Mini Figma Editor – Project Documentation

1. Project Overview

Mini Figma Editor is a lightweight, browser-based visual design editor inspired by tools like Figma. It allows users to create, edit, arrange, and export basic design elements using pure **HTML, CSS, and Vanilla JavaScript**—without Canvas, SVG, or external frameworks.

The project focuses on **DOM manipulation, event handling, state management, and UI/UX fundamentals**.

---

2. Core Features (As Per Instructions)

2.1 Element Creation

- Add **Rectangle** elements
- Add **Text** elements (editable inline)
- Each element maintains its own state (position, size, rotation, content)

2.2 Selection System

- Click to select an element
- Selected element shows:
    - Resize handles (4 corners)
    - Rotate handle
    - Outline highlight

2.3 Drag & Drop (Mouse Events)

- Click + drag to move elements
- Movement constrained within canvas boundaries

2.4 Resize (Mouse Events)

- Resize from all four corners
- Minimum size enforced
- Resize respects canvas boundaries

2.5 Rotation (Mouse Events)

- Rotate using a rotation handle
- Rotation based on mouse angle from element center
- Rotation value synced with properties panel

2.6 Properties Panel

- Modify width
- Modify height
- Modify rotation (degrees)
- Change background color
- Edit text content (for text elements only)

2.7 Layers Panel

- Displays all elements in stacking order
- Click layer to select corresponding element
- Selected layer highlighted

2.8 Layer Ordering

- Move element **Up** (bring forward)
- Move element **Down** (send backward)
- Uses z-index derived from internal array order

2.9 Keyboard Interactions

- **Arrow Keys** → Move selected element by 5px
- **Delete** → Remove selected element
- Keyboard actions only apply when an element is selected

2.10 Local Storage Persistence

- Auto-save layout to localStorage
- Design restores automatically on page refresh

2.11 Import / Export

Export JSON

- Downloads internal layout state as .json

Import JSON

- Load previously exported designs

Export HTML

- Generates a standalone HTML file
- Recreates layout using inline styles

3 Extra Features Implemented (Beyond Instructions)

3.1 Undo / Redo System

- Undo & Redo buttons
- Maintains history stacks
- Covers move, resize, rotate, create, delete, layer changes

3.2 Copy & Paste

- **Ctrl/Cmd + C** → Copy selected element
- **Ctrl/Cmd + V** → Paste element
- New element offsets position slightly

3.3 Infinite Canvas

- Large scrollable workspace
- Grid background for alignment

3.4 Modern UI Enhancements

- Glassmorphism-style panels
- Lucide icons for actions
- Visual hover & active states
- Canvas footer for file actions

---

4. Event Handling Overview

4.1 Mouse Events

- `mousedown` → Start drag / resize / rotate
- `mousemove` → Update element transform
- `mouseup` → End interaction
- Click handling ensures correct selection before interaction

4.2 Keyboard Events

- Arrow keys for movement
- Delete key for removal
- Ctrl/Cmd shortcuts for copy-paste

---

5. Key Learnings Demonstrated

- Advanced DOM manipulation

- Event delegation & conflict handling
- Geometry math (rotation & resizing)
- Undo/Redo stack management
- Local storage persistence
- Clean separation of concerns

---

7. Conclusion

This project demonstrates how a **Figma-like editor** can be built using only core web technologies. It highlights strong fundamentals in JavaScript, UI design, and interactive systems—making it an excellent showcase project for front-end development.