Brief Game Design Document

05/06/2021
Team Knowledge

This template is loosely based on the Project Design Document on Unity's Create with Code Course, but has been expanded and adapted to this course.

Team Members
Ben Schuster - Logan Ross - James Difiglio - Jerod Lockhart

Game Design Concept

1 Player Control

You control a: Person

in this: Infinite runner | game

where: A, D, W, S

makes the player: Move Left to Right, Jump, Slide

2 Basic Gameplay

During the game, Food | appe from Further down the road

3 Core Game Mechanic

The goal of the game is to: Get a high score by surviving and eating healthy food

What makes this goal challenging or difficult is: Obstacles hurt player. Junk food offers energy however hurts player and

Players have the ability to: Change whichever lane they're in, Jump and Slide

And when players use their abilities: They can avoid obstacles and catch healthy food

4 Gameplay Mechanics

As the game progresses, The game moves faster and more obstacles

making it: Harder to eat healthy.

[*optional*] There will also be

5 Win / Loss Conditions

The player will win when

The player runs out of stamina

The player will lose when

The player runs out of health

When the player wins

The player runs out of breath, and a score win screen appears.

When the player loses

The player dies, and a score lose screen appears. There is a negative score multiplier for this type of lose.

When the game is over, the player can restart the game or try again from the beginning by

Clicking the 'replay' button

6 Sound & Effects

There will be sound effects

When the player eats

and particle effects

When the player eats

[*optional*] There will also be

Background music

7 User Interface

The

health

will

Increase / decrease

whenever

The player is running/
Player gets hit by an obstacle

At the start of the game, the title

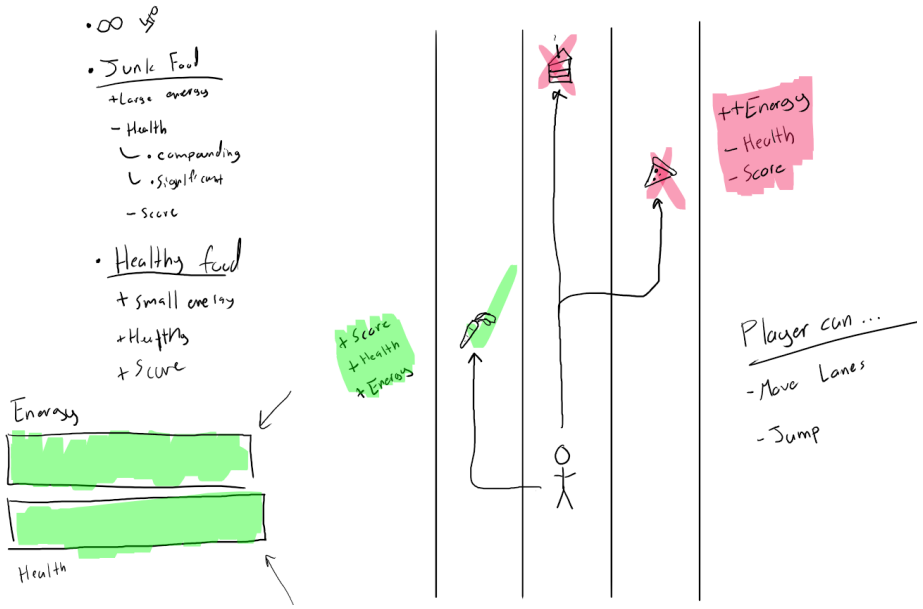
'Fast Food'

