**Sea Adventures- DevLog**Lyudmil Pashayanov

# My Business Strategy Research and Design:

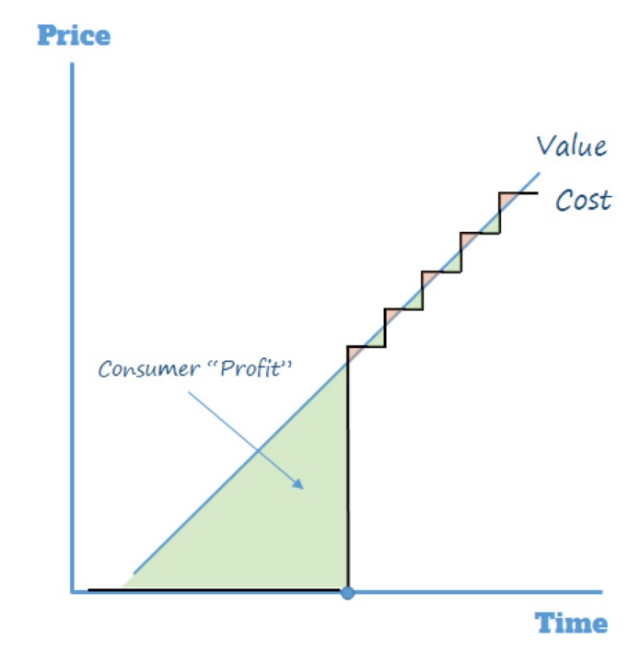
## Overview:

I would also like to create small economy within the game, which would be able to later monetize the game. For example, create a currency so important and valuable so that a player spends money on it or develop the flow in the game in such a way that makes the user want to watch an Advertisement.

My focus on this project will be to use the available products analysis, literature study and Best Good Bad Practices to research and design a strategy for monetizing a game. There are several wide-known business models for achieving that goal ([Appendix 1: Business strategies for monetization for your game](#appendix1)).

## My strategy:

As I am not going to provide any unique gameplay, nor run an advertising campaign to allow my game to be premium, the business strategy I will be designing to monetize the game, will work as making the game **free** **to Play (F2P)** and rely on **Micro transactions and Rewarded Video Ads**. After analyzing the available games and doing a library research, it seems that this kind of hybrid strategy works very well for mobile games([research source](#ResearchStatsOnMonetization)), and it can be seen applied in a lot of successful mobile titles ([Wordscapes](https://play.google.com/store/apps/details?id=com.peoplefun.wordcross&hl=en), [Angry Birds](https://play.google.com/store/apps/details?id=com.rovio.angrybirdsspace.ads&hl=en), [Piano Tiles](https://play.google.com/store/apps/details?id=game.piano.black.tiles.music&hl=en)).



“I get an abundance of consumer profit in the beginning with a free-to-play game because the cost to me is zero. However, as I progress, I get pinched and I end up paying. At an aggregate level (i.e. across all players) users are paying for the product after trying it for free. Users get all consumer profit up front, but the profit is then split between consumer and producer later”

### Ads:

By using the ‘Best good and bad practices’ method when it comes to Ads in games, I reached the following conclusions: I do not want to ***force*** the user into watching an Ad, as eventually this will make him/her quit my game. On the contrary, I want to present the Ads in the game in such a way so that my users want to watch them -> I will give them a very valuable reward after the Ad and give them the option to cancel the Ad and not receive the reward.

#### Rewarded Ads in Sea Adventures:

In Sea Adventures after the user dies during the level, he will be given the choice to continue, as if he never has died, in exchange of watching an Advertisement ([user scenario](#userScenario)). I see in lots of games ([Mario Cart](https://mariokarttour.com/en-US), [Jetpack Joyride](https://halfbrick.com/our-games/jetpack-joyride/)) extra life as a reward is valued enough to prompt the user to watch an Ad and from personal experience makes him feel rewarded.

### Currencies:

**Upgrade points-** Granted at the beginning of a level. Used to create and upgrade defenses and upgrade your ship during the level. Upon a finished wave, more upgrade points are granted. Upon winning a level, the rest over upgrade points are granted and converted to **Coins**.

* Idea behind this is to make the levels harder (play smart, plan out moves) by forcing the player to spend less upgrade points during the level, so that he can receive more **Coins** at the end of it.

**Coins**- Soft currency you receive from the rest over **Upgrade points** you have when you finish a level. Used for upgrading your fleet.

**Keys**- The currency you pay 1x for starting a level. You receive 1x **Key** upon winning a level. There will be max amount of this currency. It will recharge *overtime or c*ould be received by watching an **Ad**.

* Idea behind is to prompt a **Rewarding Ad** if the user has used all his **Keys** during his play session.

**Diamonds-** Hard currency you can get by paying real money. Used for buying more **Coins.**

## User Scenario:

In the user scenario below, you can see how the currencies are going to be rewarded and how the player will spend them.

