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Section A
Semester # 5
Advance Programming Technique

Snake Game Mini Project

1. Project Overview

The Snake Game is a simple, classic arcade game implemented in C# using Windows Forms. The player controls a snake that moves around the game panel, consuming food to grow longer. The game ends if the snake collides with itself or the boundaries.

2. Design Choices

2.1 User Interface (UI)

- **Form Background:** Light gray for a clean, minimal look.
- **Game Panel:** Black background to highlight the snake and food.
- **Snake:** Green body with a bright green-yellow head.
- **Food:** Red ellipse for visibility.
- **Labels:** Black text for Score, High Score, and State for readability.
- **Buttons:** Colored (Start - Green, Pause - Orange, Restart - Red) with white text, rounded corners, padding, and subtle hover effects for a modern, stylish look.

2.2 Game Mechanics

- **Snake Movement:** Controlled with arrow keys, smooth movement using a Timer.
- **Collision Detection:** Checks for wall collisions and self-collision.
- **Food Spawning:** Randomly placed on empty cells.
- **Scoring:** Increases by 10 for each food eaten, session high score tracked.
- **Pause/Resume:** Allows pausing the game using a button or 'P' key.
- **Restart:** Resets the game state without closing the form.

2.3 Code Structure

- **Program.cs:** Entry point, maintains session high score.
- **instScreen.cs:** Instruction form with Start button to launch GameForm.
- **GameForm.cs:** Main game logic and UI.
 - `InitializeComponent()` sets up form, panel, buttons, and labels.
 - `GameTimer_Tick()` updates snake position.
 - `MoveSnake()` handles movement and collision.
 - `GamePanel_Paint()` draws snake, food, and optional grid.

- UpdateLabels() updates score and state labels.
- CreateSimpleButton() helper for styled buttons.

3. Deliverables

Complete C# Project: Contains all source code files, solution (.sln), and project files.

Executable File (.exe): Standalone application in bin/Debug or bin/Release folder.

Documentation: This structured document explaining design choices and project overview.

4. Features Summary

- Classic Snake gameplay with smooth controls.
 - Modern, minimal, and stylish UI.
 - Pause, Resume, and Restart functionality.
 - Session high score tracking.
 - Easily distributable executable.
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