will appear

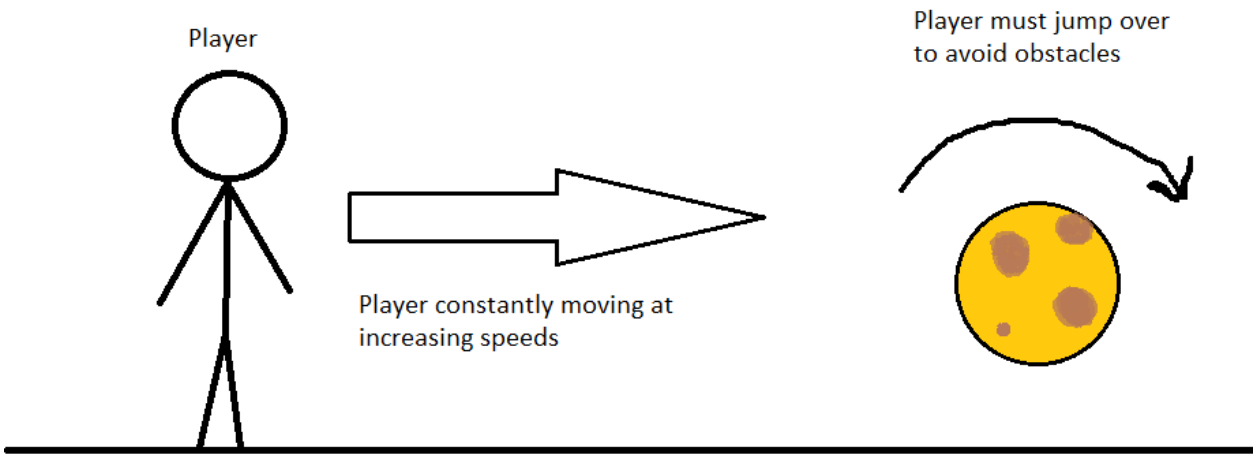
8 Other Features

Game Design Sketch (Annotated with Callouts)

(Also known as a One-Page Game Design Document)



Score Counter
(score accumulates as
the player progresses)



Deliverable 1: Theme and plan to achieve theme

Health-Related Behavior Change.

In order to encourage the player to make a health-related behavior change in the real world, we wanted to encourage them to eat healthy via our game. In our game you collect food, healthy food is good for you and junk food is bad. This incentivises players to eat healthy food in game which we hope would condition or encourage them to eat healthier in real life.

Deliverable 2: Intended experience or Desired Outcomes

- The player receives positive feedback when eating healthy foods in game
- The player tries to beat previous high scores by progressing further each game
- Rewarding gameplay that isn't too difficult or too easy
- The player feels motivated to eat healthier because of in game actions that they took while playing

Deliverable 3: Game Development

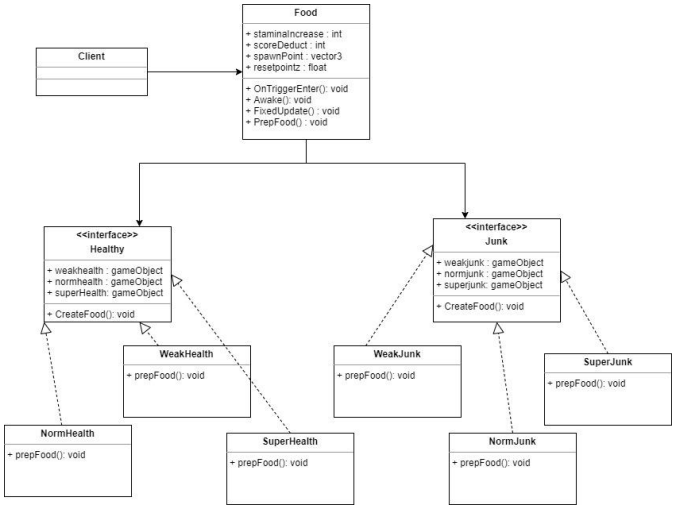
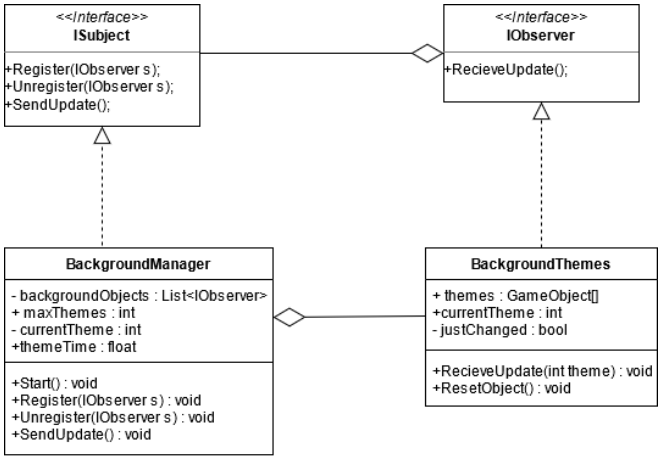
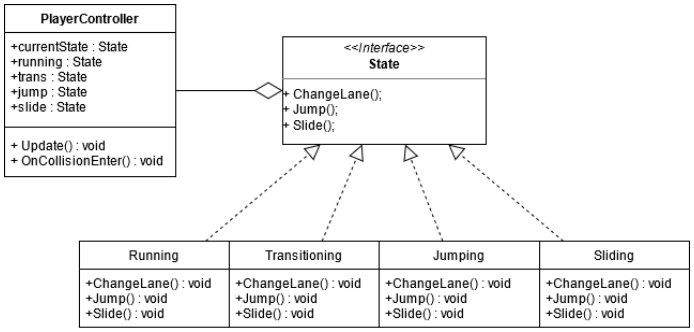
We made our game using Unity, all of the code being written in C#. For our project management we did weekly sprint planning and sprint retrospectives to make sure we were all on the same page and got done what we needed to.