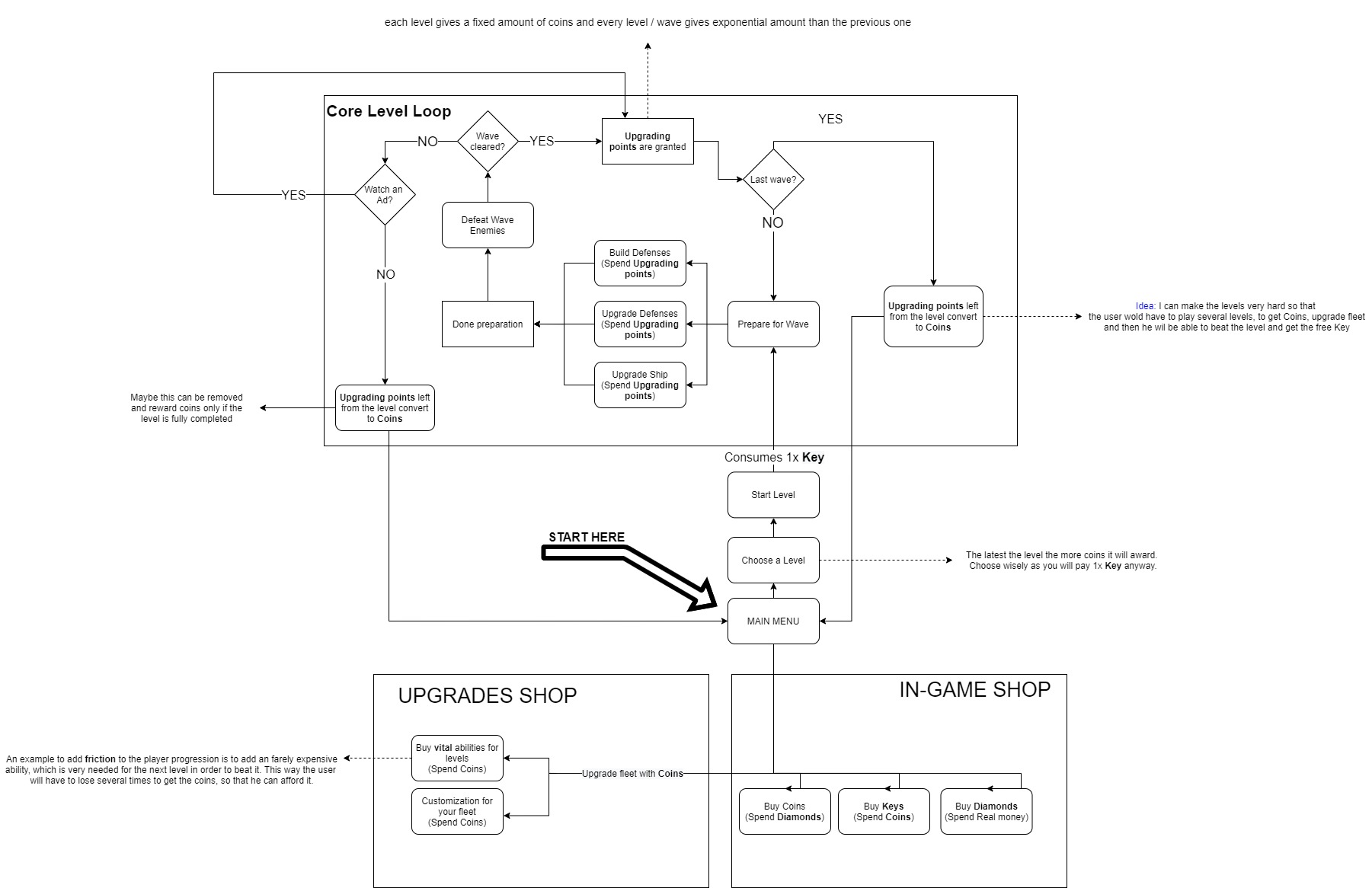


Figure 1: User scenario based on notes focused on monetization

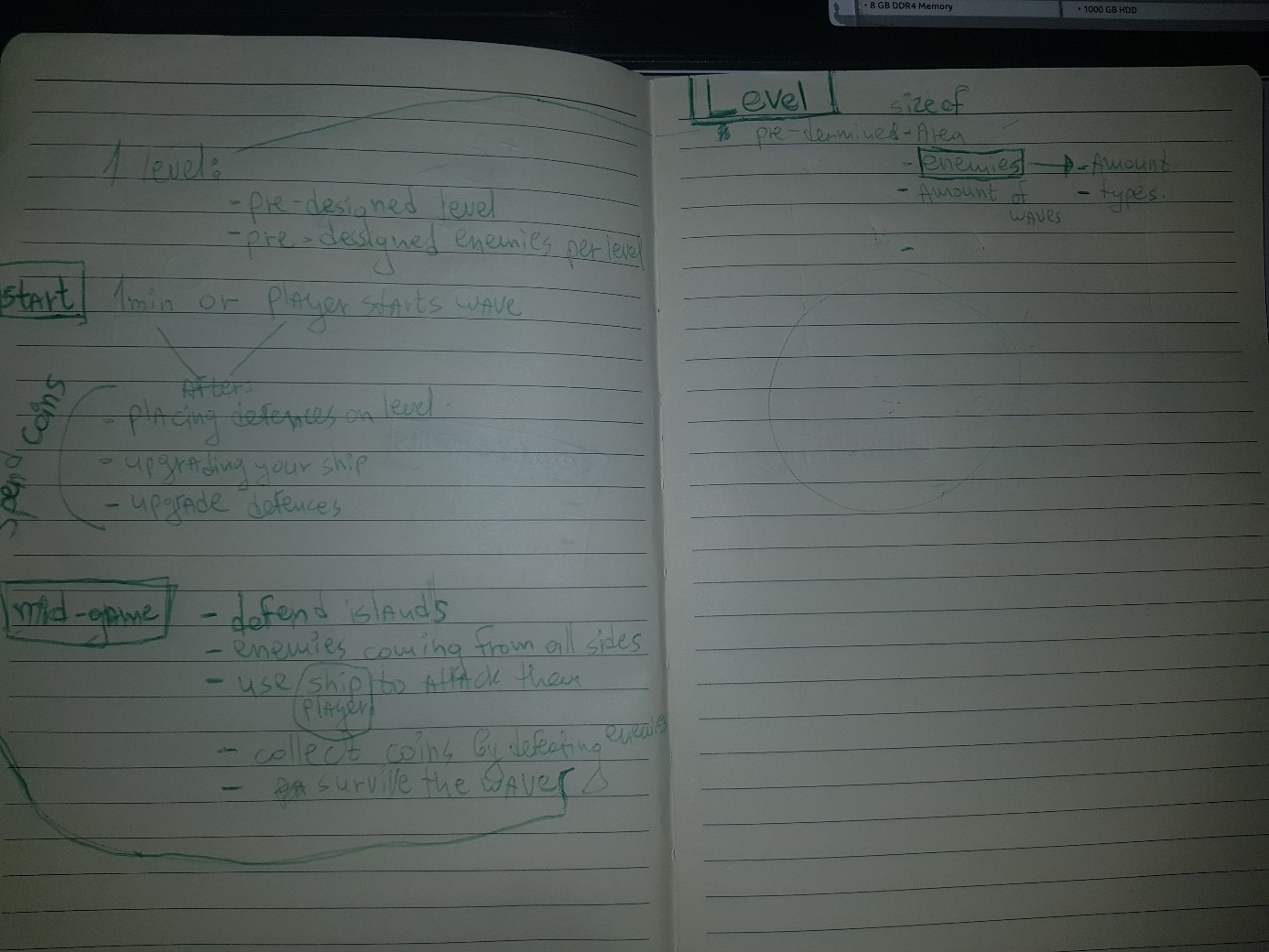


Figure 2- Core Loop notes

## Core level Loop Of “Sea Adventures”:

### Start of a level:

Player loses 1x Diamond in order to start the level.  
The player starts with pre-determined amount of **upgrading points.**

### Preparation phase:

Player will have to prepare for the big waves of enemies coming to attack. The preparation consists of:

1. Upgrading your ship abilities/stats: By spending **upgrading points**.
2. Putting defenses on the map: By spending **upgrading points**.
3. Upgrading your already active defenses: By spending **upgrading points**.

