PWA IEEE-830.

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10-B

Progressive web applications

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Contents

1 Introduction

The following document present the research on PWA

In the current panorama technological in the development application has become a important pillar to offer immersive and efficient digital experiences.

The web applications are computer programs allow working with technologist web services, similar to HTML, CSS, JS and PHP.This tools allow access to application through web navigator and made more easier to create and administrate content in line.

1.1 Purpose

The document is aimed at a school audience with the proposal of offering knowledge of the implementation of PWA in environments more dedicated to this development practice.

In this work going to explain the context of PWA, the tools in development , requirements of installation a PWA, navigators available.

1.2 Research scope

The functionality of PWA research. Finding and defining the requirements to install a PWA, compatible browsers and development tools allows us to have a broader knowledge of the subject to learn.

The scope of this research provides a comprehensive overview of Progressive Web Applications, covering development tools, installation requirements, browser compatibility, best practices, examples, challenges, future trends, security considerations, benchmarking, user adoption and learning resources.

Frameworks like React help to do PWA, and others helping to user designer to do more easier applications, that tools are important to the development and the objective to learn more others types of applications it is to find more tools.

1.3 Definitions, Acronyms and Abbreviations

- PWA: Progressive Web Application.
- APPS: Applications.
- UE: User Experience.
- UI: User Interface.
- HTML: Hypertext Markup Language.
- JS: JavaScript.
- PHP: Hypertext Processor.
- WEB: World Wide Web.
- CSS: Cascading Style Sheets.

1.4 References

Applications web. (2020, 4 de noviembre). Postgradoingenieria. https://postgradoingenieria.com/que-son-aplicaciones-web/

Making a Progressive Web App | Create React App. (2021, 4 de noviembre). Create React App. https://create-react-app.dev/docs/making-a-progressive-web-app/

Comparación entre aplicaciones web, aplicaciones nativas y aplicaciones híbridas - Comparación entre los diferentes tipos de aplicaciones - AWS. (2024, 1 de septiembre). Amazon Web Services, Inc. https://aws.amazon.com/es/compare/the-difference-between-web-apps-native-apps-and-hybrid-apps/ Esta sección lista todos los documentos referenciados en la ERS.

1.5 Vision General of the Document

This section presents a brief description of the contents, with the main purpose of offering readers an overview that allows them to understand the structure and purpose of the document.

The development of this document is intended to fully document the different types of development forms. The information addressed covers specific aspects of each application category.

The organizational structure of this document follows best documentation practices according to IEEE830, facilitating navigation and cross-referencing between the various sections. Readers are advised to follow the proposed sequence to obtain a comprehensive understanding of the system requirements.

2 PWA

PWA stands for "Progressive Web App" (Progressive Web Application). A Progressive Web App is a type of web application that uses modern web technologies to offer a user experience similar to that of a native application. The main idea behind PWAs is to provide an application that is reliable, fast and attractive, regardless of the browser or device being used.

2.1 Development Tools for PWAs

1. **Chrome DevTools:**

   Description: Integrated development tools in the Google Chrome browser that allow debugging, profiling, and improving the performance of web applications.

   Link: Chrome DevTools

2. **Lighthouse:**

   Description: An automated tool to enhance the quality of PWAs. It provides detailed reports on performance, accessibility, best practices, SEO, etc.

   Link: Lighthouse

3. **Workbox:**

   Description: JavaScript library that simplifies PWA development by facilitating asset management and cache strategy implementation.

Link: Workbox

4. **Angular, React, Vue.js:**

   Description: Popular frameworks that ease the creation of PWAs, providing robust structures and tools for progressive web application development.

5. **PWA Builder:**

   Description: Online tool that assists in generating the manifest and Service Worker for your PWA. It offers support for various platforms such as Windows, Android, and iOS.

   Link: PWA Builder

2.2 Requirements for PWA Installation

Some requirements for PWA:

1. **Requirements for PWA Installation:**

   Web Manifest (manifest.json) File:

   Specifies information such as name, icon, colors, etc., necessary to install the PWA on a device.

2. **Service Worker:**

   A JavaScript script that runs in the background and handles events like push notifications, updates, and offline caching.

3. **HTTPS:**

   PWAs typically require a secure connection via HTTPS to ensure data security and the proper functioning of Service Workers.

2.3 Navigators

1. **Compatible Browsers for PWAs:**

   Google Chrome:

   Widely supported browser known for its compatibility with Progressive Web Apps.

   Mozilla Firefox:

   Another popular browser that supports Progressive Web Apps.

   Microsoft Edge:

   Microsoft's browser, which has embraced Progressive Web App functionality.

   Safari:

   Although with some limitations, Safari also supports Progressive Web Apps.

2.4 Tools for developers

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