Northwestern University
CompEng 205 Winter 2023
Assignment 5: Game

We are here finally! You will now create an action video game using all the skills that you have learned.

This is the full working game. We will give you every opportunity to be creative in the theme and design of your game (e.g. you could choose a space-themed shooter, platform scroller, strategy, first person shooter). However, we have a few minimum standards that everyone must meet to receive full credit -- these are mandatory minimums. In addition, we will require you to implement at least three “advanced features”. These advanced features give you an opportunity to dazzle. We will spend a little class time discussing how you might approach each of these advanced features.

Mandatory Features

- Must detect collisions
- Must have at least two sprites
- Game play must have reward and punishment
    - Good play rewarded with win or advance to next level
    - Bad play results in game over (or forced restart)
    - Not necessary to have a win condition
- Respond to player input (push buttons or keyboard)

Advanced Features (Choose any three)

- Special visual effect (e.g. lightning, fade in/out, static, whole screen shaking, complex explosions (e.g. frames of animation during explosion ≥ 3))
- Sound or music
- Sprites which can be rotated at arbitrary angles
- Sprites which can be scaled to arbitrary sizes (e.g. make larger/smaller)
- Massive number of active, discernable sprites (25+)
- Scrolling background
- Platforms
- Gravity or Other Forces (objects fall/move with non-constant velocity – specifically the magnitude of the velocity should vary)
- Multiple in-flight projectiles (bullets, laser blasts, etc. triggered by I/O e.g. button press)
- Powerups
- Complex Scoring System with either:
    - Multiple increment/decrement values to player’s score
    - Buy items to improve situation (e.g. upgrades/powerups/lives/health)

To receive full credit, your source file must be fully commented and must compile correctly. Your executable should not crash (e.g. due to some pointer weirdness) or cause images to wrap around the screen (nor anything else crazy). You will need to implement three special features for full credit.

Submit a single file which contains all the assembly code and data to implement your game. You should provide the following information at the top of your assembly source file:

- Name / NETID
- One sentence description of the game.
- List the three advanced features implemented.
- How to play the game (e.g. what various controls do)