### Wave phase:

During the wave, the player actively attacks incoming enemies and defends the main point of interest (island). While destroying enemies, the player receives **upgrading points**, which could be spend on the next preparation phase.

### Lose State:

In case the player fails to complete the level (dies), he is prompted to watch and **Ad** and continue where he left off. If he refuses, certain amount of the (half) **upgrading points** are converted to **coins** and the player is sent to the main menu.

### Win State:

In case the player successfully beats the level, the one is rewarded with 1x **Diamond** and all his left-over **upgrading points** are converted to **coins**.

## Features Introduction:

As it is very important that your items are perceived as more valuable as possible, it is very important to introduce them in the right way.

|  |  |  |
| --- | --- | --- |
| **Level** | **Introduced feature** | **Goal** |
| **1-3** | * Basic Attacks * Basic Enemies * Movement controls | Tutorial |
| **4-7** | * Upgrading Points * Special Attack | Tutorial |
| **8-10** | * Special enemy | Shows that new enemies appear |
| **Main Menu after 10th level** | * Upgrades shop * Buy the ‘’traps ability’’ from the upgrades shop | Tutorial  + Emphasizes where you can spend your coins  + By unlocking it, it makes players curious.  + It functions as a reward |
| **11-13** | * Basic Trap | Tutorial to what you have bought from the ‘’upgrade store’’ |
| **14-20** | * New special Trap * New enemy (killable **faster** withspecial trap) | Emphasizes that you need to upgrade and use traps to win levels |
| **20-…** | … | … |

# Game creation:

## Overview:

I am inspired to create a **Tower Defense**, **Strategy** game. Main idea is that you have your ship (*player*) in open waters (*level map*) and you have an island (main point of interest), somewhere on the level map, which must be ***defended***. Just like in “**Orcs Must Die**” the player, would be able to place ***defenses*** on the map, which will help him when the pirates (*enemies*) come. I would like to be able to introduce several types of ships, with which the player will be able to play with (*attacker, defender, carrier*), all of which will have different advantages and disadvantages. The level will be similar to a **Plants vs. Zombies** level, where there are several waves and the player needs to survive until the end.

## Enemies design:

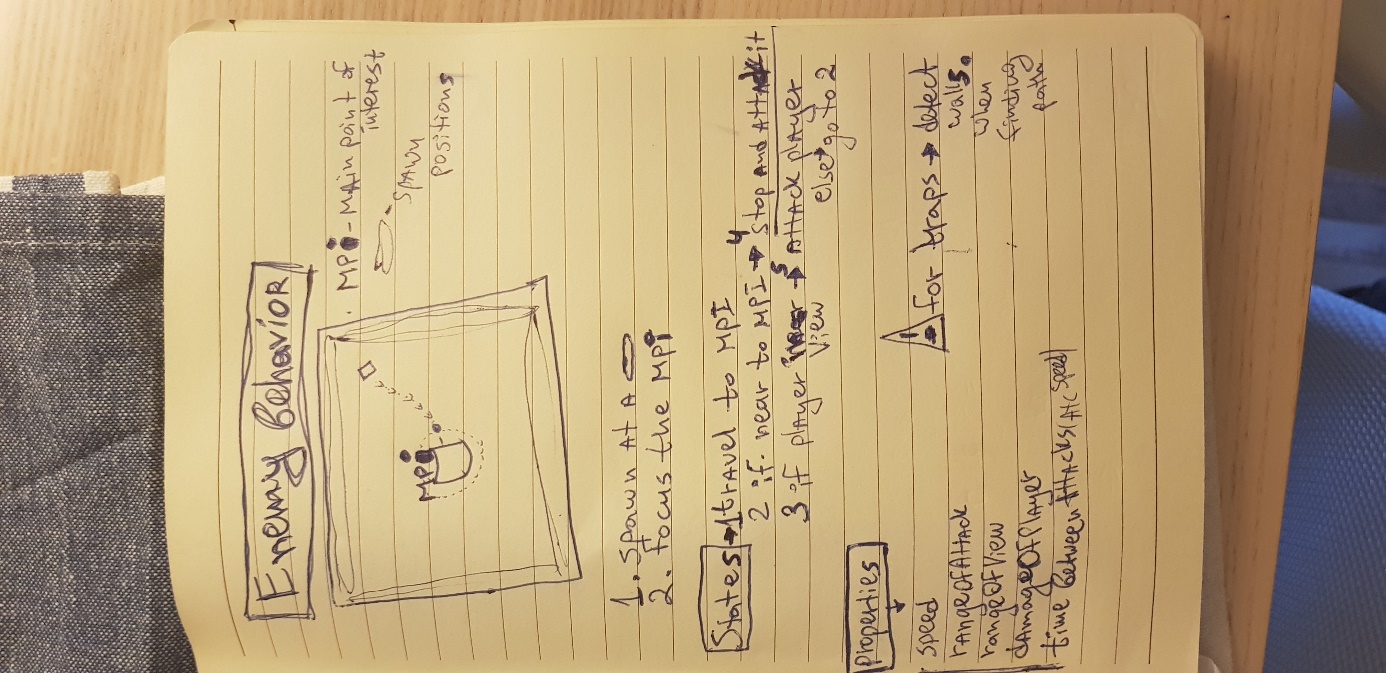


Figure 2: IT Architecture sketching method (Workshop) on Enemies in Sea adventures

### Enemies AI:

### Pathfinding:

My enemies should spawn on the edges of the level and go to the center of it and attack the Island. As I want to have traps in my game, I had to create my enemies go to the island, but in the same time go around the traps (walls) on the map. In order to do that I had to create some kind of a pathfinding system. As I found out it will be a lot of work to create, I found an already made one by Unity ([NavMesh by Unity](#brackeys)).

