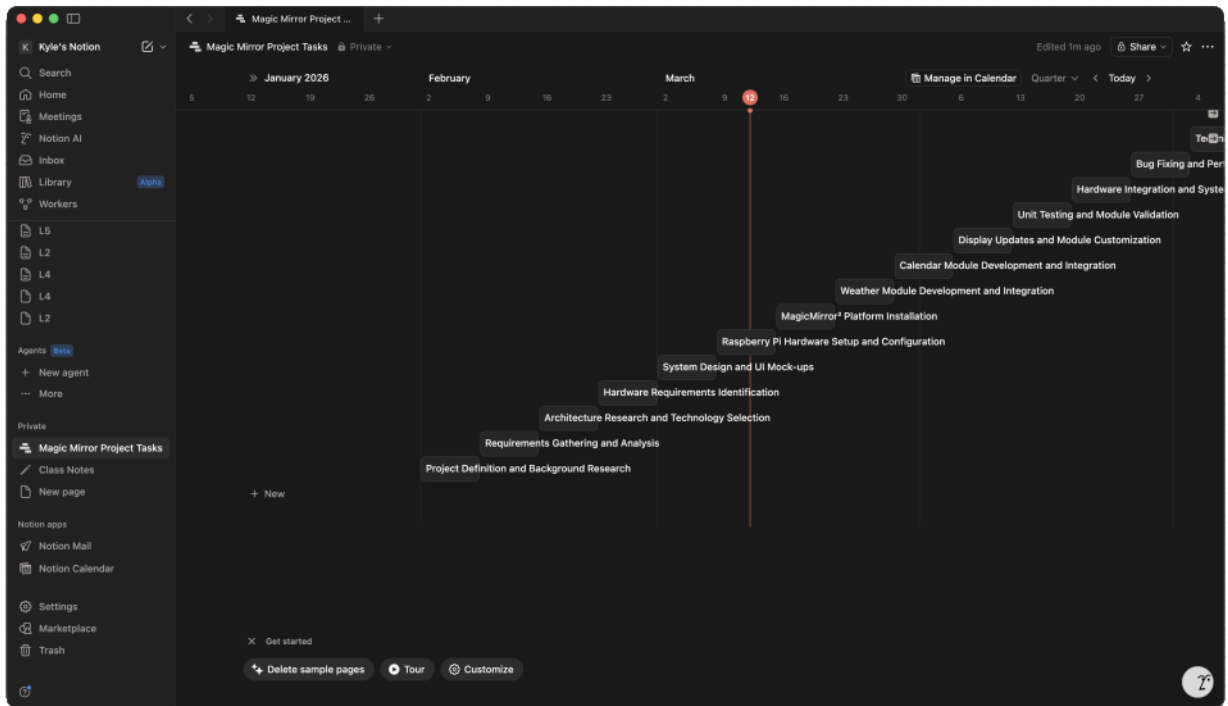
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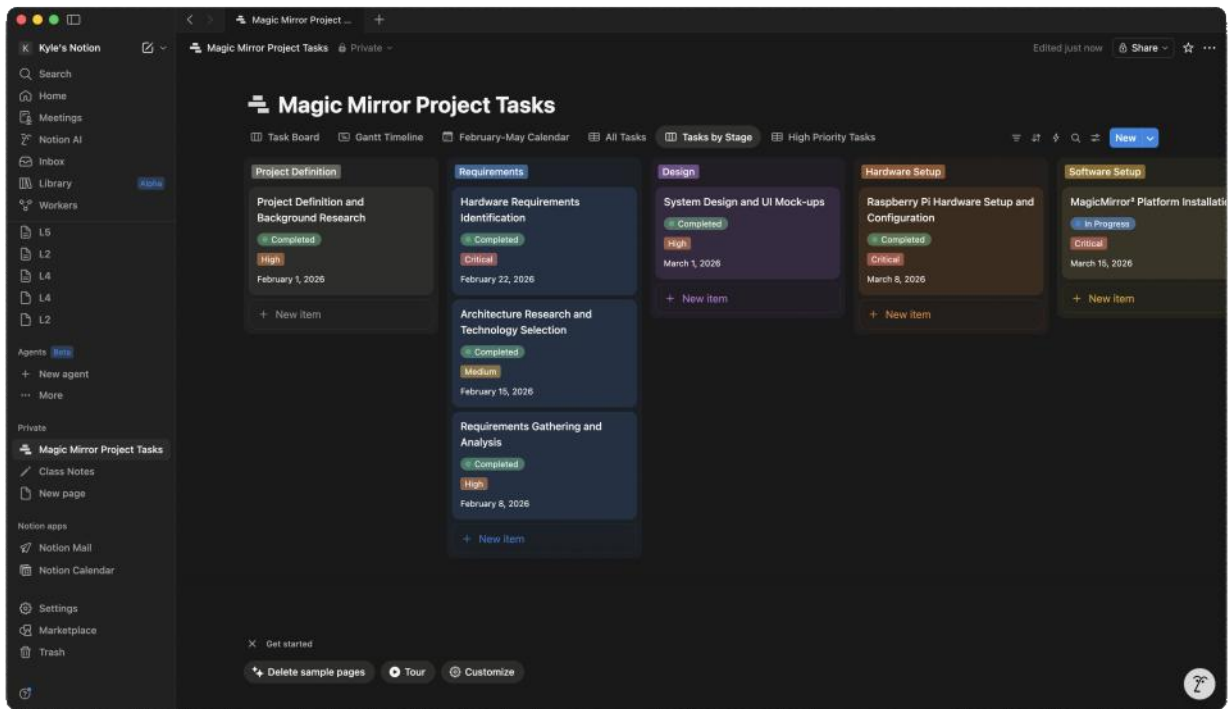
Project Management tool evidence (Notion)