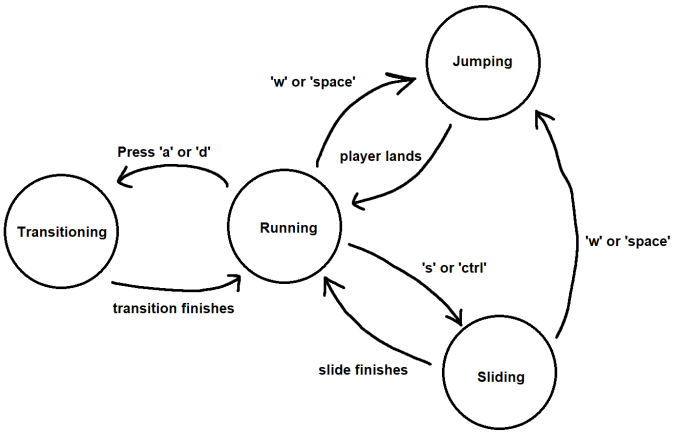
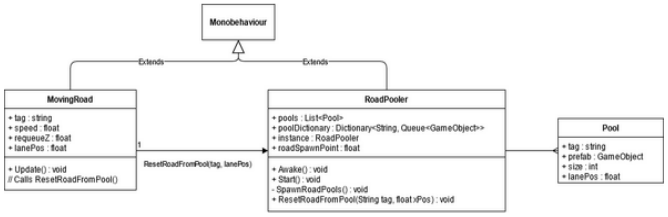
Since our game is an infinite runner, many of the objects use singletons and object poolers to make sure the game isn't creating and destroying too many objects all the time.

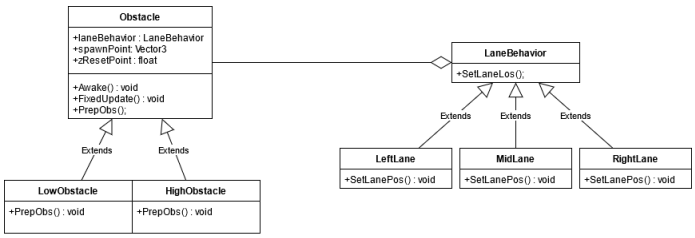
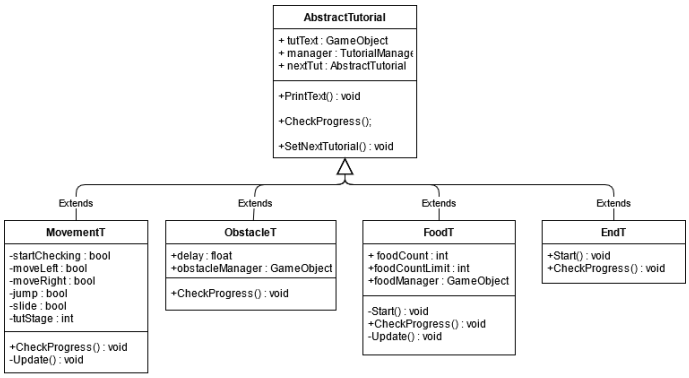
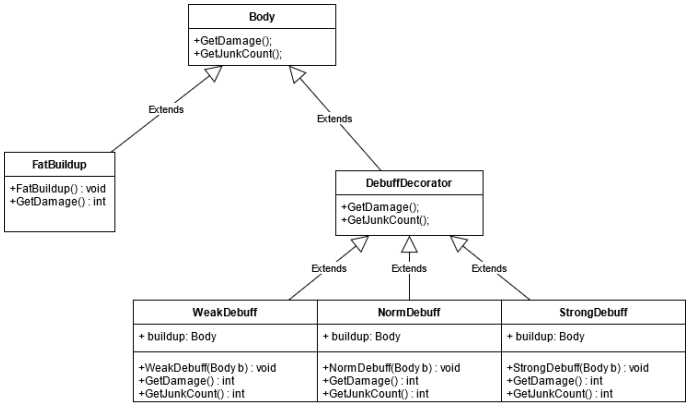
Deliverable 4: Brief Game Design Document