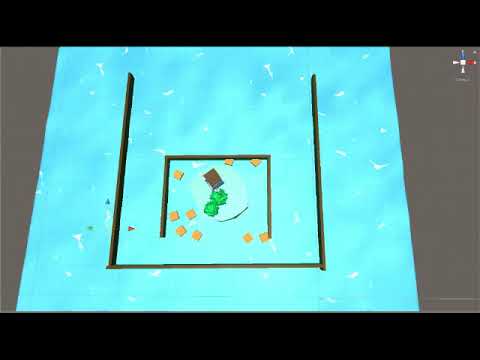
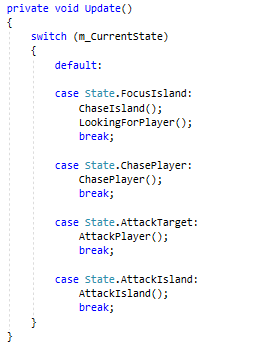
[](https://www.youtube.com/embed/JTHAcrRyOL8?feature=oembed)

Figure 3: My enemy pathfinding functionality

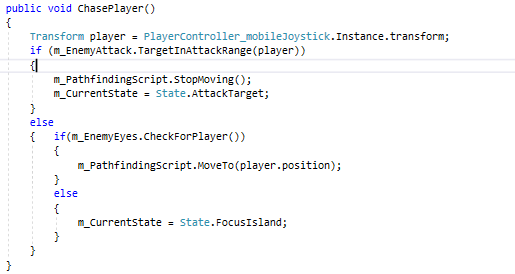
### Enemy States:

My enemy AI states are the following:

1. Travel to the island.
2. If you see the player, chase him.
3. If you get near the player attack him.
4. If you don’t see the player go to 1.
5. If you reach the Island, Attack the island until you defeat it.

I wanted to choose the fastest approach to simulate enemy behavior and the simplest way to create that turned out to be an AI state machine([Simple Enemy AI](#codemonkey), [AI State Machine](#JasonWeimann)):  


Where the [states](#AIstates) of the AI change from similar to this function:



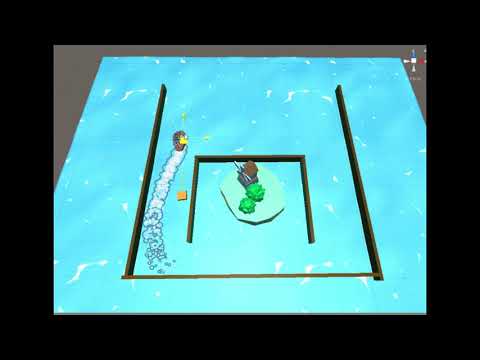
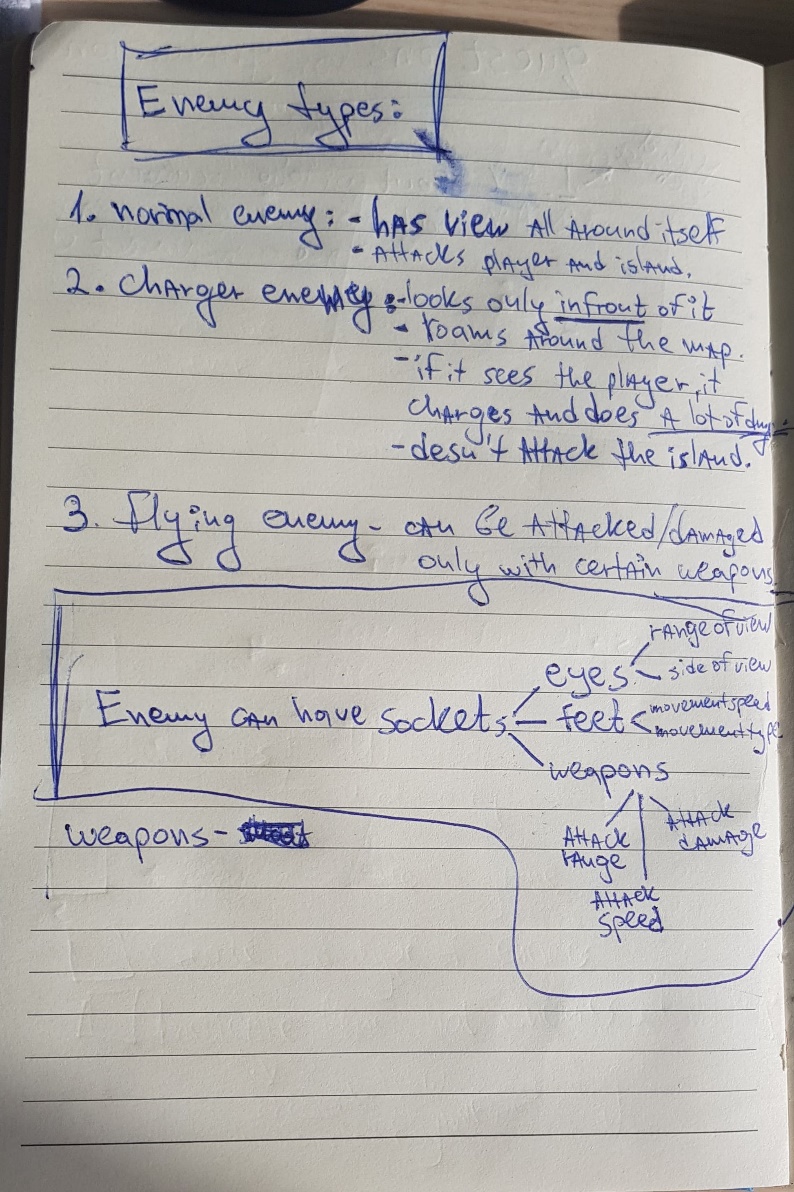
[](https://www.youtube.com/embed/aIzvKUoVwvI?feature=oembed)

Figure 4:   
Red line = not in range -> going to the island.  
Yellow line = player in range, but not in view -> go to the island.   
Green line = player in range and in view -> attack player.

# Code Talks:

## Enemies Design:



## SOLID Code:

By design I want to have different types of enemies. If I want to scale the game and follow good code practices, I want my enemies to be easily extendable and easily modifiable. In order to do that I did a Design patterns research on SOLID principles.

