Designing for Mindful Human-Computer Interaction

Prototyping for the Digital Wellbeing

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e-Lite

Prototypes

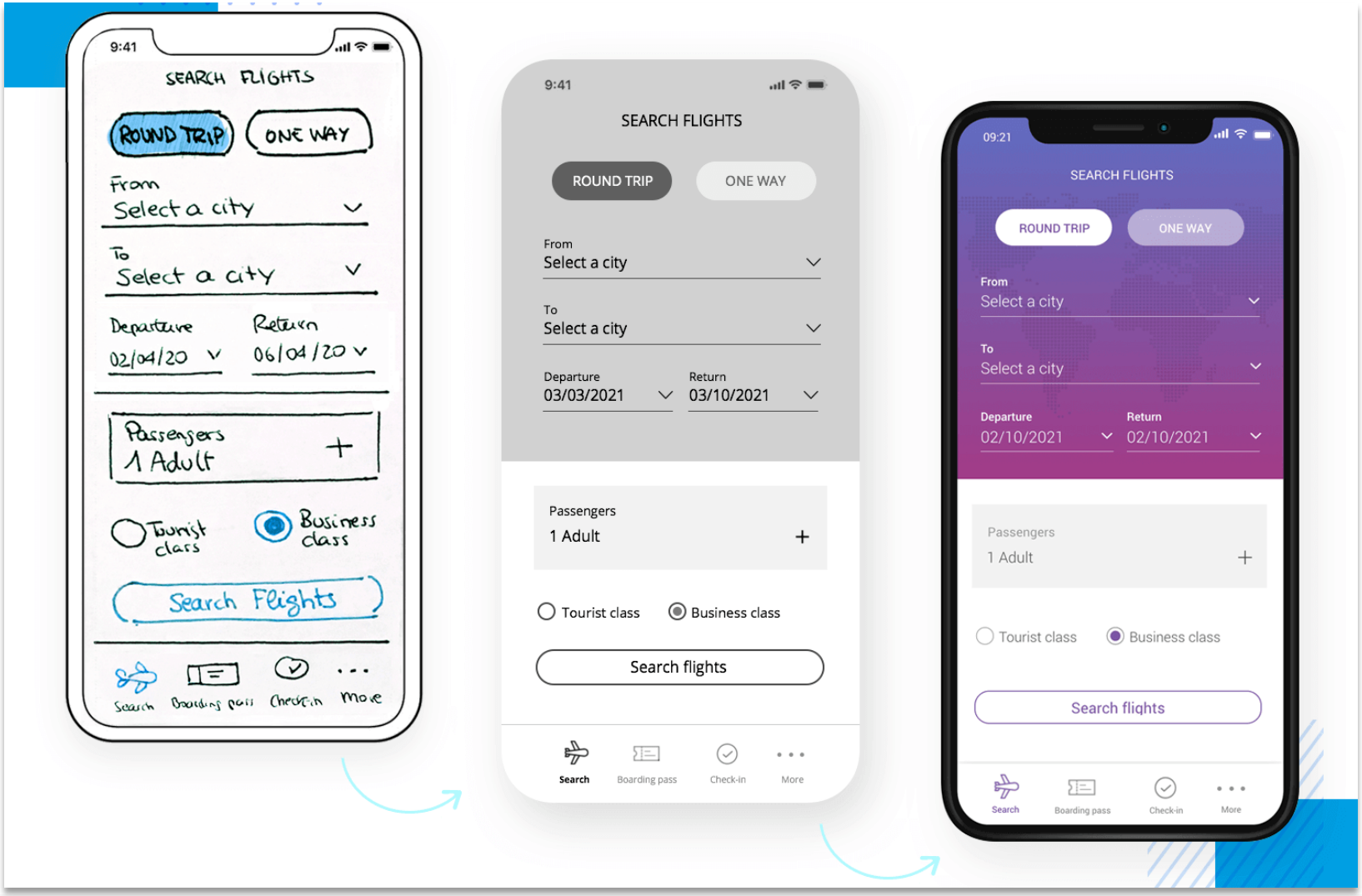
- «A prototype is a concrete but partial representation or implementation of a system design»
- «An easily modified and extensible model (representation, simulation or demonstration) of a planned software system, likely including its interface and input/output functionality»
- One of the most powerful tools for design exploration, visualization, and testing
- They let us ‘see’ and ‘feel’ interactivity (simulated or real)

Prototypes

- **Envisionment**: making ideas visible
  - Generating new ideas
  - Evaluating new ideas (within the design group)
  - Testing new ideas (with users)
- Different tools and techniques, according to
  - The stage of design (early, …, advanced, final)
  - The intended audience (designers, test users, clients, management, …)