Document above w/ pictures.

Deliverable 5: UML Diagrams

Design Pattern	Description	Diagram
Factory Method	This pattern will be used to spawn the two types of food, junk and healthy.	
Observer	Used to communicate background theme changes as the game progresses.	
State	Used for player movement controller to make sure no un-wanted movement occurs	

		
Singleton	Used for a overall game manager that works between levels and allows for easy global access	**GameManager** +pauseMenu : GameObject +gameOverScreen : GameObject +gameOver : bool +isPaused : bool +speed : int +score : int +minSpeed : int +maxSpeed : int +finalScore : Text +instance : Gamemanager +currentLevelName : string -Awake() : void -Update() : void +LoadLevel(string levelName) : voi +UnloadCurrentLevel() : void +ReloadCurrentLevel() : void +Pause() : void +UnPause() : void +GameOver() : void
Object Pooler	Used to help manage the infinitely scrolling road system and keep performance acceptable	

Strategy	Used for obstacles with a variety of positions/trait behaviors	
Template	This was used for the progressive tutorial system	
Decorator	Used to add a compounding damage effect to eating junk food. Also count how much was eaten for final score.	

Deliverable 6: Playtesting Methods

To playtest our game, we split our team into two groups to meet with other students in our class to playtest. In total, we had about 4 playtesters, as well as giving out the game link to other friends not in the course. Our game had a minor, but not fully functional tutorial, so we assisted them with understanding any controls or game features that were not yet implemented.

We had each individual play our game for about 10 minutes after reading over the controls. They were able to play the game through several runs due to the fast replayability of our game, so were able to try different strategies while playing. While playtesting, we would take notes about comments the playtesters would directly give, as well as common events/behaviors we noticed while observing the gameplay.

After the playtester finished the 10 minutes, we finalized it by asking a few followup questions and then having them fill out a playtest questionnaire that we made. We compiled all of this into a final report.

Deliverable 7: Observation Notes

Playtester 1:

- took a moment to read the controls
    - Player thought it was quite self explanatory
    - Ensure that theres a more progressive tutorial
- Enjoyed indication yellow color for slide icon
- Would eat junk food for stamina quite oftenly
    - Either reduce stamina JF gives or increase damage it deals
    - Potentially decrease score when eating food
- Noticed the increasing speed and smaller gaps between walls over time
- Liked the moving background environment
- Doesn't seem to notice difference between different tier
- Player felt that the game overs were justified
- Jump is a bit long
    - (increase fall speed?)
- Even though it shouldn't be possible, there are still lengthy gaps of 5-obstacle walls
    - Maybe force only one 5 wall in a row?
- Players were unknowingly getting hit by 2 walls occasionally. Either fix or modify walls to deal the same falt high damage value

Playtester 2:

- Took a moment to read the controls
    - Player thought it was quite self explanatory
- Playtester's laptop wasn't able to run the game very well so wasn't able to play the game
- For their mechanic, they turned out being more worried about their health bar instead of stamina bar, prioritizing healthy food
- Player occasionally forgot they could slide

