NATIONAL UNIVERSITY OF COMPUTER AND EMERGING SCIENCES (KARACHI CAMPUS)

NAT

FAST School of Computing

# Spring 2025

Project Proposal: **[Color Hunt Game]**

**Abstract:**

**Color Hunt** is a GUI-based interactive game developed in Java, demonstrating Object-Oriented Programming principles such as **Encapsulation**, **Inheritance**, **Polymorphism**, and **Abstraction**. The game challenges players to identify the **color in which a word is displayed** — not the word itself — enhancing reaction time, focus, and cognitive reflexes.

**Key Features:**

**Real-time score tracking**

**Adaptive difficulty with increasing speed**

**Custom-designed GUI components** for a polished experience

**Sound effects** to enhance interactivity

**A built-in mini-game (Tic Tac Toe)**:

After 3 consecutive wrong answers, players enter a Tic Tac Toe match. Winning allows the main game to continue; losing ends the session — adding an innovative second-chance mechanism.

The game consists of **10+ classes** including

* Game: Controls the overall game flow and logic
* UIManager: Manages all GUI components and visual layout
* ColorText: Handles word-color mismatches
* GameMode: An abstract class defining the structure of game modes
* ClassicMode & ChallengeMode: Concrete classes representing gameplay variations
* Scoreboard: Dynamically tracks and updates the player's score
* Player: Stores high scores
* SoundManager: Enhances gameplay experience with audio feedback
* TicTacToe: Implements the mini-game for recovery after repeated mistakes
* GameFlowManager: Coordinates the main game loop and transitions between game states
* GameException: A custom exception class for game-specific error scenarios, improving robustness
* Color Challenge: An abstract class defining the structure of game modes
* Match Color: Implements the main gameplay logic where players match the displayed color of a word, not its text.

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