Final Game Engine Write-Up

Lessons Learned/ Recommendations for the Future
- The ini library we chose to use is incredibly powerful. It is good to look at examples of how libraries are used so that you know its capabilities.
- IntelliJ's built-in GUI designer is amazing for working with swing. This is helpful to know for other classes.
- Designing a GUI, even with IntelliJ's tools, takes a long time to develop and implement. It should not be created last minute.
- Understanding the backend is very helpful when designing the frontend.

Paths/Strategies Abandoned
- Controller support: This feature may still work. However, we did not have time to test it or build a GUI for it.
- Editing/removing through the GUI: Unfortunately, we ran out of time to implement these.

New Features
- GUI: allows the user to add game objects, events, inputs, HUD elements, AI, sounds, sprites, fonts, and backgrounds (can also copy objects)
- Pausing:
    - Press P to pause or unpause the game
    - Press 0 to restart the game
    - Press 9 to refresh the game and load newly added changes
- Animations
- AI options for all game objects:
    - COPY - an object copies the movements of another
    - LEDGES - an object turns around when it detects a ledge
    - WALLS - an object turns around when it detects a ledge
    - BOUNCE - an object turns around when it collides with something vertically
    - AUTO - an object moves automatically without user input
    - DESTRUCT - an object is destroyed by another
- Drawing text to screen
- End game condition
- Concurrent audio
- Proper collision detection

Sprint Breakdown
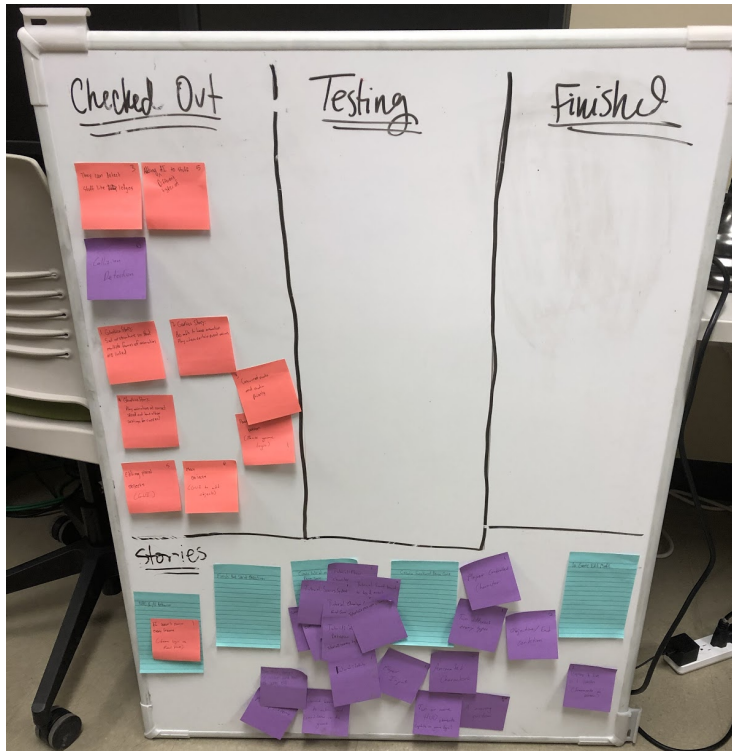
Scrum Meeting 1
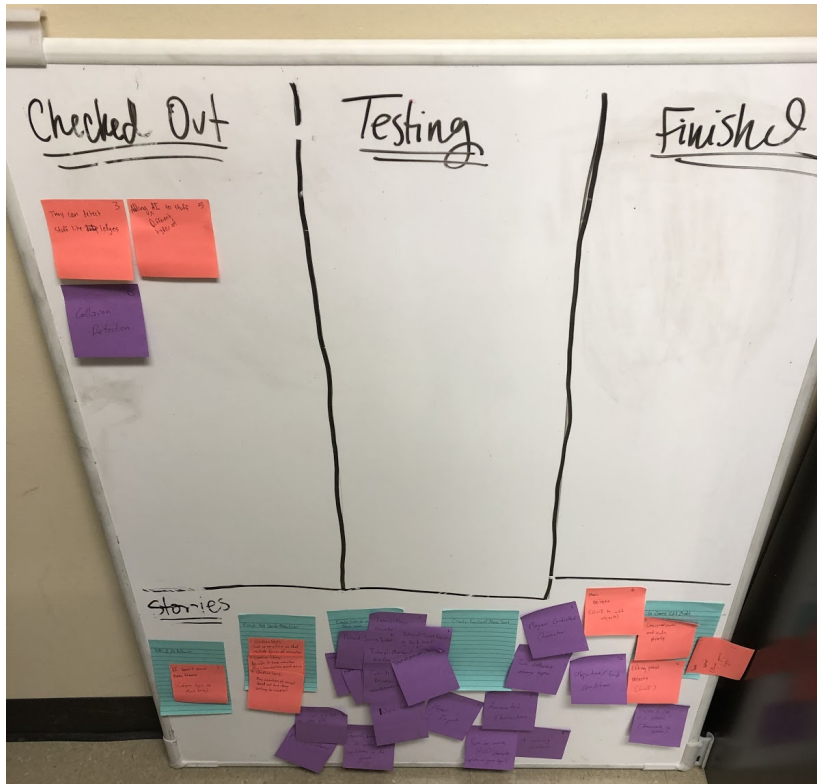
Description: Ashley decided to continue working on AI and collision since that is what she had mainly worked on up to this point.

