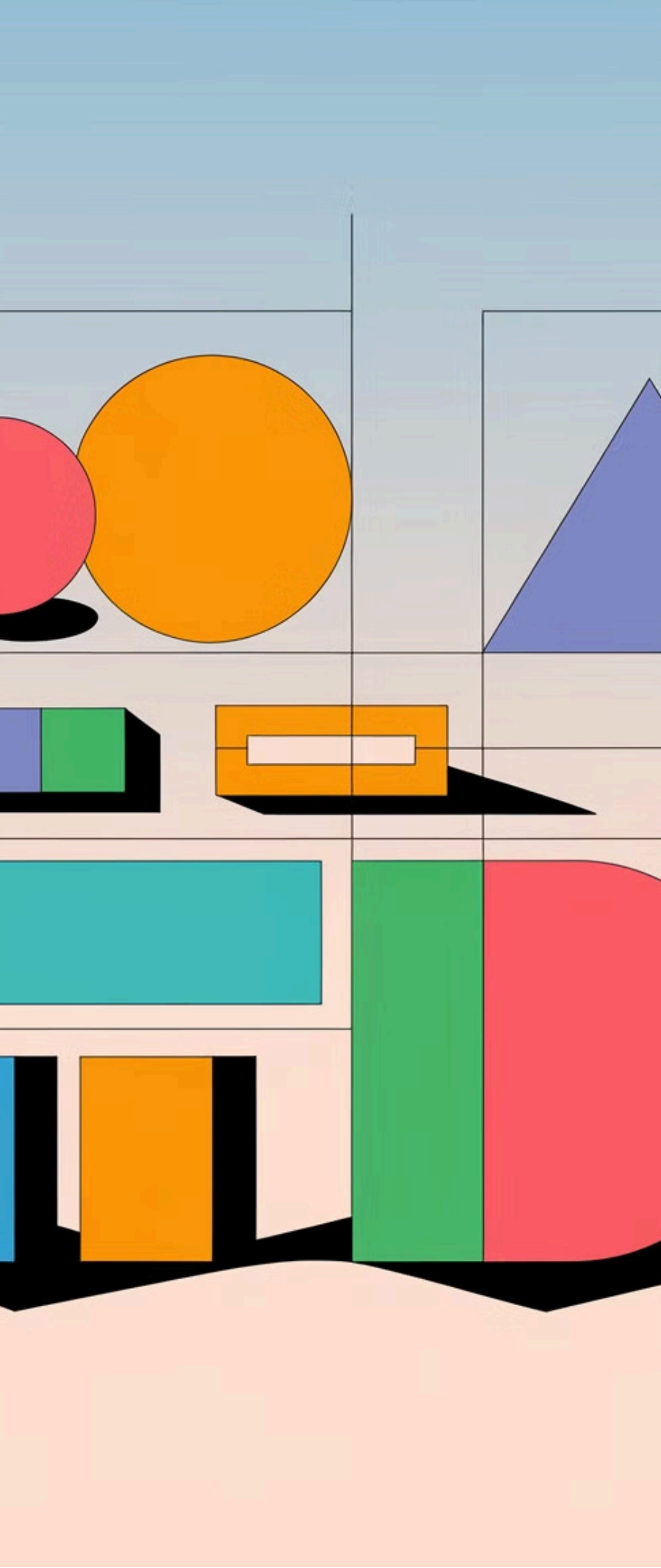# DigiPen-JTech Game Development Academy

Level 1

Welcome to the exciting world of 2D game development! In this foundational course, you'll learn essential programming concepts and creative techniques. Get ready to bring your game ideas to life using P5.js, a powerful JavaScript library for creating interactive visualizations and games.

Core Programming Concepts

Variables & Data Types

Understand the concept of variables to store data, such as position, size, and color.

Conditional Statements

Use if and else statements to control the flow of a program based on specific conditions.

Wrapping Logic

Implement wrapping effects to create seamless movement within a bounded area.

Reflection

Understand how to reflect shapes and objects.

Visual Elements and Animation

Add visual elements and use animation techniques like bouncing and reflections to create a more engaging game experience.

Game Mechanics and Interaction

Discover how to make the game respond to player actions, including keyboard, mouse, and object collisions.