### Open Closed Principle:

I implemented the [O**pen Closed Principle** **(OCP)**](#OpenClosedPrinciple)for the development of the enemies, because it allows me to not change my AI class (closed for modification), but at the same time, extend and modify the behavior of my different types of enemies very easy (open for extension).

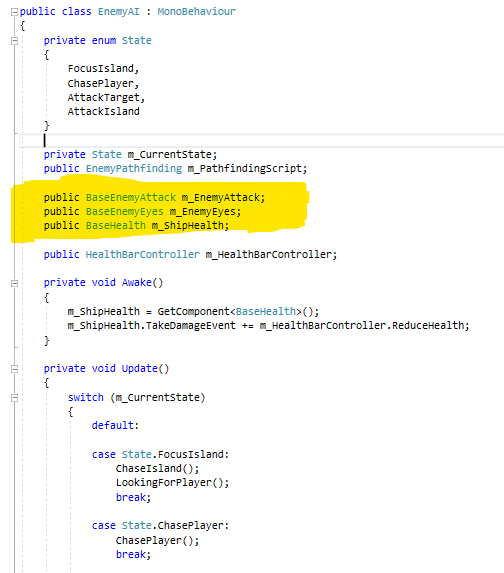


Figure 4: Enemy AI operates with only abstract classes, so that I don’t have to modify it when a new enemy is introduced.

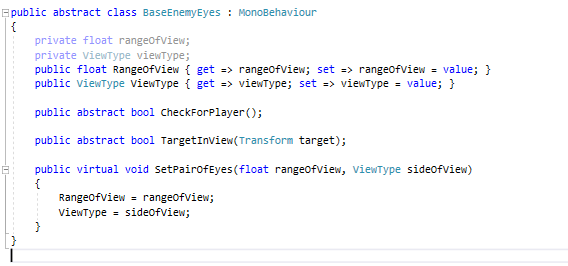


Figure 5: Abstract class implemented by every new type of enemy, which wants to use the AI

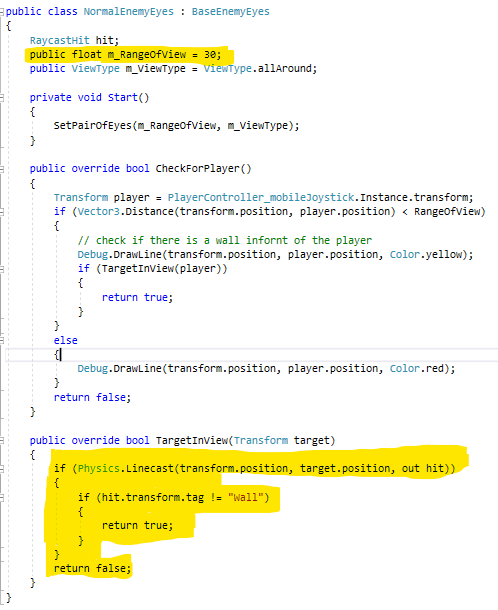


Figure 6: One enemy type could have its vision blocked by walls, so then it won't see the target and have a great view range

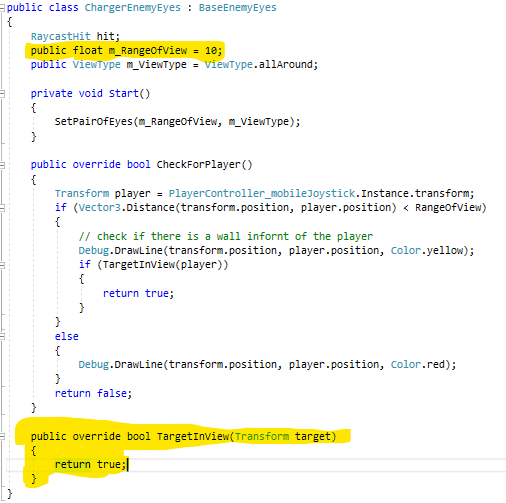


Figure 7: Another type could be that it has smaller vision, but it can see you and attack you through walls

In the latter, both enemies will work correctly without modifying the Enemy AI, as it only works with the abstract classes. This approach allows me to fast create enemies without constantly modifying my enemy AI class.

### Single Responsibility Principle:

As you see in the latter examples, my classes are responsible only for one very specific behavior. A class for the enemy eyes, enemy attacks, game object’s health, etc. From a Design Pattern research ([Single Responsibility principle)](#SingleREsponsibility) and seeing its advantages in my game, I reached the conclusion that this approach has the following benefits:

* **Readability** – Classes are easy to keep between 20-100 lines when they correctly follow SRP.
* **Extensibility** – Small classes are easy to inherit from, modify, or replace.
* **Re-usability** – If your class does one thing and does that thing well, it can do that thing for other parts of your game.

### Observer pattern:

This is a very popular pattern, which I learned by doing a Design Pattern research, and decided I want to learn and implement it.

I my case bellow I have implemented it in my ‘’BaseHealth’’ class so that I every time when the object with the ‘’BaseHealth’’ class attached (player or enemy) is taking damage, all classes which are subscribed to the ‘’TakeDamageEvent’’ are notified and act respectively: reduce the HP Bar, play animation for taking damage, play sound for taking damage. All of that is done so that it obeys the single responsibility question and as well keep the code easy to read.

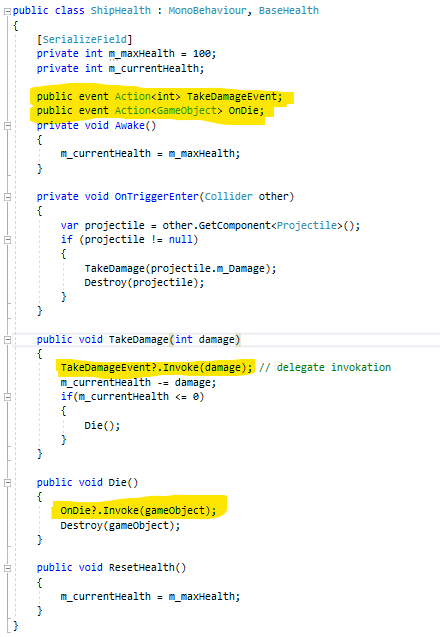


Figure 8: Notifying of all the observers of those events

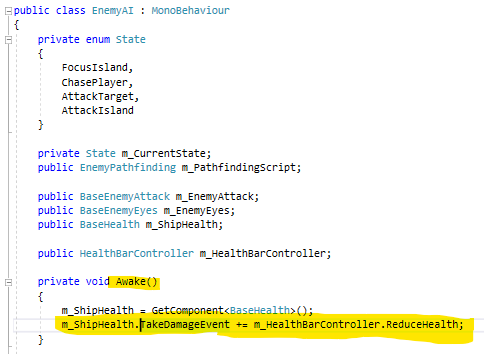


Figure 9: On creation of the enemy, we subscribe to the event, so that when it triggers, we visually reduce the HP bar