Deliverable 8: Summary of Questionnaire Results

Results: Playtest Questionnaire Results

Deliverable 9: Playtesting Report: Findings from Playtesting

- Highlight 1: Scaling Difficulty
    - Details: With the scaling speed and frequency of obstacles, the players felt the game scaled difficulty well
    - Proof: All survey results say it wasnt too hard, and the only survey response that said it was too easy was submitted before the system was functional
    - Action Items: None
- Highlight 2: Player attentiveness
    - Details: Players paid more attention throughout the game
    - Proof: All survey results are agree or strongly agree on this question
    - Action Items: None

- Highlight 3: Scrolling Background
    - Details: Players liked the scrolling background effect, felt like they were always moving
    - Proof: Comments in playtesting, questionnaire
    - Action Items: None
- Highlight 4: Controls
    - Details: The players felt comfortable using the controls as it was simple and responsive
    - Proof: Survey and questionnaire comments
    - Action Items: None
- Highlight 5: Spawn system
    - Details: Players never felt they lost a game due to a lack of food spawn/RNG
    - Proof: No complaints about it ever being an issue in playtesting
    - Action Items: None

- Issues 1: Player Jump
    - Priority : 2
    - Details: The player jump felt too slow to land, making it hard to jump to eat food and then successfully dodge obstacles
    - Proof: Viewable behavior in playtesting, questionnaire comment
    - Action Items: Try to speed up the jump action
- Issues 2: Tutorial
    - Priority : 1
    - Details: The tutorial is a temporary mini-game flat screen with text.
    - Proof: Its the current tutorial
    - Action Items: Create a full progressive tutorial level
- Issues 3: Aesthetic
    - Priority : 5
    - Details: The player and the obstacles are just cubes made from the Unity basic objects
    - Proof: Viewable in current game
    - Action Items: Try to get player and obstacles assets
- Issues 4: Damage
    - Priority : 4
    - Details: Player can occasionally take increased damage depending on how they hit a wall
    - Proof: Viewable in playtesting, found in final build but couldnt fix.
    - Action Items: Make it so they deal more flat amounts of damage
- Issues 5: Junkfood too appealing
    - Priority : 3
    - Details: Some players felt that the health penalty from junkfood wasn’t significant and would undermine our intended theme
    - Proof: Observed in playtesting and questionnaire

    - Action Items: Decrease score for collecting fat food. Possibly compounding health decrease when eating more junk food
- Issues 6: Healthyfood not impactful enough
    - Priority : 3
    - Details: Some players ignored the stamina increase healthy food would give instead only going for junkfood
    - Proof: Observed in playtesting and questionnaire
    - Action Items: Previous issue statement might help, increase stamina decrease rate, increase stamina restored
- Issues 7: Overall Goal
    - Priority : 4
    - Details: Players didn't feel there was a final goal of the game
    - Proof: Questionnaire comments
    - Action Items: Try to add more theming to why the player is in an infinite runner
- Issues 8: Slightly delayed road system
    - Priority : 5
    - Details: As the player progressed further in level, the object pooler would desync and result in a mess of road stripes along the road
    - Proof: Viewable in playtesting
    - Action Items: Try to fix, however not detrimental to gameplay and is a difficult bug to fix

Deliverable 10: Sprint Retrospective

Week 7 (Bonus!) - 3/15

- Ben - Partially Done - Successfully tweaked level and inventory, but could not change loading system due to complexity
- Logan - Done - Finished decorating levels
- James - Done - Finished player animator
- Jerod - Done - Adjusted music, added credits

Week 1 [Game2] - 3/22

- Ben - Done - Fully filled out game design document
- Logan - Done - Filled out chosen theme and intended experiences
- James - Done - Created sketches for game design doc
- Jerod - Done - Found a variety of food assets

Week 2 - 3/29

- Ben - Not Done - Had no time to work on project due to midterms and other class projects
- Logan - Not Done - Had no time to work on project due to midterms, other class projects, and easter
- James - Not Done - Had no time to work on project due to midterms, other class projects, and easter
- Jerod - Not Done - Had no time to work on project due to midterms, other class projects, and easter