Take from https://www.justinmind.com/prototyping/low-fidelity-vs-high-fidelity-prototypes

Fidelity: Different Information Is Conveyed



Figma

A Tool for Rapid Prototyping

Overview

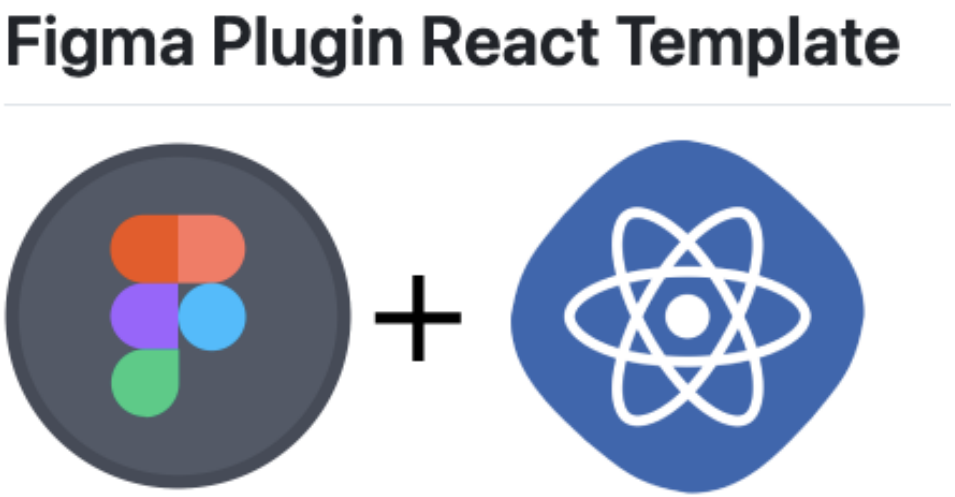
- Figma is a collaborative interface design tool: https://www.figma.com/
  - entirely browser-based;
  - free for students;
  - allows real-time collaboration on the same file.
- Some starting points:
  - https://www.figma.com/community/file/917793002372330875
  - https://youtu.be/S0J9C70PGsg?t=782 (from the HCI course)

Figma Extensions

Integrating LLMs to support designers

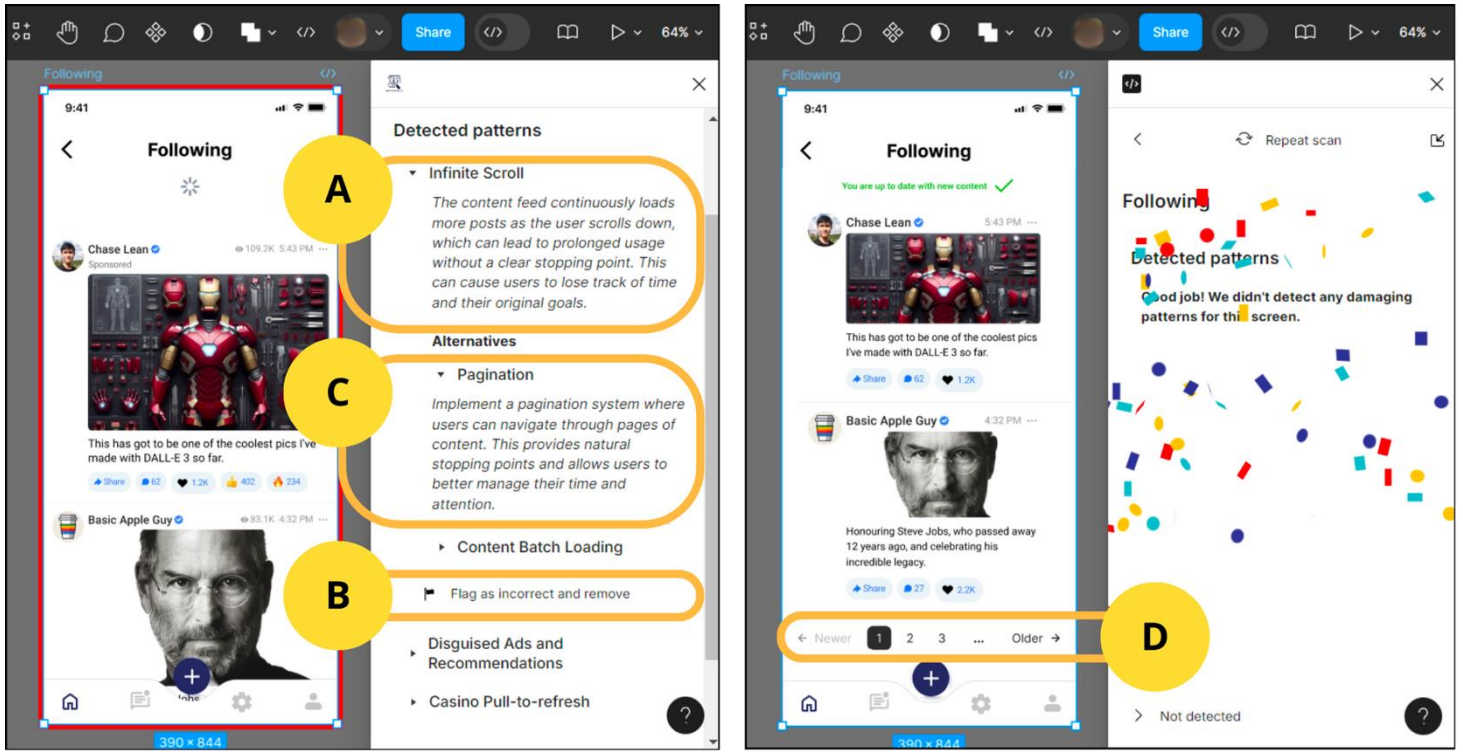
References to create and style the plugin

