

## Project Description: Progressive Web App Development

In this project, you will develop a Progressive Web App (PWA) using HTML5, CSS, and JavaScript. You may also use Bootstrap to enhance the styling and responsiveness of your app. You will focus on the following key tasks:

1. **App Concept and Design:**
  - Choose a unique and meaningful name for your app.
  - Design an app icon that represents the app's purpose and identity.
2. **Development:**
  - Build the app using HTML5, CSS, and JavaScript.
  - If desired, incorporate Bootstrap to improve the app's appearance and responsiveness.
3. **PWA Features:**
  - Implement an install option for your app, allowing users to install it on their devices.
  - Create a manifest file to enable offline functionality and enhance the user experience.
4. **Form and Canvas Integration:**
  - Develop a learning program with a canvas on top and a menu below.
  - Integrate the Canvas API to display images and create dynamic graphics related to the chosen topic.
  - Include sound effects for an engaging learning experience.
5. **Content Creation and JSON Data Storage:**
  - Research and curate images and sounds related to the chosen topic.
  - Provide educational content and interactive elements for users to learn about the topic.
  - Use JSON to store data about the topics, including the title, text, image, and audio. This allows for a dynamic and flexible program that can be easily adapted to different datasets.
  - For audio content, consider using your own voice recordings or explore text-to-speech tools to generate high-quality audio. Alternatively, incorporate sounds relevant to your topic, such as background music or engaging sound effects.
6. **Deployment:**
  - Host the app on a web server, making it accessible via a website.
  - Ensure the app can be installed and run both online and offline.
7. **Testing and Optimization:**
  - Test the app on different devices and browsers to ensure compatibility and performance.
  - Optimize the app for a smooth and seamless user experience.

## **Deliverables:**

1. The complete source code of the app, including HTML, CSS, JavaScript, and any additional assets (e.g., images, icons).
2. The manifest file and service worker script.
3. A JSON file to store user-related information and data about the topics.
4. A webpage that links to the web version of the app.
5. A promotional page with screenshots from the app and instructions on how to download it.
6. A brief documentation describing the app's features, functionality, and installation process.
7. A brief programmer documentation explaining how to modify the JSON file to include a new dataset.

## **Suggested Topics:**

Students are encouraged to come up with their own unique topics based on their interests and curiosity. Here are some suggested topics to inspire you:

- Space Exploration
- Marine Life
- Historical Events
- Environmental Conservation
- Famous Inventors and Their Inventions
- Solar System and Planets
- Wild Animals and Their Habitats
- Human Body and Health
- Music and Musical Instruments
- Art History and Famous Artists

Sample JSON file:

```
{
  "computers": [
    {
      "title": "Central Processing Unit (CPU)",
      "description": "The CPU is the brain of the computer. It performs all the calculations and processes instructions to run programs.",
      "image": "cpu_image_url",
      "audio": "cpu_audio_url"
    },
    {
      "title": "Random Access Memory (RAM)",
      "description": "RAM is a type of computer memory that temporarily stores data for quick access. It plays a critical role in determining the speed and performance of a computer.",
      "image": "ram_image_url",
      "audio": "ram_audio_url"
    },
    {
      "title": "Solid-State Drive (SSD)",
      "description": "An SSD is a data storage device that uses flash memory. It offers faster read and write speeds compared to traditional hard drives.",
      "image": "ssd_image_url",
      "audio": "ssd_audio_url"
    }
  ]
}
```

Helpful link:

[https://developer.mozilla.org/en-US/docs/Web/Progressive\\_web\\_apps](https://developer.mozilla.org/en-US/docs/Web/Progressive_web_apps)

<https://copilot.microsoft.com/>