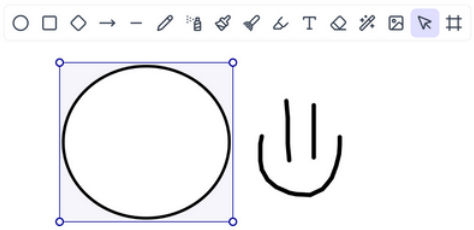
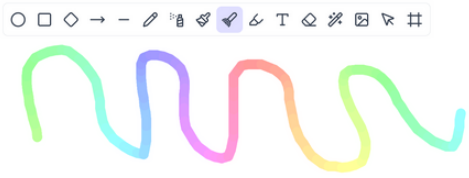
Final Project Submission Q2





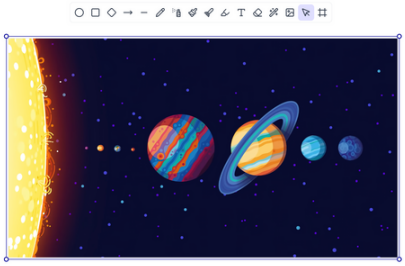
For this project, I extended the template by adding various tools and functionalities to enhance user interaction. One significant modification is the **Frame tool**, which allows users to move a frame, with all elements inside it moving accordingly. I implemented **undo and redo** functionality using an undoStack, enabling users to reverse or reapply actions with Ctrl+Z and Ctrl+Y.

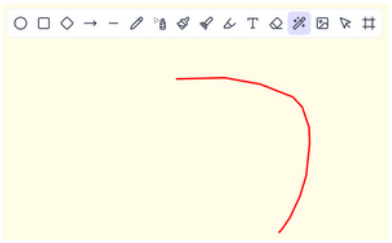
I also introduced a **Node-based UI**, which modularizes each tool's behavior. For example, each tool (such as EllipseTool, SquareTool, etc.) has its own function that manages its variables and interactions, like draw, mouseDragged, mousePressed, and mouseReleased. When a tool's draw function is triggered, an element is added to an array called elements. This array is iterated to draw the respective element on the canvas based on its type and properties, such as stroke color and stroke weight. Additionally, selected elements are highlighted by creating a bounding box around them, allowing users to move, resize, or modify their properties.

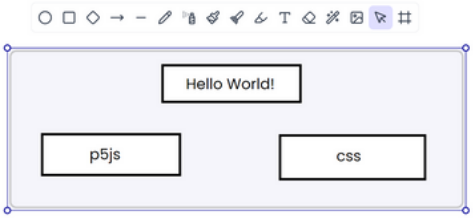
I also integrated the ability to save the drawing and configuration settings (like stroke color, stroke weight, and size) in local storage. This ensures users can preserve their settings across sessions. To further enhance the app, I added a **Laser pointer tool** and contextual menus to streamline tool selection.

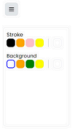
Stylistic changes include drop-down menus, context menus, and the ability to pan and zoom on the canvas, creating an **"infinite canvas"** effect. The background color of the canvas can also be changed.

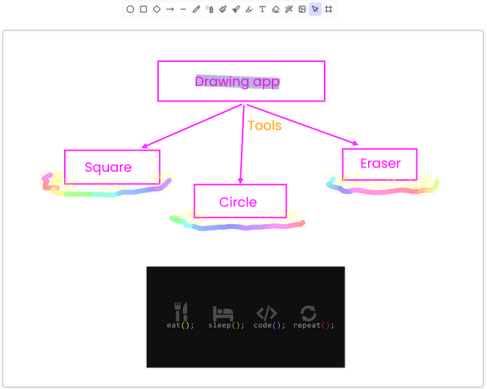
Overall, the modifications were structured to fit seamlessly into the template's design by following modular practices. Each new tool is encapsulated within its own function, which ensures scalability and maintainability.