- https://github.com/nirsky/figma-plugin-react-template
- https://github.com/figma/plugin-samples



Source code of Digital Wellbeing Lens (with LLM integration)

- https://git.elite.polito.it/public-projects/digital-wellbeing-lens



Chrome Extensions

Prototyping DSCTs for the Web

Overview

- Extensions are written with the same web technologies used to create web applications:
  - **HTML** is used as a content markup language;
  - **CSS** is used for styling;
  - **JavaScript** is used for scripting and logic.
- A Chrome extension can access two different set of APIs:
  - "traditional" JavaScript APIs (https://developer.mozilla.org/en-US/docs/Web/API);
  - Chrome APIs (https://developer.chrome.com/docs/extensions/reference/).

Ingredients

- The **Manifest**:
  - required file;
  - must have a specific file name: manifest.json;
  - it must be located in the extension's root directory;
  - it records important metadata, defines resources, declares permissions, and identifies which files to run in the background and on the page.
- The **Service Worker:**
  - handles and listens for browser events (e.g., navigating to a new page, closing a tab, …);
  - it can use the Chrome APIs, but it cannot directly interact with the content of web pages.

Ingredients

- **Content Scripts**:
  - execute Javascript in the context of a web
  - read and modify the DOM of the pages they're injected into.
  - can only use a subset of the Chrome APIs:
    - may interact with a service worker to access additional APIs
- The **Popup** and **other pages:**
  - an extension can include various HTML files, such as a popup, an options page, and other HTML pages;
  - all these pages have access to Chrome APIs.

Hello, World!

1. Create a directory for your extension
2. Create a file named *manifest.json* and add the following code:

```
{
      "manifest_version": 3,
      "name": "Hello Extensions",
      "description": "Base Level Extension",
      "version": "1.0",
      "action": {
      "default_popup": "hello.html",
      "default_icon": "hello_extensions.png” }
}
```

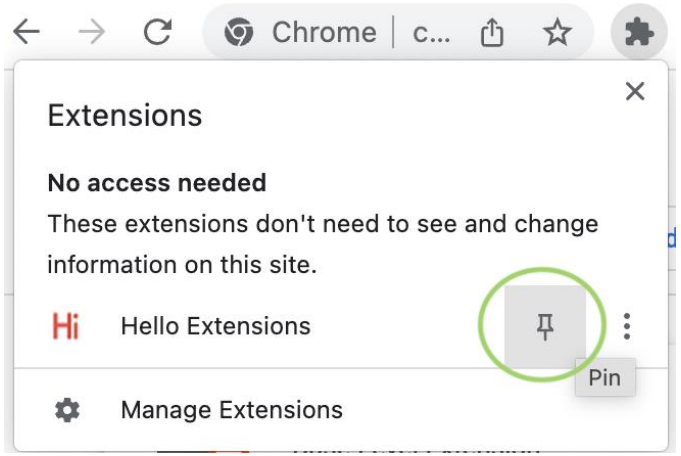
Hello, World!