## Levels in code:

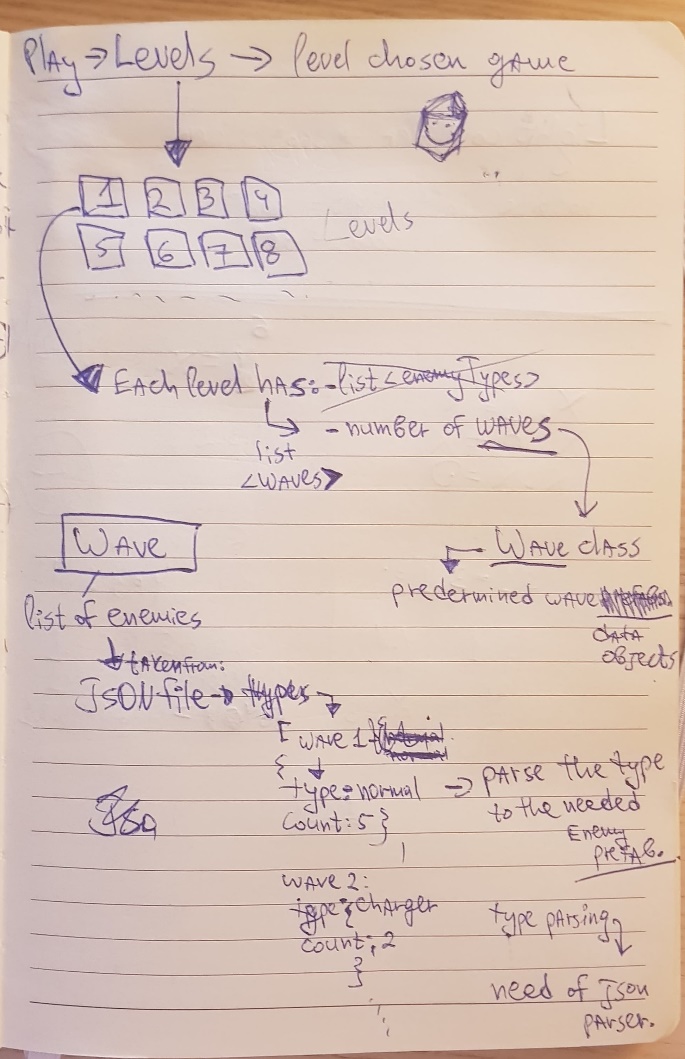


Figure 10: IT Architecture sketching method (Workshop). Design on how I want to start a level + What a level data structure will be.

From my personal experience, working at Blue Giraffe (Game developer), I know that it is crucial to any game to be flexibly and be able to easily modify its levels, so that when you spot on which level people die a lot or beat the level easily, you can change the levels difficulty to suit your needs. By design, I want to have full control over my levels, so that in the future, when I had multiple rounds of playtesting, I can balance the levels effortlessly.

That is why I decided to develop the game in such way, that my levels are read and started from a JSON File ([Figure 10](#figure10)). JSON is an easy to read and learn format known to almost everyone in the gaming industry. Having my levels on a JSON allows a person without technical knowledge to have flexibility and change the levels difficulty, just by changing the JSON values.



Figure 11:Level data in a JSON File



Figure : Classes Level and Wave creation from the JSON file

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9. Unity3D - SOLID Code - Open Closed Principle, Author: Jason Weimann Ref: <https://www.youtube.com/watch?v=wYkzeKghjsI&list=PLB5_EOMkLx_WjcjrsGUXq9wpTib3NCuqg&index=2>
10. Observer Pattern - Game Programming Patterns in Unity & C# , Author: Jason Weinmann Ref: <https://www.youtube.com/watch?v=Yy7Dt2usGy0&t=612s>
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# To be decided (old):

1. ~~What platform do I aim for? It will be either PC or mobile, but I have not decided yet. If it is going to be mobile game, I will be restricted with amount of controls the user can use and I would have to focus on UI design a lot, which I am not sure if I want.~~
2. ~~If the levels of the game will be pre-designed~~ **~~OR~~** ~~they will be auto generated, with some values for difficulty being increased.~~
3. ~~Depending on the chosen platform, if the movement of the player will be “click on the screen to move there” or WASD controls.~~
4. ~~If your player ship is shooting attacking enemies automatically or the player is aiming? If the game is going to be mobile, automatic shooting (Archero) will be easier on the player, but would as well give the feeling that the user has less control over the level and his actions.~~
5. ~~Why control over the level is vital?~~
6. ~~What enemies should be there?~~
7. ~~What defenses should be there?~~
8. ~~What are the advantages and disadvantages of the different player ships (characters)?~~
9. ~~What upgrades there will be outside of the level? (maybe increasing your overall stat for one type of ship)~~
10. ~~Find who is your user. Who likes this genre /type of games? What do those people like? Get good insight of your users.~~
11. ~~Should there be customization to the upgrades of your ship? How customization can be monetized?~~
12. ~~Decide if it will be 3~~~~rd~~ ~~person camera or strategy game camera (top-view/ touch sides to control (League of legends)).~~

# Already decided (old):

1. I will develop a prototype for my economy and monetization of the game for a PC, with the idea that later on I will move the controls and game mechanics to fit a mobile device.
2. The levels will be pre-designed, as I would like to have **full control** on how fast the player will advance, so I can as well know how the player will spend his coins / money.
3. Both of the controls been implemented in the project and will be tested to see which one is liked more and suits the game. If the game is moved to mobile, “click to go” controls are more user-friendly, than little mobile joystick controller on the bottom corner of the screen.
4. Player is aiming and shooting with the mouse. So that the player could have more control over the level.
5. I want to add more depth to the levels, because I want to make them available to being completed in different styles (ways). I want to emphasize how important it is to strategies your moves during a wave. For example, where or if at all you will put your traps, and then defeat the waves of enemies. Not putting traps will be done with the idea to spare the money so that they can convert to coins at the end of the level, but without the traps the level will be harder to compete and the **entrance currency** (**Keys**) will be lost.
6. Will not be discussed as it is out of the scope of the project now.
7. Will not be discussed as it is out of the scope of the project now.
8. Will not be discussed as it is out of the scope of the project now.

