Introduction

What is a chrome extension

A Chrome extension is a small software program that you can install into the Google Chrome web browser to enhance its functionality. Extensions allow users to customize their browsing experience by adding new features or modifying existing behaviour of the browser or websites they visit.

Key Characteristics of Chrome Extensions:

1. Customization and Enhancement:

- Extensions can modify the user interface, add new tools, or enhance the functionality of Chrome. For example, an extension might block ads, manage passwords, or change the appearance of websites.

2. Runs in the Browser:

- Chrome extensions are built using web technologies such as HTML, CSS, and JavaScript. They run entirely within the Chrome browser, interacting with web pages and the browser itself.

3. Manifest File:

- Each extension includes a `manifest.json` file that defines its permissions, capabilities, and other metadata. This file is essential for the extension to work properly.

4. Components:

- Background scripts: Run in the background and handle tasks like monitoring browser events, managing state, or handling complex operations.

- Content scripts: Run within the context of web pages and can modify their content or behaviour.

- Popup: An HTML page that appears when the user clicks on the extension's icon in the browser toolbar.

- Options page: Allows users to configure the extension's settings.

- Icons: Visual representations of the extension that appear in the toolbar or extension menu.

5. Permissions:

- Extensions request specific permissions (like access to tabs, bookmarks, or certain websites) through the manifest file. These permissions are necessary for the extension to perform its intended functions.

6. Installation:

- Extensions are typically installed from the Chrome Web Store, where users can browse and search for extensions.

7. Security and Privacy:

- Chrome extensions are sandboxed to limit their access to data and system resources. However, users should be cautious about granting permissions, as some extensions may have access to sensitive information.

Examples of Chrome Extensions:

- Ad Blockers: Block ads on websites (e.g., AdBlock, uBlock Origin).

- Password Managers: Manage and autofill passwords (e.g., LastPass, 1Password).

- Productivity Tools: Enhance productivity by adding features like task management or note-taking (e.g., Todoist, Evernote).

- Customization: Change the appearance of websites or the browser itself (e.g., Dark Reader, Stylish).

PIP (Picture-in-Picture) Chrome extension

A PIP (Picture-in-Picture) Chrome extension is a browser add-on that allows users to watch videos in a small, floating window that stays on top of other windows while they continue to use their computer. This feature is especially useful for multitasking, as it lets users keep an eye on a video while they browse the web, work on documents, or perform other tasks.

Objective:

Briefly describe the purpose of the PIP extension. For instance, was it to enhance video watching, improve multitasking capabilities. Highlight the core functionalities of the extension, such as resizing the PIP window, moving it around the screen, or integrating with other tools.

Key Features of a PIP Chrome Extension:

Floating Video Window:

The extension enables users to pop out a video from a webpage into a small, resizable, and movable window that remains on top of all other windows, allowing them to continue watching while interacting with other content.

Support for Multiple Video Sources:

PIP extensions usually support videos from a wide range of websites, including YouTube, Vimeo, and other video streaming platforms.

Control Over the Video:

Users can control the playback (pause, play, skip) of the video directly from the PIP window. The window typically includes basic controls such as play/pause and volume adjustment.

Ease of Use:

Most PIP Chrome extensions are designed to be user-friendly, often requiring just a single click to activate Picture-in-Picture mode. Users can usually trigger PiP by clicking on the extension icon in the browser toolbar or by right-clicking on a video.

Built-in vs. Extension:

Chrome has a built-in Picture-in-Picture mode for videos, but third-party PIP Chrome extensions often offer additional features, such as better compatibility with various video players, customization options, and more control over the PIP window's behaviour.

How to Use a PIP Chrome Extension:

Install the Extension: Install a PIP extension from the Chrome Web Store by searching for "Picture-in-Picture" or a similar term.

Activate PIP Mode: When you're watching a video on a compatible website, click the extension icon in the Chrome toolbar to pop the video out into a PIP window.

Resize and Move the PIP Window: Once the video is in PIP mode, you can drag the window around the screen, resize it, and control the video playback directly from the PIP window.

Close PIP Mode: To exit PIP mode, either close the PIP window or return to the original video player on the webpage.

Using a PIP Chrome extension enhances your ability to multitask by keeping video content visible while you work on other tasks or browse different websites.

Code and Creation

Creating a "Picture in Picture" (PIP) Chrome extension requires using JavaScript along with HTML and CSS for the front end. Below is a simple example that uses the picture-in-picture API to allow the user to pop out any video on a webpage into a PIP window.

Step 1: Create the Manifest File

Create a **manifest.json** file in your project directory. This file contains metadata about your extension.

Json Code:

```
{
 "manifest_version": 3,
 "name": "Picture in Picture",
 "version": "1.0",
 "description": "A simple Picture in Picture extension.",
 "permissions": [
  "activeTab",
  "scripting"
 ],
 "action": {
  "default_popup": "popup.html",
  "default_icon": {
   "16": "icons/icon16.png",
   "48": "icons/icon48.png",
   "128": "icons/icon128.png"
  }
 },
 "background": {
  "service_worker": "background.js"
 }
}
```

Step 2: Create the HTML Popup

HTML Code

Create a popup.html file that will appear when the user clicks the extension icon.

```
<!DOCTYPE html>
<html>
 <head>
  <style>
   body {
    width: 200px;
    padding: 10px;
    font-family: Arial, sans-serif;
   }
   button {
    width: 100%;
    padding: 10px;
    background-color: #007bff;
    color: white;
    border: none;
    cursor: pointer;
   }
   button:hover {
    background-color: #0056b3;
   }
```

```
  </style>
 </head>
 <body>
  <button id="pipButton">Start Picture in Picture</button>
  <script src="popup.js"></script>
 </body>
</html>
```

Step 3: Create the Popup JavaScript

Create a popup.js file that contains the logic for triggering the Picture in Picture mode.

JavaScript Code:

```
document.getElementById('pipButton').addEventListener('click', async () => {
 const [tab] = await chrome.tabs.query({ active: true, currentWindow: true });

 chrome.scripting.executeScript({
  target: { tabId: tab.id },
  function: togglePictureInPicture,
 });
});

async function togglePictureInPicture() {
 const video = document.querySelector('video');
```

```
  if (video) {
    if (document.pictureInPictureElement) {
      await document.exitPictureInPicture();
    } else {
      await video.requestPictureInPicture();
    }
  } else {
    alert('No video element found on the page.');
  }
}
```

Step 4: Create the Background Script

Create a background.js file that handles background processes for the extension.

JavaScript Code:

```
chrome.runtime.onInstalled.addListener(() => {
  console.log('Picture in Picture Extension Installed');
});
```

Step 5: Add Icons

Add icons in your icons folder in sizes 16x16, 48x48, and 128x128 pixels. You can name them icon16.png, icon48.png, and icon128.png.

Step 6: Load the Extension in Chrome

Open Chrome and go to chrome://extensions/.

Enable "Developer mode" in the top right corner.

Click on "Load unpacked" and select your extension's directory.

Once loaded, you can click the extension icon to trigger Picture in Picture mode for any video on the current tab.

This simple extension will allow you to pop out any video into a PiP window with a single click. You can customize and enhance this further as needed!