**Project Report: Human Evolution Through the Ages (p5.js Interactive Visualization)**

**Aim**

The primary aim of this project is to create an **interactive visual experience** that represents the **evolution of humankind through five major historical eras** — Prehistoric, Ancient, Medieval, Industrial, and Modern. The project blends **education, design, and interactivity** using the p5.js library, enabling users to experience human progress as a continuous, exploratory journey across time.

**Overview**

This p5.js-based visualization presents a **side-scrolling narrative** where a human character walks through different stages of evolution. Each era has its own background image, descriptive context, and environment that reflects the unique characteristics of the period.

The experience begins on a **“Begin Screen”**, where all eras are displayed as thumbnails above a walking path. The player starts here and moves forward in time by pressing the **right arrow key**. Upon reaching the edge of the canvas, the scene transitions to the next era. The **left arrow key** allows the player to revisit previous ages or return to the begin screen.

This design symbolizes both **progress and reflection**, showing that human development is a journey that can be explored forward and backward.

**Interactivity and Features**

* **Keyboard-based navigation** using left and right arrow keys.
* **Animated human character** using cyclic frame-based motion.
* **Era-specific backgrounds** with distinct color tones and themes.
* **Semi-transparent text overlays** showing era name, time period, and description.
* **Ground alignment** to ensure the human character walks consistently across all pages.
* **Begin screen with thumbnails**, representing eras in a timeline-like fashion.
* **Responsive design**, adjusting layout and scaling to fit the entire browser window.
* **Ending message** on the modern era:  
  *“Nobody can see what the future holds.”*

**Learning Outcomes**

This project demonstrates:

* The use of **state-based programming** for screen transitions.
* Application of **constraint-based motion logic** to control boundaries.
* Use of **object arrays** for structured data management across eras.
* Implementation of **animation, image rendering, and scaling** in p5.js.
* Application of **scene composition techniques** to organize multi-stage experiences.

It emphasizes how creative coding can merge **interactivity, design, and storytelling** to make learning engaging.

**Use Cases**

* **Educational tool** for teaching human evolution interactively.
* **Museum or exhibition display**, turning historical learning into a visual experience.
* **Game prototype**, demonstrating timeline-based navigation and learning progression.
* **Creative coding demonstration**, useful for students learning p5.js animation and scene control.

**Future Scope: Mario-style Interactive Mechanic**

In future iterations, the project aims to incorporate **game-like interactivity inspired by classic Mario mechanics** on the **Begin Page**:

* The player will be able to **jump using the spacebar**.
* Each era thumbnail will be represented as a **“block” above the path”**.
* When the player **jumps and hits a block**, it will “break open” to reveal a **portal** to that era.
* Entering the portal will transport the player into that specific era’s environment, where they will explore and **learn the intricacies of that age** through interactive elements and visuals.
* After completing the exploration, a **new portal will appear on the left side** of the screen, allowing the player to **return to the Begin Page**.

This future addition will:

* Enhance **player engagement** by introducing action mechanics.
* Transform the project from a passive journey into an **interactive learning game**.
* Offer an **immersive, gamified educational experience**, encouraging discovery through play.