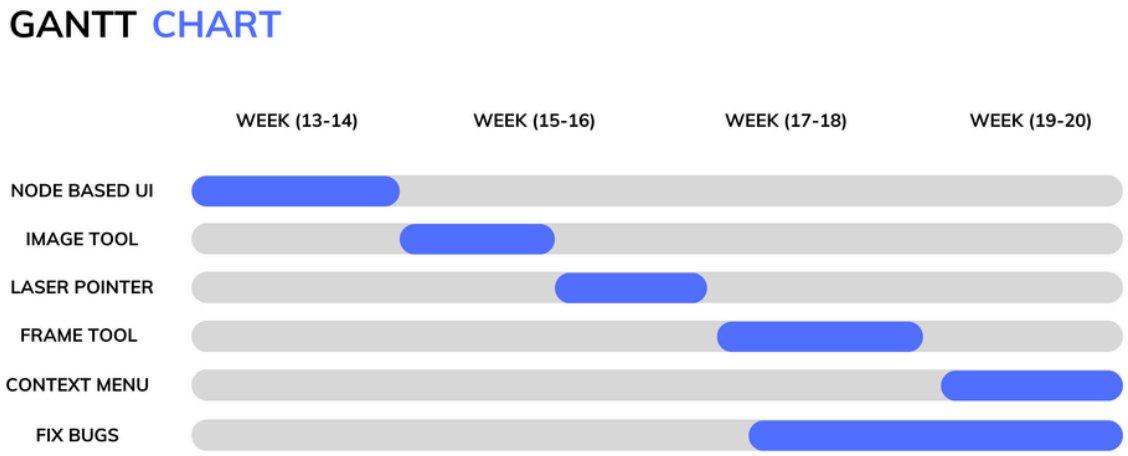


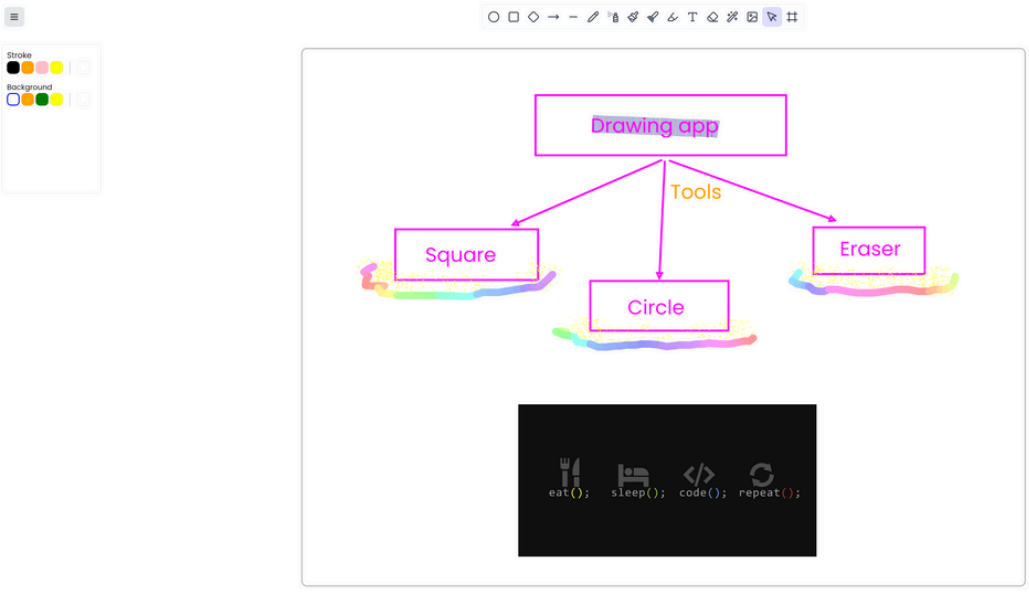




Final Project Submission Q3

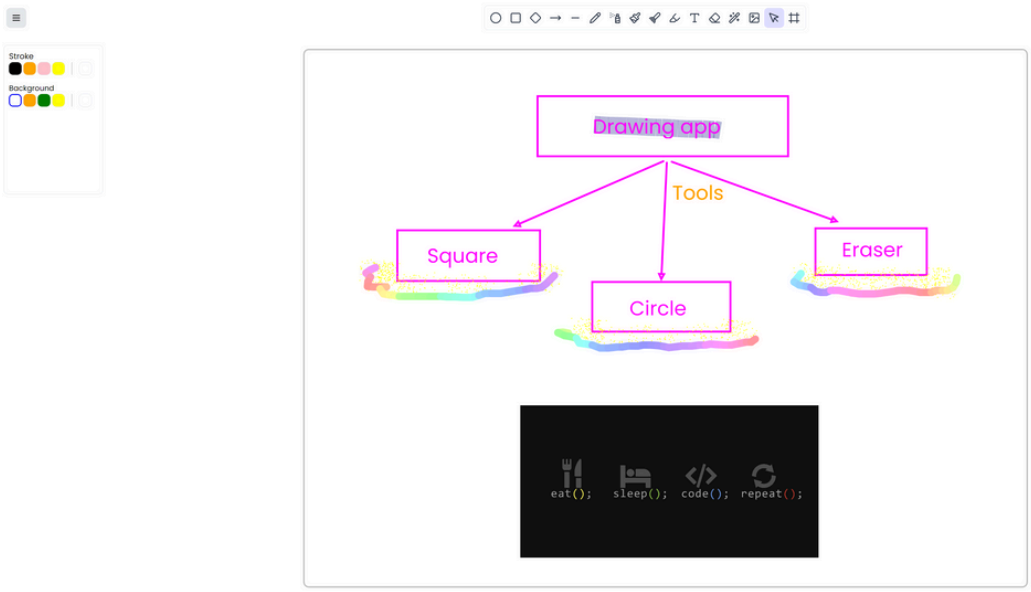
The project plan, as outlined in my Gantt chart, was highly effective in helping me stay on track. I managed to stick to the schedule well, completing the Node-Based UI on time in weeks 13–14, which provided a strong foundation for the remaining tools and features. I had allocated sufficient time for each task, and in some weeks where I completed tasks early, I used the extra time to implement more tools, add extra functionality, and fix any bugs that arose.
The time division was efficient, especially when working on the Image Tool, Frame Tool, and Context Menu in the planned weeks. I balanced development and bug fixing effectively, ensuring that the project was continuously improving.
Unexpectedly, I did not face any major difficulties or challenges. As I progressed, my familiarity with the tools and the codebase grew, allowing me to work faster and more efficiently than initially expected.





Final Project Submission Q4

Reflecting on the project, I realized that I sometimes jumped into coding before doing adequate research, which occasionally slowed me down. In future projects, I would invest more time upfront in researching and planning to avoid unnecessary detours and ensure a more structured workflow.
Regarding testing, I performed some system testing and informal user testing. I found a few bugs, especially when it came to the undo/redo functionality and tool interaction, but I managed to fix most of the critical ones before showing the project to others. However, there may still be some less noticeable issues that went undiscovered.
User feedback was mostly positive. I showcased the project to friends and people in online forums, and they particularly liked the node-based UI, which made the app intuitive and easy to use. However, a few bugs were reported during their testing, which helped me identify areas for improvement.
Next time, I would focus on a more robust testing phase before sharing with users. I'd also aim for more structured testing to catch smaller issues. To enhance future versions, I'd prioritize having a well-researched, solid plan and implement continuous testing throughout the development process to minimize bugs in the final stages.



Final Project Submission Q5

Some of the resources I used:

- https://stackoverflow.com/ (code)
- https://developer.mozilla.org/en-US/docs/Web/JavaScript (code)
- https://www.w3schools.com/JSREF/jsref_obj_array.asp (code)
- https://p5js.org/reference/ (code)
- https://github.com/excalidraw/excalidraw (design)
- https://editor.p5js.org/inoon/sketches/7yoo0zW6X (code)