Assignment 3 — Mario-Style Platformer

Specification & Scoring Rubric

Goal. Build a 2D platformer (Mario-style or your own theme) that demonstrates smooth scrolling, basic combat, items/power-ups, a boss encounter, audio, and a usable menu—using **Cocos2d**, **Pygame**, **PySDL2,** or any engine that you're familiar with.

1) Technical baseline

1 **Language/engine:** Python with Pygame/PySDL2, Cocos2d, or anything; pick one and stick to it.

2 **Target resolution:** 1280×720 (recommended); support other 16:9 sizes.

3 **Frame rate:** Aim for 60 FPS; degrade gracefully.

4 **Controls (minimum):** Left/Right (or Up/Down if vertical), Jump, Action/Attack, Pause/Escape.

5 **Physics:** Simple gravity & collision with platforms/tiles are sufficient.

2) World & camera (3 pts total)

1 **Map size ≥4× screen area (1 pt):** Example: 5120×720 (horizontal) or 1280×2880 (vertical). Player can traverse beyond a single screen.

2 **Scrolling on one axis (2 pts):** Horizontal or vertical camera follow; clamp at world edges; avoid jitter via smoothing or tile-aligned steps.

3) Core interactions (3 pts total)

1 **Enemy defeat (1 pt):** At least one enemy vulnerable to a specific tactic (e.g., jump-stomp) with visual/audio feedback and removal/state change.

2 **Breakable containers (1 pt):** Crates/blocks that break via jump/attack and spawn items; update collision boxes after breaking.

3 **Coin collection (1 pt):** Coins with pickup sound and on-screen counter; persist count across the level.

4) Special objects (2 pts total)

1 **Boss (1 pt):** Distinct enemy with HP, patterns, a telegraphed weak phase, and a clear win condition. Show boss HP; provide hit feedback.

2 **Star (1 pt):** Temporary power-up (~5–10 s) granting invulnerability/speed with unique visual and jingle; show timer/icon.

5) Audio & menu (2 pts total)

1 **Audio (1 pt):** Looping BGM per level; SFX for jump, coin, crate break, enemy hit/defeat, star pickup, pause, confirm. Options for volume preferred.

2 **Menu (1 pt):** Main Menu with New Game, Options, About, Exit; Options includes at least Music/SFX volume; About shows team, credits, controls.

6) Game structure & UX

States: Splash (optional) → Main Menu → Gameplay → Pause → Win/Lose → Back to Menu.
Recommended: simple checkpoints; HUD shows Lives/HP, coins, optional timer, star/buff indicator, and (for boss fights) boss HP.

8) Scoring rubric (10 pts)

Category	Points
Map & movement	3
Interactions (enemy/boxes/coins)	3
Special objects (boss + star)	2
Audio & menu	2

9) Bonus ideas

1 Multiple enemy defeat methods (e.g., stomp and projectile; parry; lures).

2 Environmental puzzles that require moving objects to progress (bridges, numbered tiles, pressure plates).

3 Polish: particle effects, camera shake, squash-and-stretch, animation blending, save/load.

4 Accessibility: color-blind safe UI, remappable keys.

10) Deliverables & submission

1 Source code + README.md (how to run, controls, engine version).