Visual Elements and Animation

1   ### Basic Shapes

Master drawing circles, rectangles, and triangles. Create game objects and UI elements.
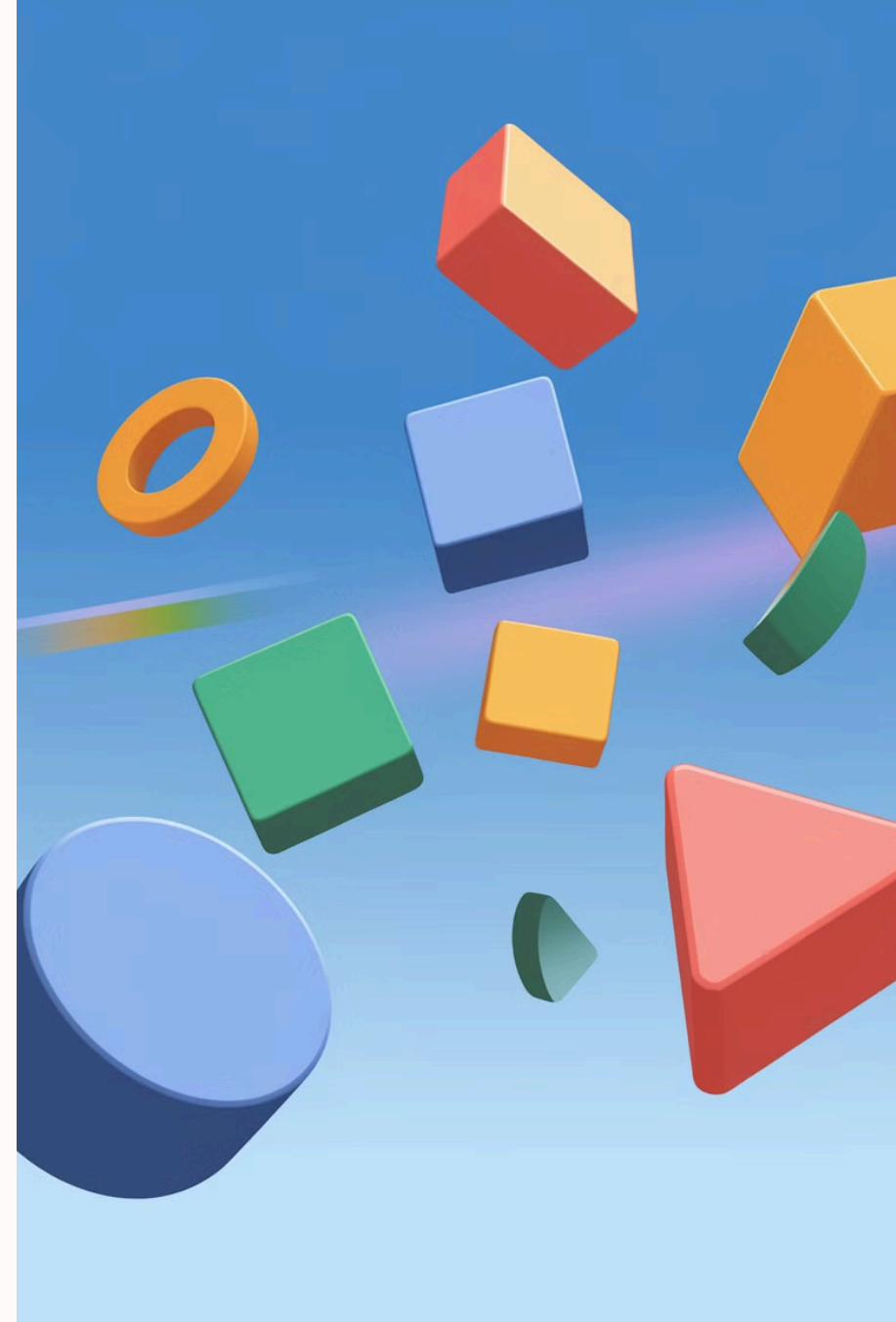
2   ### Motion and Animation

Bring your game to life. Learn techniques for smooth, engaging character movements.

3   ### Color and Effects

Explore RGB and HSB color modes. Add visual flair to enhance player experience.