9. Upgrades, which will be **essential and** **required** by the next levels if you want to pass it with ease. The user will be drawn more to actually invest real money for diamonds->coins and then upgrades (sold for coins), as the faster you get upgrades the faster you can progress the game. Also upgrading the appearance of your ship will be sold as well.

10. The type of people who will probably try out the game will be: Personas: Strategy/Planning games players, who like medium fast paced games, where they have to plan their decisions but as well take new decisions on the go. However, I will try to create the economy of the game, in such way so that every player has the same behavior in the game, in terms of when to buy stuff or watch Ads. That being said I am not aiming at a specific target of players, but I am aiming at creating a game which will trigger the same emotions in almost every gamer.

11. Yes, with the help of micro-transactions the player will be able to buy new appearances for his ship.

12. As it will be a mobile game, the camera is on a fixed position and you see the player down from the top.

# Balanced Stats and gameplay design(old):

## Player Ship design (WIP):

### Overall stats:

1. Movement speed
2. Attack damage
3. Carriage amount (how many defenses you can place)
4. Health?
5. Shields?

### Carrier ship:

* Medium carriage amount.
* Medium movement speed.
* Medium attack damage

### Attacker:

* Medium movement speed.
* Big attack damage.
* Little carriage amount.

### Defender:

* Little attack damage
* Little/medium speed
* Big carriage amount

# Notes (pictures):

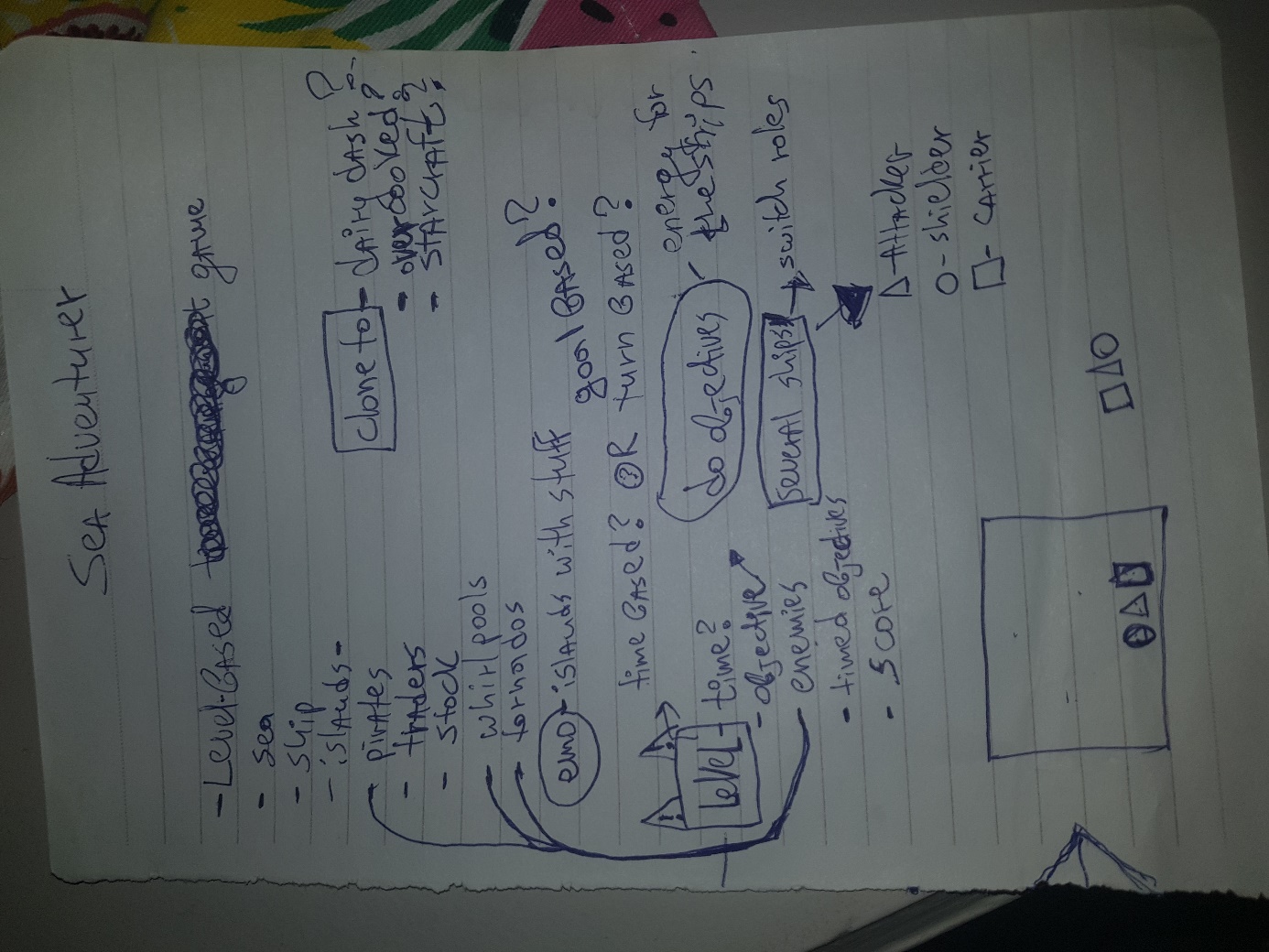
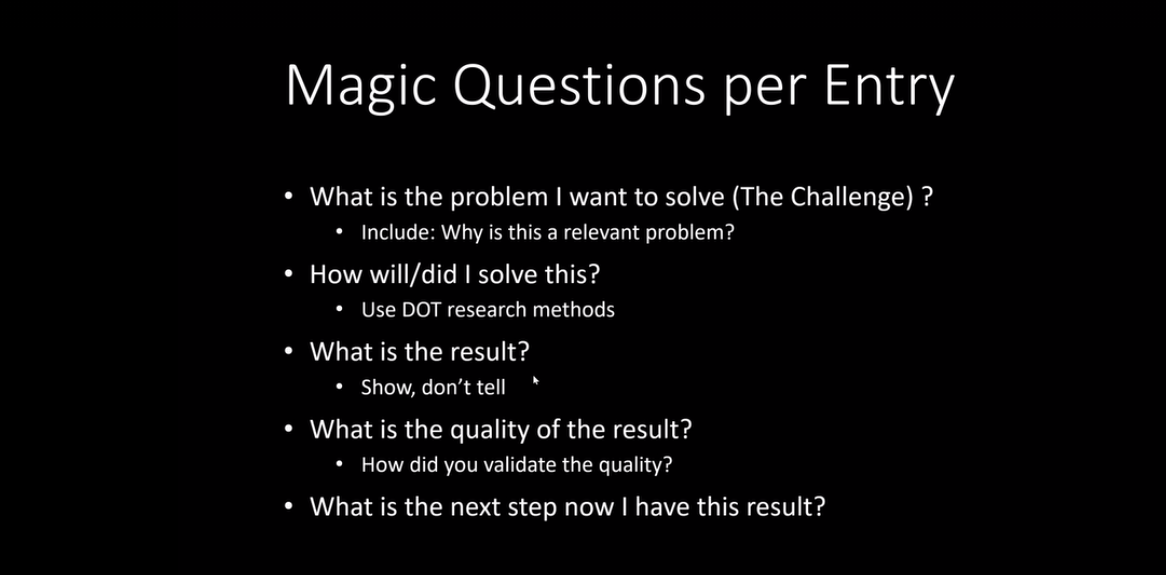