Checked Out:
- 3: Objects can detect stuff like ledges (Ashley)
- 5: Adding different types of AI to stuff (Ashley)
- 0: Collision detection (Ashley)

Scrum Meeting 2

Description: The group decided that getting all of the past sprint tasks completed was the most important thing. Weston decided to work on animation. Stevie chose to work on the GUI. Cody decided to work on the pause mechanic and also concurrent audio. The group felt like after these were finished, making a working game demo would be fairly straightforward.

Checked Out:
- 1: Set up structure so that multiple frames of animation are linked (Weston)
- 2: Be able to have animation play when certain events occur (Weston)
- 4: Play animation at correct speed and have other settings be correct (Weston)
- 5: GUI for editing placed objects (Stevie)
- 6: GUI for placing objects (Stevie)
- 3: Concurrent audio and audio priority (Cody)
- 1: Pause game logic (Cody)

Scrum Meeting 3
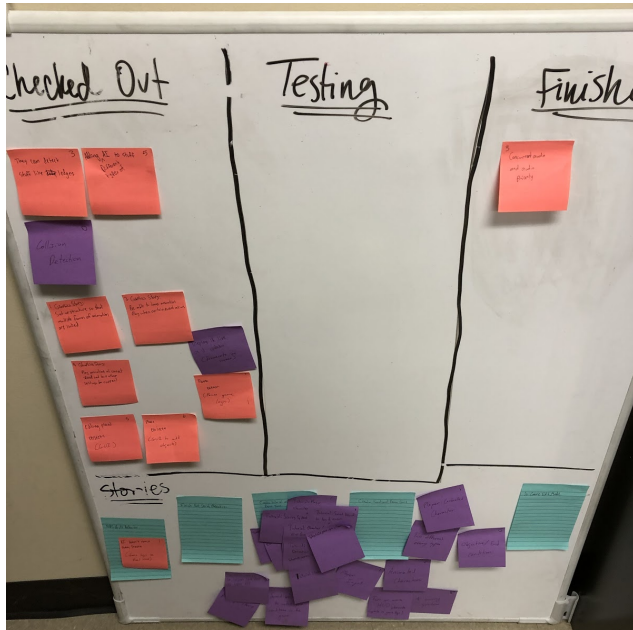
Description: Not much progress was made. Cody figured out how to have concurrent sounds and decided to work on getting text to draw to the screen.
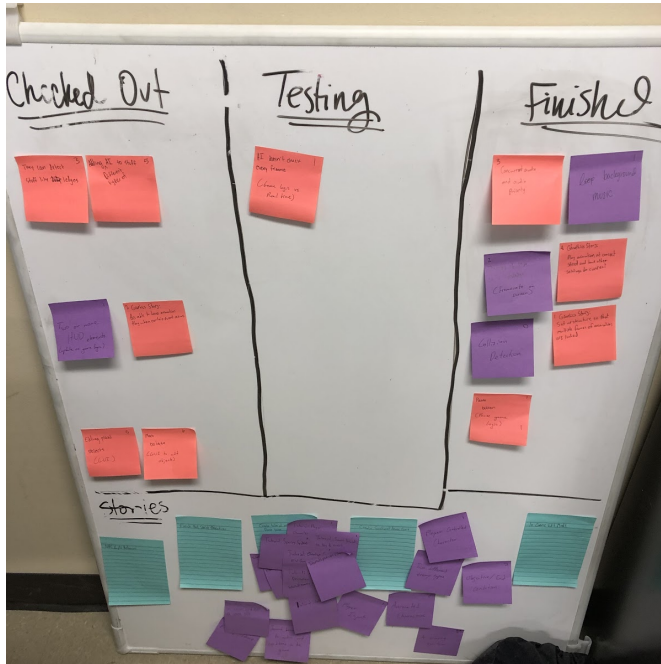
Checked Out:
- 2: Display frame rate live as it updates (Cody)

Finished:
- 3: Concurrent audio and audio priority (Cody)

Scrum Meeting 4

Description: Much more progress was made this time. Cody figured out how to draw text to the screen. Because of this, finishing the HUD was much easier. Ashley decided to finish the HUD. Weston figured out how to animate an object. Cody got the pause button to work properly.