Game Mechanics and Interaction

Keyboard Input

Implement responsive controls. Create intuitive player movement and actions using keypresses.
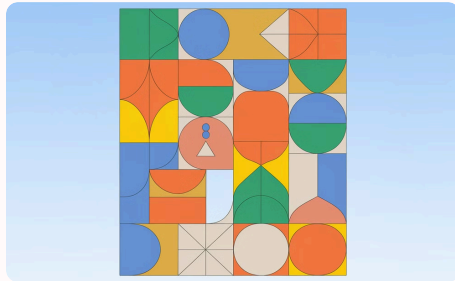
Mouse Input

Design interactive game elements. Develop click-based mechanics for engaging gameplay.
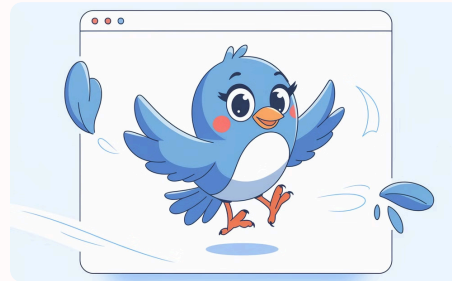
Collision Detection

Master object interactions. Create realistic gameplay with precise collision handling.
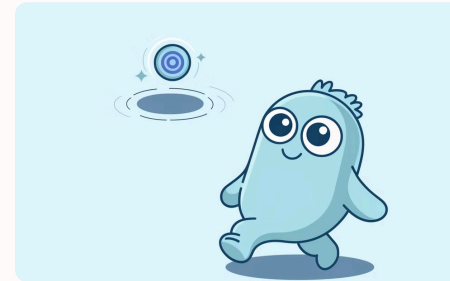
Key Activities and Projects

Drawing Shapes

Practice creating various shapes like circles, rectangles, and triangles to build game objects and UI elements.

Creating Animations

Bring shapes to life by animating their position, size, and appearance over time for a more dynamic experience.
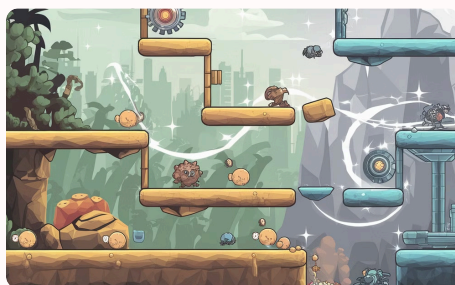

Implementing Keyboard and Mouse Input

Design responsive controls that allow players to move characters, fire projectiles, and interact with game elements.
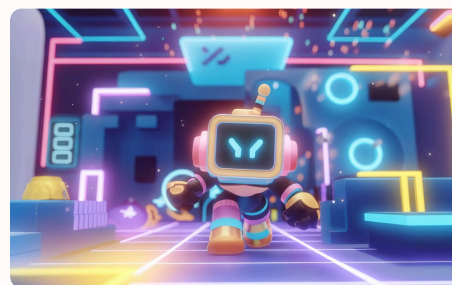

Detecting Collisions

Implement precise collision detection between objects to create realistic interactions and gameplay mechanics.
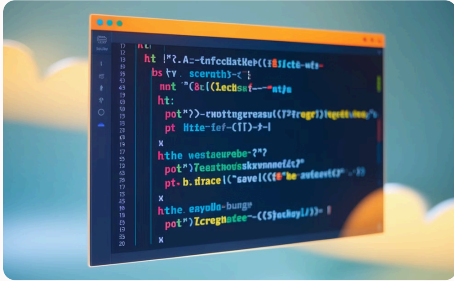

Creating Game Levels

Design and build different levels with increasing complexity, incorporating a variety of game mechanics and visual effects.

Experimenting with Color and Visual Effects

Use different color modes (RGB, HSB, etc.) to create visually appealing games.

Core Programming Competencies

Programming Skills

- Write clear and concise P5.js code.
- Use variables and data types effectively.
- Implement conditional statements and loops.
- Utilize functions to modularize code.

Problem-Solving Skills

- Break down complex problems into smaller, manageable steps.
- Debug code to identify and fix errors.
- Experiment with different approaches to solve problems.

Creative Thinking Skills

- Design innovative and engaging game concepts.
- Experiment with different visual styles and game mechanics.
- Use color and sound to enhance the game experience.

Collaboration Skills

- Work effectively with others to create collaborative projects.
- Provide and receive constructive feedback.

Measurable Outcomes

1. Create basic P5.js sketches.

2. Understand and apply fundamental programming concepts.

3. Design and implement simple games with basic game mechanics.

4. Debug and troubleshoot their code.

5. Collaborate with others to create group projects.

6. Apply critical thinking and problem-solving skills to game development challenges.