Week 3 -4/5

- Ben - Done - Successfully added lanes and player movement

- Logan - Done - Added a polling object that spawns obstacles
- James - Done - Created scripts to use for the health and energy bar
- Jerod - Done - Found assets to use and started work on the factory pattern

Week 4 -4/12

- Ben - Done - Converted player to state pattern, used observer pattern to create scrolling background
- Logan - Not Done - Score system and more varied obstacle system not yet implemented
- James - Not Done - Started menu system, but non-functional.
- Jerod - Not Done - Healthy and junk food system not yet uploaded to project

Week 5 - 4/19

- Ben - Done - Added simple Tutorial. Fixed menu system. Added scaling difficulty.
- Logan - Done - Helped finish food factory pattern
- James - Done - Finished questionnaire with custom questions
- Jerod - Done - Helped finish food factory pattern

Week 6 - 4/26

- Ben - Done - Add new tutorial using Template pattern
- Logan - Done - Moderated and took notes during playtesting session
- James - Done - Moderated and took notes during playtesting session
- Jerod - Done - Moderated and took notes during playtesting session

Deliverable 11: Spring Planning

Week 1 - 3/22

- Ben - Fill out game design doc
- Logan - Fill out theme/intended experience
- James - Supply sketches
- Jerod - Search for food assets
    - Food Assets: Food pack - 3D Microgames Add-Ons | 3D | Unity Asset Store
    - Food & Grocery Items - Low Poly | 3D Food | Unity Asset Store
    - FREE Casual Food Pack- Mobile/VR | 3D Food | Unity Asset Store
    - 3D Bakery Object | 3D Food | Unity Asset Store

Week 2 - 3/29

- Ben - Work on lanes
- Logan - Work on obstacles
- James - Work on menu stuff
- Jerod - Work on food stuff

Week 3 - 4/5

- Ben - Work on lanes
- Logan - Work on obstacles
- James - Work on menu stuff
- Jerod - Work on food stuff

Week 4 - 4/12

- Ben - Modify player jump to be physics, change to state pattern, implement observer pattern

- Logan - Implement score system, finishing obstacles, implement strategy pattern
- James - Menu system / Singleton game manager pattern
- Jerod - Implement the healthy and junk food system

Week 5 - 4/19

- Ben - Implement Tutorial. Fix menu system. Add scaling difficulty
- Logan - Work on food factory pattern
- James - Work on questionnaire
- Jerod - Work on food factory pattern

Week 6 - 4/26

- Ben - Add full progressive tutorial
- Logan - Take notes during playtesting
- James - Take notes during playtesting
- Jerod - Take notes during playtesting

Week 7 - 5/03

- Ben - Work on report. Add 8th pattern. Final game balance tweaks
- Logan - Work on report and presentation
- James - Work on report and presentation
- Jerod - Work on report and presentation

Deliverable 12: Completed plan to make changes based on Playtesting

Priority	Action Item	Description	Deadline	Status
1	8th Pattern	Implement the final 8th pattern	5/6	Done - 5/5
1	Tutorial	Implement a progressive tutorial using template pattern	5/6	Done - 5/1
2	Player Jump	Tone down the player jump to make more responsive	5/6	Done - 5/5
3	Junk Food Balance	Increase damage dealt by junk food. Possibly use decorator?	5/6	Done - 5/5
3	Healthy food balance	Increase stamina given by healthy food, increase stamina consumption rate	5/6	Done - 5/5
4	Damage Tweaking	Potentially add I frames to player, or make obstacles not overlap to cause the damage	5/6	Decided not to do [not enough time]
4	Overall Goal	Try to change the score to calories, add some text saying ‘go out for a jog’ on hud/menu	5/6	Done - 5/5
5	Aesthetic	Add assets to player and	5/6	Decided not to do [not enough

		obstacles		time]
5	Road Stripe System	Find and fix bug causing them to become desync	5/6	Decided not to do [cannot find source]

Deliverable 13: Team Project Game

Github link - https://github.com/BenSchu438/CIS_497_TeamKnowledge_Game2

Simmer.io link - https://simmer.io/@bschuster/fast-food