Checked Out:
- 1: Two or more HUD elements (Ashley)

Testing:
- 1: AI doesn't check every frame (Cody)

Finished:
- 1: Loop background music (Cody)
- 2: Display frame rate live as it updates (Cody)
- 1: Pause game logic (Cody)
- 1: Set up structure so that multiple frames of animation are linked (Weston)
- 4: Play animation at correct speed and have other settings be correct (Weston)
- 0: Collision detection (Ashley)

Scrum Meeting 5
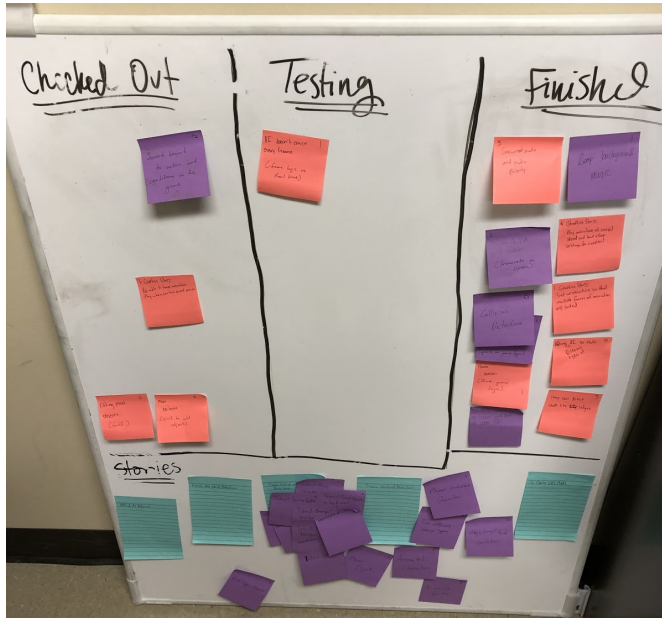
Description: Ashley finally finished adding AI to objects. She also finished working on the HUD. She then decided to work on linking sounds to different events. Because there is not a scrolling feature to this game engine, having the HUD stay on screen was completed automatically.
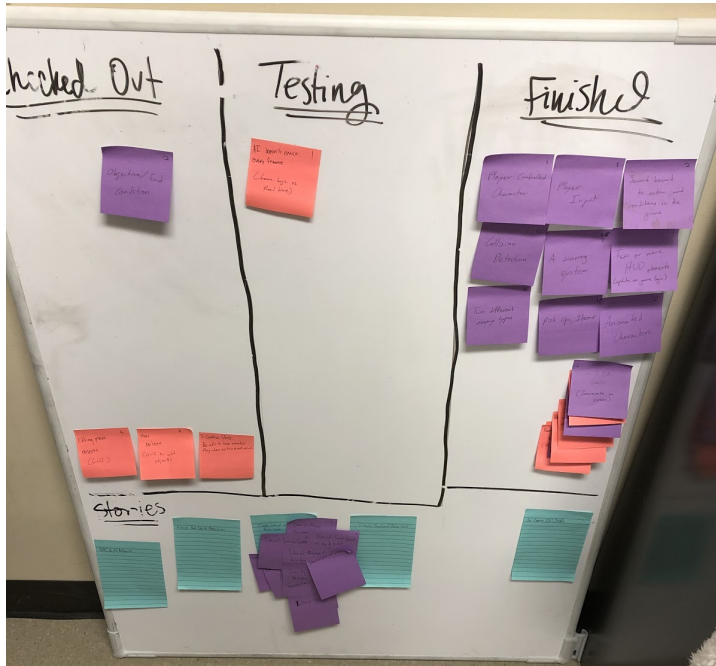
Checked Out:
- 2: Sound bound to action and conditions in the game (Ashley)

Finished:
- 1: Two or more HUD elements (Ashley)
- 3: Objects can detect stuff like ledges (Ashley)
- 5: Adding different types of AI to stuff (Ashley)
- 1: The HUD stays on screen and does not scroll off

Scrum Meeting 6

Description: Ashley was able to link sounds and events. While building and testing the game engine, the demo game features, in a way, built themselves. The remaining part of the demo game was the end condition, which Cody decided to work on. Weston and Stevie continued to work on the GUI. Ashley decided to work on various bugs. Stevie also volunteered to make the tutorial after the engine was finished.

Checked Out:
-    2: Objective/ End Condition (Cody)

Finished:
-    1: Player controlled character
-    1: Player input
-    2: Scoring system
-    1: Two different enemy types
-    1: Pick ups, items
-    2: Animated characters
-    2: Sound bound to action and conditions in the game (Ashley)

Product Owner Meeting Notes

- Save presets
- Quality of life
- Context dependent (timer, audio file)
- Info boxes on what each element is
- Shouldn't need to name health bar
- Art → background (rename)
- Stuff is too vague
- Wall should only show up once
- Simplify/omit features
- Fix location of health bar
- Too much control
- Extremely arcane → better/self documenting
- Very un-user friendly
- Speed → slow, medium, fast
- Omit minute details
- Come up with better names
- Tooltips
- User-friendly option: basically where start/end, generate terrain between the 2 points
- Show to other people and get them to do it and take notes
- Make tutorial make game
- Put source code in dropbox alongside jars
- Pause, add, and go back in (like Mario Maker)
- Be able to edit/remove objects
- Change thing/remove then redraw
- Be able to copy objects

Burn-Down Chart

Final Burn-Down Chart

	Meeting 1	Meeting 2	Meeting 3	Meeting 4	Meeting 5	Meeting 6	End
Theoretical	57	49	27	25	24	22	0
Actual	57	57	54	45	35	25	0