3. Download the icon for the extension and save it in the directory with the name "*hello-extension.png*"
4. Create a file named *hello.html* and add the following code:

```
<html>
    <body>
        <h1>Hello, World!</h1>
    </body>
</html>
```

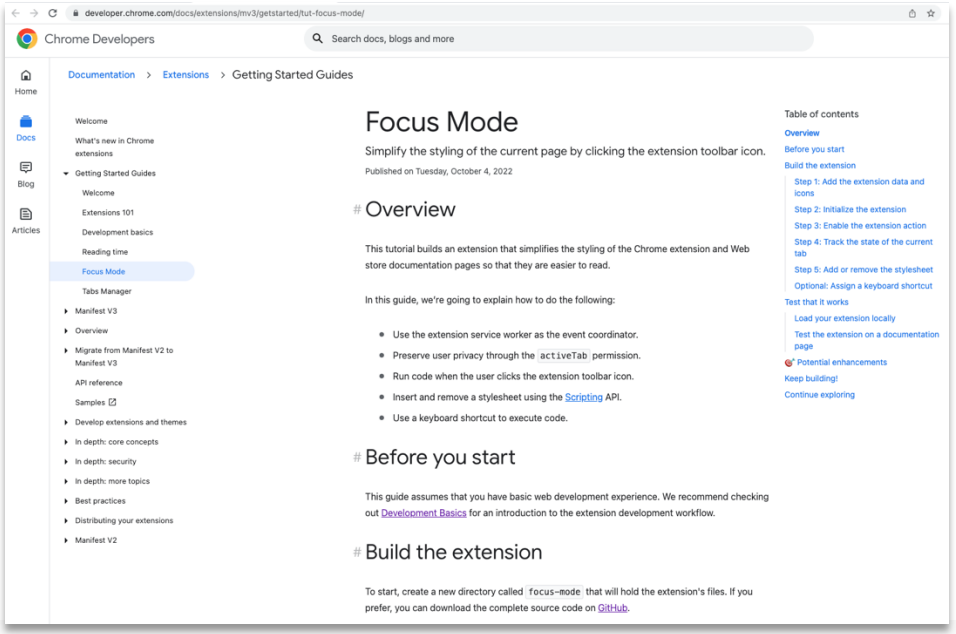
Hello, World!

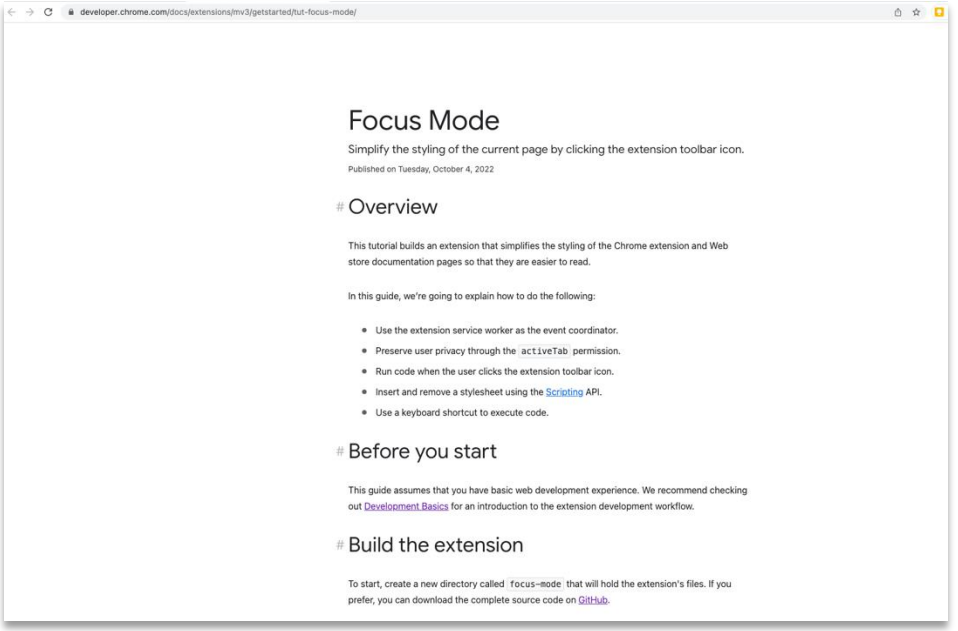
5. Load the extension as an an unpacked extension:
   - go to *chrome://extensions* in a new tab;
   - enable Developer Mode;
   - click the *Load unpacked* button and select the extension directory.
6. Pin your extension to the toolbar to quickly access your extension during development.



EXAMPLE: Focus Mode

- Simplifying the styling of a web page by removing menus, search bars, …
  - SOURCE: https://developer.chrome.com/docs/extensions/mv3/getstarted/tut-focus-mode/





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