**Game Title:** *3D Pacman - Pac³*

**Team Name:** *Polygon Pioneers*

**Team Members:**

* Julia Petrie 29617347
* Stefan Spataro 56862295
* Ivona Nicetin 87205910
* Daniel Storozhuk 74456278

The GDD largely covers all key aspects relevant to the Game Jam, including the timeline, mechanics, and assets. However, there are some uncertainties regarding the transition to a 3D version of *Pac-Man*. Does this mean the player can move along the X, Y, and Z axes, or is movement restricted to just X and Y, with the addition of 3D models? To avoid ambiguity, future iterations of the GDD should include illustrations or early sketches to better convey what is meant by a “3D version of the 2D original. **Make sure to treat the GDD as a tool to convey to each team-mate that you’re on the same page, instead of purely treating it as a submission.**

**Development Challenges to Consider:**

* **Enemy Pathfinding:** Implementing pathfinding for the ghosts in a 3D space can be complex. Given that the game is in 3D, using Unity’s built-in **NavMesh** system would be a practical approach ([Unity NavMesh Documentation](https://docs.unity3d.com/6000.0/Documentation/ScriptReference/AI.NavMesh.html)). Watching a few tutorials on NavMesh implementation will help in understanding its setup and behavior. Additionally, fine-tuning NavMesh parameters is crucial, as improper configurations may cause ghosts to behave unexpectedly, such as getting stuck in corners or failing to navigate efficiently.

Prioritise shipping a playable demo even if you miss certain features of the game. Remember to consult TAs or the Professor to keep the project within scope. Throughout the development process get as many people to play test your game in order for the final submission to be a fun game. It could also be interesting to document the results of the play testing in the final GDD submission at the end of the Jam

**Core Concept**

**Briefly describe the game.**

* We are taking inspiration from the game Pacman. We plan to create a system with a main character and ghosts released from a box throughout each level.
* Our main twist will be a 3D version of the 2D original. We plan to change the experience of the game by making it a level-based objective game. We are changing the fruit power-ups to add speed to Pacman. While this is a 3D game,
* Differing ghost mechanics: Each ghost fundamentally behaves the same. However, the speed at which they move and the score awarded for eating each ghost will vary.

**Core Gameplay**

**Game Loop:**

***Describe the basic actions the player takes and how they interact with the game.***

* The player emulated Pacman is running through a map to collect fruit(formerly Pac-dots) and powerups while avoiding ghosts.
* The game will rely on sound effects such as a coin jingle when Pacman collects an item. Along with visual feedback of the coins disappear. Visual feedback will also occur when ghosts are eaten, as they will disappear and reappear in their starting spot.

**Player Controls**

***List the controls clearly and simply.***

* Keyboard (or Controller) Inputs:
  + Move: WASD,
  + Special Ability: Sprint using the left shift key, only accessible during fruit power-up.

**Level & Progression**

Game Structure:

* The game has three levels, which will be hand-designed into different scenes, creating a seamless user experience.
* To complete the game, the player must successfully finish all three levels by collecting all the coins while avoiding the ghosts.

Progression System:

* The difficulty will increase as the ghosts speed up. The map changes, making it more difficult to collect the coins, and the power-ups last a shorter amount of time.
* Occasional power-ups will be offered when the player runs through super fruits, upon doing so, Pacman will have the ability to eat ghosts. If Pac-man runs through the fruit powerups, he becomes faster for a limited amount of time.

**Scoring & Win/Loss Conditions**

Winning:

* In each level, eat all of the pac-dots until you beat the last level.

Losing:

* Pacman has 3 lives per level. Lives are lost when Pacman gets caught (touches) a ghost while not powered up by a ghost-eating ability. When losing the three lives, the level will restart.

Score System:

* Score increments when you complete a level, harder levels are worth more points.

**Timeline & Milestones**

**Week 1: Core Mechanics & Gameplay Elements**

* **Setup input buffering**
* Set up a basic Unity project <Julia>
* Implement player input and core mechanics (movement, abilities) <Stefan>
* Pacman dies(loses a life) when touched by ghost
  + Sprint ability (While Pacman is fruit powered-up, it can sprint by pressing shift)
* Implement ghost mechanics <Ivona>
  + Ghost dies when touched by powered-up Pacman,
  + They get progressively faster each time they die and are released
  + Each ghost has its own properties (speed, difficulty)
* Create a sample level - MAP to test mechanics <Julia>
* Cinematic camera setup following Pac-Man movement informed by direction indicator. Camera will be positioned just above the wall so the player can see parts of the map. <Daniel>
* Launch pad. Character movement disabled midair.<Stefan>

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**Week 2: Polish Mechanics & Troubleshoot Bugs & Finalize**

* Create two more map levels, each with greater complexity <Julia>
* Create a UI and menu’s <Ivona>
* Add particle effects, sound effects, and other polish <Ivona + Julia>
* Implement a game manager object that oversees score, levels, game completion, and failure. <Stefan>
* Tweak player and ghost properties to have the best user experience. <Daniel>
* Package the final build <Daniel>

**Assets**

**Models & Art:**

***Provide links or sources for sprites, models, and animations.***

* Custom-made or downloaded (e.g., OpenGameArt, Kenney Assets)
* Pacman asset: <https://poly.pizza/m/fCDWdpgE7L>
* Low-poly ghost asset: <https://opengameart.org/content/low-poly-ghost-0>
  + Higher quality ghost asset: <https://assetstore.unity.com/packages/3d/characters/creatures/ghost-character-free-267003>
* Maze assets:
  + <https://poly.pizza/m/dVYNsvgErMo>
  + <https://assetstore.unity.com/packages/3d/environments/maze-modular-puzzle-kit-302221>
* Fruit assets:
  + <https://poly.pizza/m/4tOmpD9-xsV>
  + <https://poly.pizza/m/ahOO6wz8sV0>
  + <https://poly.pizza/m/csU4Smr2_aV>
  + <https://poly.pizza/m/7B_hERcgTZW>
  + <https://poly.pizza/m/abyCKYOa770>
  + <https://poly.pizza/m/7BMfIK4AqZK>

**Sound & Music:**

***Provide links or sources for music and sound effects.***

* Overall soundtrack: <https://freesound.org/s/521478/>
* Eating fruit: <https://freesound.org/s/483505/>
* Power up: <https://freesound.org/s/787791/>
* Chomp: <https://freesound.org/s/353067/>
* Try again: <https://freesound.org/s/417795/>
* Level up: <https://freesound.org/s/337049/>

**UI:**

* Loading scene, level up, end game font (CC) license) <https://www.dafont.com/crackman.font>
* In-game, score font (desktop license): <https://www.dafont.com/conthrax.font#null>
* UI game tutorial assets: <https://assetstore.unity.com/packages/tools/gui/input-icons-ui-toolkit-extension-255994>
* Our team will create all additional UI icons in adobe illustrator.

**Attribution required assets**

[Maze.0](https://poly.pizza/m/dVYNsvgErMo) by [Chuck Leone](https://poly.pizza/u/Chuck%20Leone) [[CC-BY](https://creativecommons.org/licenses/by/3.0/)] via Poly Pizza