**Final Project**

**Children’s Learning Game – Know by Picture and Sound**

**Submitted By**

**Name:** Samsun Nahar Borsha

**ID:** 22103368

**Organizer University:** Jagannath University **Venue:** International University of Business, Agriculture and Technology (IUBAT) **Dept./Institute/Centre:** Computer Science and Engineering (CSE) **Unique Batch Number:** 03 **Training Track/Course Name:** Front-End Development (ReactJS)

**Project Description: Color Catcher - Reflex Game**

**1. Project Overview**

The **Children’s Learning Game** is a fun and interactive browser-based educational tool created using HTML, CSS (with Bootstrap), and JavaScript. Designed specifically for young children, this game helps them recognize common **fruits**, **animals**, and **flowers** through visual identification and voice-based pronunciation. It promotes early learning in an engaging and playful environment.

**2. Project Objective**

This game was developed with the following objectives:

* To support **visual learning** through pictures of everyday objects.
* To reinforce object recognition through **voice pronunciation** using speech synthesis.
* To provide an **easy-to-use interface** suitable for children.
* To encourage **interactive learning** using simple click-based input.
* To ensure accessibility across **various devices** (desktop, tablet, mobile).

**3. Features**

### Category-Based Learning

* A dropdown menu allows users to choose from Fruits, Animals, or Flowers**.**

### Image Grid Display

* Once a category is selected, 10 high-quality images appear in a grid format.

### Click-to-Hear Pronunciation

* Clicking an image triggers a voice (female, if available) to pronounce the name of the item.

### Clean & Responsive UI

* Built with Bootstrap and custom CSS to ensure a smooth and attractive interface on all devices.

**4. Technical Details**

**Frontend Technologies Used:**

* HTML: Structured the page with semantic sections.
* CSS & Bootstrap: Provided styling, responsiveness, and grid layout.
* JavaScript: Handled category selection, image rendering, and text-to-speech pronunciation.

**Core Functional Implementations:**

* **Dropdown Listener:** Triggers display of images based on selected category.
* **Dynamic Image Loader:** Loads 10 image cards per category with relevant image sources.
* **Speech Synthesis Integration:** Uses the SpeechSynthesisUtterance API to speak the name of the clicked image.  
   Automatically selects a female voice if available.
* **Responsive Grid Design:** Images are neatly arranged using flexbox and adapt to different screen sizes.

**5. Future Improvements**

To increase interactivity and educational value, the following enhancements are suggested:

* Add more categories (e.g., Vehicles, Shapes, Colors).
* Include **quizzes** or matching games.
* Allow **multilingual support** for non-English learners.
* Add **background music** or sound effects for better engagement.
* Introduce **progress tracking** or achievements to motivate repeated use.
* We can add naming option while clicking the photos.

**6. Conclusion**

The **Children’s Learning Game** is a successful and impactful project that makes early education enjoyable. By combining visual recognition with spoken language, it serves as a valuable tool for children learning basic vocabulary. With further improvements, it has strong potential for educational use at home and in schools.