Assignment 2 — Tiny Football (Mini Soccer / Arcade Pong-like)

Goal

Build a simple 2D ball-and-players game that demonstrates player control, collision/physics, scoring, and (optionally) two-player or AI play. You may implement any game concept as long as it satisfies the required criteria below.

Platform & Tech

Use any language/framework you are comfortable with (e.g., Python + Pygame, JavaScript + Canvas, C++/SFML, Unity, Godot). Your submission must include clear run instructions in a README.

Controls (baseline expectation)

- Player 1: W A S D (up/left/down/right).
- Player 2: ↑ ← ↓ → (arrow keys).
- If you support controlling a group of players, provide a way to activate/select which player(s) are currently controlled (e.g., number keys 1–5 or cycle with Tab). Show a visible highlight or UI indicator for the active selection.

Field and Objects

A rectangular playfield with 4 screen edges (the “walls”), one ball with velocity and collision behavior, and one or more player objects that can be moved by keyboard input.

Grading (Mandatory, 10 points total)

1) Player entities (2 pts)
• 1 pt: Exactly one controllable player (paddle/avatar) that moves on screen.
• +1 pt: Multiple players on the field (AI/stationary obstacles/extra avatars).
Rubric: Full: players visible, smooth, respect bounds. Partial (–0.5): jitter/clipping/visibility issues.

2) Keyboard input & activation (3 pts)
• 2 pts: WASD and Arrow keys move one player or the currently selected group.
• 1 pt: Can activate/select a specific player or group (e.g., 1/2/3 keys, Tab cycle, or click). Show a clear visual indicator.
Rubric: Full: both key sets reliable; activation obvious. Partial (–1): only one key set or unclear activation.

3) Interactions & collisions (3 pts)
• 1 pt: Ball–wall collision exists (bounces off all 4 edges).
• 1 pt: Ball–wall reflection is correct (angle in ≈ angle out, speed roughly preserved).
• 1 pt: Ball–object collision exists (ball bounces off players/objects).
Rubric: Full: collisions believable & consistent. Partial (–0.5 to –1): sticking/tunneling/wrong reflection.

4) Score output / HUD (1 pt)
• Show score or counts (goals, hits, misses) on screen and update on events. HUD must remain legible.

5) Two-player mode (1 pt)
• Two humans can play at the same time using WASD vs Arrow keys, each controlling different players/teams.
Rubric: Full: inputs don't interfere. Partial (–0.5): both sets move same player or mappings conflict.

Bonuses (extra credit)

Awarded on top of 10 pts; overall assignment cap may apply.
1) External force affecting the ball (+0.5 to +1.0): Force field is visible, documented, and consistently alters trajectory; partial if unclear.

2) Player vs Computer (AI) (+1.0 to +2.0): +1.0 basic tracking/defense; +2.0 shows anticipation (predictspath), difficulty levels/cooldowns to feel fair, avoids obvious exploits.

Additionally, the most impressive game (polish, creativity, game feel) may earn discretionary credit.

Deliverables

- 1) Source code and assets.
- 2) README.md including: concept (2–3 sentences), all controls (incl. activation), run steps, known issues, asset credits.
- 3) (Optional) Config file (e.g., config.json) to tweak field size, ball speed, friction.

Minimum Quality Bar (Policy)

- Stable frame rate (target ≥ 30 FPS).
- No crash on start; documented keys must always work reasonably.
- The ball must never permanently leave the visible play area.
- Code is organized and readable (basic comments where non-obvious).