3D Print Pricer - Progressive Web App

Overview

This is a Progressive Web App (PWA) for calculating 3D print pricing. It supports multi-filament tracking, project management, and can be installed on any device as a standalone application.

Requirements

All files must be in the same directory:

- print_calculator_pwa.html
- manifest.json
- sw.js
- icon-192.png
- icon-512.png

The application must be served over HTTPS to enable PWA installation features.

Icon Generation

Before deploying, generate the required icons:

1. Open icon-generator.html in a web browser
2. Download the 192x192 icon and save as icon-192.png
3. Download the 512x512 icon and save as icon-512.png
4. Place both files in the same directory as the other application files

Alternatively, create custom icons with the following specifications:

- Two PNG files: 192x192 pixels and 512x512 pixels
- Square aspect ratio
- File names must be icon-192.png and icon-512.png

Deployment Options

Synology NAS

1. Copy all files to the Synology web server directory
2. Ensure HTTPS is configured on the Synology
3. Access via https://your-synology-address/path/print_calculator_pwa.html

GitHub Pages

1. Create a new GitHub repository

2. Upload all files to the repository

3. Enable GitHub Pages in repository settings

4. Access via https://username.github.io/repository-name/print_calculator_pwa.html

Local Development Server

For testing purposes only (installation features require HTTPS):

```bash
python -m http.server 8000
```

Access via http://localhost:8000/print_calculator_pwa.html

Alternative Hosting Services

The following services provide free hosting with automatic HTTPS:

- Netlify

- Vercel

- Firebase Hosting

Installation Instructions

Android (Chrome, Edge, Samsung Internet)

1. Navigate to the application URL

2. Open the browser menu

3. Select "Install app" or "Add to Home Screen"

4. The application will appear on the home screen

iOS/iPadOS (Safari)

1. Navigate to the application URL in Safari

2. Tap the Share button

3. Select "Add to Home Screen"

4. Tap "Add"

5. The application will appear on the home screen

Windows (Chrome, Edge)

1. Navigate to the application URL

2. Click the install icon in the address bar, or open browser menu and select "Install"

3. Click "Install" in the confirmation dialog

4. The application will be added to the Start Menu

macOS (Chrome)

1. Navigate to the application URL

2. Open the browser menu

3. Select "Install 3D Print Pricer"

4. The application will be added to the Applications folder

Verification

After installation, verify the following:

- Application launches as a standalone window without browser UI

- Application functions without an internet connection after initial load

- Data persists between sessions

- Application appears in the device's app launcher

Updating the Application

To deploy an updated version:

1. Modify sw.js and increment the cache version:

```javascript
const CACHE_NAME = '3d-print-pricer-v2'; // increment version number
```

2. Upload updated files to the hosting location

3. Users will receive the update automatically on their next application launch

Offline Functionality

The service worker caches all application resources on first load. After the initial visit, the application functions

completely offline with all features available:

- Price calculations

- Filament management

- Project tracking

- History viewing

- CSV export

Data Storage

All data is stored locally using browser localStorage. Each device maintains its own independent data store. Data is not synchronized between devices or backed up to any server.

Troubleshooting

Install option not available:

- Verify the application is served over HTTPS

- Localhost testing may not show install prompts on mobile devices

- Try Chrome or Edge browsers

Service worker not registering:

- Check browser console for error messages

- Verify sw.js is in the same directory as the HTML file

- Ensure the server is configured to serve .js files with the correct MIME type

Icons not displaying:

- Verify icon files exist in the same directory

- Check that file names match exactly (case-sensitive on some systems)

- Clear browser cache and reload

Data not persisting:

- Verify localStorage is enabled in browser settings

- Check that the application is running in a normal browser context (not private/incognito mode)

Features

- Multi-filament cost tracking

- Custom filament presets with automatic usage-based sorting

- Project mode for multi-item jobs

- Complete calculation history

- CSV export functionality

- Offline operation after initial load

Next Steps

This PWA can be packaged for distribution on the Google Play Store using Capacitor. The process involves wrapping the web application in a native container and building an Android APK file. Google Play Store submission requires a one-time $25 developer account fee.