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This screenshot shows a Notion project task board view for 'Magic Mirror Project Tasks'. The board is organized into columns for Task, Priority, Status, Stage, Start Date, End Date, and Description. The tasks are listed in the following order:

Task	Priority	Status	Stage	Start Date	End Date	Description
Hardware Requirements Identification	Critical	Completed	Requirements	February 22, 2026	February 28, 2026	Specify all hardware requirements
Raspberry Pi Hardware Setup and Configuration	Critical	Completed	Hardware Setup	March 8, 2026	March 14, 2026	Assemble hardware and install OS
MagicMirror Platform Installation	Critical	In Progress	Software Setup	March 15, 2026	March 21, 2026	Install Node.js, npm, and MagicMirror
Unit Testing and Module Validation	Critical	Not Started	Testing	April 12, 2026	April 18, 2026	Conduct unit tests for each module
Hardware Integration and System Testing	Critical	Not Started	Testing	April 19, 2026	April 25, 2026	Test complete hardware integration
Final Evaluation and Project Report	Critical	Not Started	Documentation	May 10, 2026	May 20, 2026	Complete project report and documentation
Project Definition and Background Research	High	Completed	Project Definition	February 1, 2026	February 7, 2026	Conduct comprehensive research
Requirements Gathering and Analysis	High	Completed	Requirements	February 8, 2026	February 14, 2026	Document functional requirements
System Design and UI Mock-ups	High	Completed	Design	March 1, 2026	March 7, 2026	Create detailed system architecture
Weather Module Development and Integration	High	Not Started	Development	March 22, 2026	March 28, 2026	Develop and integrate weather module
Calendar Module Development and Integration	High	Not Started	Development	March 29, 2026	April 4, 2026	Implement calendar module
Bug Fixing and Performance Optimization	High	Not Started	Testing	April 26, 2026	May 2, 2026	Identify and resolve bugs
Technical Documentation Preparation	High	Not Started	Documentation	May 3, 2026	May 9, 2026	Write comprehensive documentation



Magic Mirror Project Tasks

Task Board | Gantt Timeline | February-May Calendar | **All Tasks** | Tasks by Stage | High Priority Tasks

Task	Stage	Status	Priority	Start Date	End Date	Duration (Days)
Project Definition and Background Research	Project Definition	Completed	High	February 1, 2026	February 7, 2026	
Requirements Gathering and Analysis	Requirements	Completed	High	February 8, 2026	February 14, 2026	
Architecture Research and Technology Selection	Requirements	Completed	Medium	February 15, 2026	February 21, 2026	
Hardware Requirements Identification	Requirements	Completed	Critical	February 22, 2026	February 28, 2026	
System Design and UI Mock-ups	Design	Completed	High	March 1, 2026	March 7, 2026	
Raspberry Pi Hardware Setup and Configuration	Hardware Setup	Completed	Critical	March 8, 2026	March 14, 2026	
MagicMirror® Platform Installation	Software Setup	In Progress	Critical	March 15, 2026	March 21, 2026	
Weather Module Development and Integration	Development	Not Started	High	March 22, 2026	March 28, 2026	
Calendar Module Development and Integration	Development	Not Started	High	March 29, 2026	April 4, 2026	
Display Updates and Module Customization	Development	Not Started	Medium	April 5, 2026	April 11, 2026	
Unit Testing and Module Validation	Testing	Not Started	Critical	April 12, 2026	April 18, 2026	
Hardware Integration and System Testing	Testing	Not Started	Critical	April 19, 2026	April 25, 2026	
Bug Fixing and Performance Optimization	Testing	Not Started	High	April 26, 2026	May 2, 2026	
Technical Documentation Preparation	Documentation	Not Started	High	May 3, 2026	May 9, 2026	
Final Evaluation and Project Report	Documentation	Not Started	Critical	May 10, 2026	May 20, 2026	