Figure 13- Brainstormed ideas on paper

5 magical questions on the thing you are willing to work.



# Appendix 1- Research on business strategies for monetization within the game industry:

## Overview:

My focus on this project will be to research and design a strategy for monetizing a game. There are several wide-known business models ([business models](#BusinessModels)) for achieving that goal:

**-Microtransaction** is a business model, which represents the following: The game has *no* *cost* to download, but by selling valuable virtual goods, the game studio earns money.

**-Showing Ads** within your game.

-Make the game **paid (premium game)**.

## Micro transactions Strategy:

Successful games (revenue-wise) such as the Supercell games, ‘Fortnite’, ‘Overwatch’, all use Microtransactions to make money ([Sensortower](#Sensortower)).

Usually in games with microtransactions there are 2 types of currencies- Soft and hard currency.

* Soft currency focuses on building the **basic structures** for play and gives progression to the non-payers (people who do not buy the hard currency) with a slower grind.
* Hard currency aims to maintain value by remaining a rarer resource, which can give a better experience to the player, by giving access to exclusive items, gacha, skins and/or focuses on time/grind **reduction** within the game.

However, it is very important to maintain balance between the payer and non-payers. Non-payers should not feel that if they do not buy exclusive items and features, they are less strong/good at the game, in comparison to the people who are paying in the game. If this happens, non-payers are more likely to leave the game and never come back playing it as it feels to be “Pay to win” game.

By separating the hard- from the soft-currency, the designer can be sure that the payable currency (hard currency) is not over-inflated through actions in game and can be controlled with more ease.

However, some games allow conversion between currencies. This is risky as both currencies need proven balance in advance. Otherwise you could destroy value of your premium currency or over-inflate your soft currency, but it can move economy focus on retention (non-payers).

## Ads Strategy:

### Overview:

By showing advertisements to your players, you stop the fun in your game, and this is perceived as an irritating aspect in your game. Therefore, Ads should be used smart by the developer.

### Ad Strategies:

A strategy to make a lot of money out of your game with Ads, is if you ***forcefully*** show the user an Ad every once in a while, (after each 3rd level for example). Although, it seems that this way of the user will see a lot of Ads, this strategy will most possibly work short-term only. A lot of users do not tolerate this spam, no matter how fun the game is and later on they quit the game. However, if the game has a constant flow of new users and the company does not care about how it will be perceived by the public, then this strategy could be the most profitable one.

However, there is another way to integrate Ads within your game. If the goal of the developers is to keep their players playing their game, the Ads should be presented in a delicate way. The user should see what *valuable reward* is waiting for him *after* the Ad and have the *option* to refuse or accept watching the Ad. This strategy is called ‘‘**Rewarded Video Ads’’** and it gives the user the feeling of control over the game and if he runs the Ad it will be because he wanted to, not because the game forced him. Here comes the part where the company should integrate the Ad in such a way that the user would *always (as often as possible) want to watch it.*

## Premium Game Strategy:

### Overview:

If the users want to play your game, they must pay for it first.

### Examples of who is using this strategy:

You need to have a very good advertisement, in order to make the people buy your game, before they can play it. Usually this marketing strategy (Premium games) is picked by triple A studios, which already have many fans, which will buy their game. Those companies also spend a lot money in marketing campaigns to make a fuzz and hype the people for the game they are releasing. Such companies are for example: “EA games”, “Ubisoft”, “Blizzard”, etc.

However, if you are an infamous studio, but your game is very unique and offers something which hasn’t been seen yet, with good advertisement you can get people to buy your product. An example for such games is: “Cuphead”, being unique with their visuals, “Fall guys”, being unique with their multiplayer competitive levels, “Dreams”, being unique with the creativity they give to their user and much more.

### Goal of the strategy:

Using this strategy, the goal of the seller is to give a good run for the player’s money. For example, Player pays 10-60 dollars up front for a game. The value they get out of it is measured in the subsequent time they get out of it.

*“Let’s take a theoretical example of one of these types of games - let’s say I buy the latest Zelda game, and I pay $60. Additionally, let’s say I value 1 hour of entertainment at $1. If I get 60 hours’ worth of entertainment, I “break even”; meaning that I feel like I got my money’s worth. (see graph below) Until then, I’m experiencing a consumer “loss” - but as soon as I reach the break-even point, any additional amount of time that I play that game I experience a consumer “profit”. I’m getting more than I bargained for, which is the ideal state. The gold standard games that we all love would break this barrier and provide us with an abundance of profit.” ([Deconstructor of fun](#premiumGameGraph))*

