

ContextMemo

ContextMemo is a Chrome Extension that lets you highlight text on any webpage, attach notes, and have those highlights automatically re-appear across page reloads, revisits, and DOM changes.

This documentation includes:

- Installation in Chrome Developer Mode
- DOM Anchoring Strategy
- Data Storage Model (chrome.storage.local)

Installation (Chrome Developer Mode)

1. Clone the Repository

```
git clone <https://github.com/nitin22234/contextMemo>
```

```
cd notes_extensio
```

2. Install Dependencies

```
npm install
```

3. Build the Extension

```
npm run build
```

4. Load the Extension in Chrome

- Open `chrome://extensions/`
- Enable Developer mode
- Click Load unpacked
- Select the `dist/` folder

5. Enable Access to Local Files

- Open Chrome Extensions
- Find ContextMemo → Details
- Enable Allow access to file URLs

DOM Selection & Anchoring Strategy

ContextMemo uses a 4-layer hybrid anchoring system:

1. XPath (Precise DOM Location)

- Stores absolute XPath
- Accurate but fragile

2. CSS Selector (Flexible Path)

- Uses IDs, classes, tag indexes
- More resilient than XPath

3. Context Matching (Fuzzy Logic)

- Stores selected text + 50 chars before/after
- Finds matches through text scanning

4. Global Text Search (Fallback)

- Scans all text nodes with TreeWalker
- Works even when text spans multiple HTML tags

Restore order:

XPath → CSS → Context → Global

Data Storage Model (chrome.storage.local)

Uses Chrome's async local storage:

- Up to 5MB storage

- Non-blocking
- Fully local and private

Data Structure Example:

```
{  
  "id": "1701234567890-x8z9a2",  
  "url": "https://example.com/article#section2",  
  "content": "User note text",  
  "selectedText": "Highlighted text",  
  "domLocator": {  
    "xpath": "/html/body/div[1]/p[2]",  
    "cssSelector": "#content > p:nth-child(2)",  
    "textContent": "Highlighted text",  
    "textOffset": { "start": 15, "end": 55 },  
    "context": {  
      "before": "Text before selection...",  
      "after": "...text after selection."  
    },  
    "timestamp": 1701234567890  
  },  
  "createdAt": 1701234567890,  
  "updatedAt": 1701234567890  
}
```

Data Lifecycle:

- Create: Append new note

- Read: Filter notes by URL
- Update: Modify by ID
- Delete: Remove by ID

Demo Video Link :

https://drive.google.com/file/d/1dcfzin76EdyUpBODO6_BMOZy0-zHOI52/view?usp=sharing