Design Document

Seasonal Harmony

In this project I have created an interactive generative banner simulating dynamic natural environments that react to time, interaction, and scroll behavior. Using p5.js, it creates a natural scene featuring flowers, butterflies, stars, and snowfall that evolve based on user interaction. When the user does mouse movement, clicks, and scrolling somethings interactive happens. The banner integrates randomness and noise, forming the core of it's generative behaviour.

My project goals

- To develop and interactive and artistic banner that changes with the user input
- To involve algorithmic design using randomness and natural behaviours
- Create a seamless blend between natural aesthetics and code-based art.

Technical Stack

Used HTML and CSS for the website layout landing page and to create the canvas container. Used p5.js to generate all visuals and to handle interaction in the canvas. JavaScript to logic interaction like mouse, scroll and keyboard input.

Randomness and Noise

Random values were used to control different elements in the animation, such as positions, shapes, and colours of flowers, the starting points of butterfly movements, and the properties of snowflakes. Wind animation is created using smooth noise patterns. These random and noise based elements help make each composition unique, adding unpredictability and making the scene more engaging.

User Interaction & Data Stream	
Interaction	Effect
Mouse move	Transitions scene from day to night when in the sky area.
Mouse click	Spawns butterflies from the nearest flower.
Scroll down	Transforms the environment into winter with snow and a cooler colour palette.
Key press “M”	Randomises petal colours of all flowers, adding playful variability.

Interactive Seasonal Nature Banner

The scene starts by creating a canvas that fits it’s parent container and sets up initial flower positions while avoiding overlaps. It listens to scroll events to change the scene. In the draw loop, the sky changes colour based on whether it’s night or winter, and grass or snow is shown accordingly. Flowers grow with animated stems and blooms, butterflies fly around and disappear off-screen, snow falls during winter, and stars appear at night. Mouse movements turn on night mode and generate stars, clicking spawns a butterfly from the nearest flower, pressing "M" changes flower petal colours, and scrolling toggles the winter scene.

Design colour scheme

The design uses calm, natural colours like blues, greens, soft yellows, and pinks, with gentle animations to create a peaceful look. The canvas adjusts to window size, and changing seasons or time of day gives the banner a lively feel. Challenges like preventing flower overlaps were solved with distance checking, wind effects were created using sine waves, and winter transitions were triggered by scroll events with added snow animations.

Future improvements

If I had more time I could include sound effects for atmosphere, more creatures like bees or birds and time-based changes.