2D Game Reflection Paper

**Learning and Development (400 words): Describe the key learnings from the project. What concepts or skills did you acquire or improve upon?**

We would be remiss not to acknowledge the more obvious critical learnings from the project, that is, the ins and outs of Godot 4. From implementing collision objects to enhancing visual components with layers and other UI tools, this assignment brought out much more complexity. It required more attention to combine several scenes to make one cohesive game. At first, we would do things like creating several copies for sprites, such as making up ~10 popcorn sprites to cascade down the screen, but once we realized that we needed something that could spawn infinitely and at random, we knew we had to compile a script on one specific sprite/node and go from there. In addition, where we initially viewed the main scene as something to carry all components/parts of the game, we soon learned and realized the importance of chunking out each part of the game (e.g., the popcorn bowl, the popcorn kernels, the instructions screen) that would then come together in the main scene. So, overlapping game components was a key learning point.

As silly as it may sound, we learned a lot about parts that had nothing to do with Godot. For instance, in terms of collaborating on Github, uploading to a shared repository, making branches, pulling and pushing origins, etc., these were all moments of learning and discovery that involved quite a bit of trial and error. Some of us were only partially aware of how to make files and folders sync up to Github or Godot to streamline the entire process, and now it has set us all up for a much easier time in tackling future labs, projects, etc.

Regarding collaboration and group work, we all learned how to come together cohesively, create ideas, and chunk out work so each member was not only sharing the load but also working off their unique skill sets. Some of us had more programming/coding experience, so naturally, those individuals would handle more scripts in Godot. Some were more creatively/narratively oriented, coming up with significant concepts, scenes, images, etc.. Some of us also enjoyed the flourishes of the game once the core gameplay and scripts had been established, like the sounds, visuals, and specific details and effects that could quickly go unnoticed but enhanced the game much more when implemented.

**Challenges and Mistakes (400 words): Reflect on the challenges, mistakes, and any confusion encountered during development. How did these experiences contribute to your learning?**

We made several mistakes throughout the game development process, but oddly enough, we can look back and appreciate most of these moments riddled with confusion now.

One big mistake we made was neglecting to communicate contributions to the shared repository from the beginning. Some of us needed clarification about how to contribute and push/pull the origin of the shred repository, so we all found ourselves creating our own Godot projects and scenes. Once we realized what was happening, we had to restart several parts and retrace ourselves to collaborate effectively and productively. With that in mind, even after we began to get into the rhythm of sharing the load and collaborating all on the same repository/Github project, there were several excess scenes, nodes, scripts, instantiated components, etc., that needed to be cleaned up, but before we knew it, there were almost too many game parts to sort through, so there were moments where scenes and scripts would get misnamed, there would be duplicates of nodes. Overall, it made compiling several scenes into one game more challenging. However, towards the end, we realized the importance of streamlining and standardizing the naming process for all parts, how vital it was to create a scene for each game component, etc.

In a more technical sense, we made mistakes with implementing scenes and creating different scripts, not understanding fully how important the conversations between various nodes, scenes, etc., were to one another. One noticeable difference between the game's first iteration and the prototype for playtesting was how the popcorn was designed and created. At first, we created individual Sprites for each kernel as we weren’t entirely sure how to write a script for random kernels to spawn. When we played the first version, it presented more as a watchable scene of popcorn spawning than something with longevity that allowed for player interaction and manipulation. So we revisited the popcorn scenes and knew we had to create one sprite that would spawn at random and endlessly so a game could be played with it as a result. We took it step by step, chunk by chunk, as after we made the popcorn spawn randomly, we moved on to making it collide with the bowl. So, this was a good representation of how we approached the design of each scene by approaching one objective at a time and “layering” them over time instead of diving in deep and trying to control several things at once. Another crucial part of the design process was how each scene and component needed to be established before developing each further. For example, to understand the best way to make the bowl move, how fast it would have to go to catch kernels for fairness, etc., we needed the popcorn falling scene to be present, just as we needed to have instructions and backgrounds in place to make sure everything was oriented and displayed correctly. So, the design process depended on the interconnectedness of different game parts rather than solely standalone scenes.

**Path Forward (200 words): Based on your reflections, discuss the potential steps or strategies you would adopt to improve your game development process in future projects.**

Some future developmental ideas we had were levels after each round. Ideally, each level would end after the player has completed filling their bowl with popcorn, and a timer would indicate the time they had to do so. We had some issues regarding the bowl filling up with popcorn, so that is something that we need to troubleshoot and figure out. However, once that is figured out, we also considered adding upgrades the user could get with each level, such as caramel and cheddar popcorn to catch instead of regular. As the levels increase, we would increase the speed of the popcorn / decrease the time the player has to fill their bowl. We would also have to figure out how to double the speed when the level goes up. We also planned to add obstructions to the game, such as butter “raindrops” that slow down the bowl from moving side to side, causing the player to lose opportunities to catch the popcorn. Lastly, we discussed the idea of burnt kernels that would cause whatever was previously in the popcorn bowl to go wrong if caught, causing the player to restart their bowl with whatever time they have left. For that idea, we would have to figure out a way for the bowl to flip over if a burnt kernel is caught. We would also have to consider how to get the score to clear and go to zero when the burnt kernel is caught. We struggled quite a bit with getting the score to correlate with the popcorn going into the bowl, so our group would have to keep that in mind.

We also think that to further contribute to the game and repository itself, we would likely want to clean up the scenes, scripts, nodes, etc., as throughout the game development process, we often would instantiate scenes or nodes, combine scripts, or forget to delete old/unused parts, so to have a clear understanding of what has been done and what still needs to be done, we need to set ourselves up for success, and that starts with a “spring cleanup” of sorts.