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# Design History

This is a brief explanation of the history of this document.

## Version 0.10

Version 0.10 is the first version that will be uploaded to the shared folder. In this version general questions about the game are answered.

* Filled in the General questions

## Version 0.20

Version 0.20 is the first version after the major discussion about the game. Many of the mechanics and functions became more clear.

## Version 0.30

## Version 0.40

## Version 1.00

Game Overview

This is where a general overview is given for the game.

## Philosophy

The game is mostly a learning experience, but we want to make it entertaining and also competitive.

## Common Questions

### What is the game?

Our game must be a modern version of the original arcade game Asteroids. It will take place in the space setting. It will be shown from a top-down view. It’s a 2D shooter game

### Why create this game?

We were given the assignment to recreate the original game, to learn about Unity and the essentials of Scrum.

### What is the purpose of the game?

The purpose of the game is to be a fun and competitive experience for the users.

### Where does the game take place?

The game takes place in space.

### What do I control?

The player controls a spaceship. The spaceship can move forward, rotate left, rotate right and shoot.

### How many characters do I control?

You control just one singular spaceship. As a player you do have multiple lives.

### What can the character do?

As said above, the spaceship can go forward, rotate left, rotate right and shoot. The shoot button can also be held down to burst-fire.

### How many levels are there going to be?

We want to have 3 levels to consider the game complete. We can add more levels after that, if we want.

### Do I score points?

Yes, you score points by shooting asteroids and saucers.

### Are there any obstacles or traps in the game?

The asteroids and saucers are the obstacles.

### What is the main focus?

To get the highest score possible. You do this by thinking ahead and dodging everything. There is some skill involved for sure.

### What’s different?

This game is different because we want to modernize the original game Asteroids. We want to use better assets like visuals, sound and controls. We also want to create our own twist on the original, so this game will have 3 different “game modes”. The first game mode is the Classic mode, the second is ................... and the last game mode is .......

# Feature Set

## General Features

Great visual sprites

Fitting sounds

Three game modes

Competitive high score list

Keyboard and Xbox Controller support

## Game Play

Easy to control

Easy to learn

Difficult to master

Runs smoothly even on slower computers/laptops

Much focus and thinking ahead

# The Game World

## Overview

In the game the player uses a spaceship to traverse space. The background can have many different space-themed objects, like stars, planets and many different colors. We want the asteroids to have different sprites, so you won’t see the same asteroid the whole time.

## The Physical World

### Key Locations

The game place in space. The location (background) will change each level.

### Travel

The player travels through space by thrusting forward.

### Scale

The scale of the game is very exaggerated. Big asteroids are huge compared to the player’s spaceship. A small asteroid will be slightly smaller than the spaceship.

### Objects

Asteroids are the objects from this game. Shooting these will give you points, but also create more asteroids if you shot a big or medium asteroid.

### Time

...

**Rendering System**

### Overview

Give an overview of how your game will be rendered and then go into detail in the following paragraphs.

### 2D/3D Rendering

We use Unity for this game. We will use 2D sprites for the game.

## Camera

### Overview

The camera is fixed on the scene and will show the player from the top-down perspective.

## Game Engine

### Overview

The Game Engine we use is a 3D/2D engine. It uses sprites. The code is written in C#.

### Game Engine Detail

The game engine will keep track of the player’s spaceship, asteroids, saucers and bullets. It will spawn the objects and check the collision.

### Collision Detection

The Collisions Detection we need are for the edges of the map – every object (spaceship, asteroids, saucers, bullets), spaceship – asteroids, saucers and saucers’ bullets, spaceship’s bullets – asteroids and saucers.

Objects that go of the map, will continue appear on the other side of the map. If an object goes of the map in the top left corner, then it will appear in the bottom left corner.

(add image)

Spaceship – asteroids, saucers and saucers’ bullets collision is needed. When the spaceship hits a asteroid, the spaceship will break and lose a life. This will also break the asteroid.

When the spaceship hits a saucer, the spaceship will break and lose a life. This will also break the saucer.

When the spaceship hits a saucers’ bullet, the spaceship will break and lose a life. The bullet will disappear/despawn.

Spaceship’s bullets – asteroids and saucers

This is need to give the bullets fired by the player some function.

If a bullet hits an asteroid or a saucer, then the bullet will disappear/despawn. The asteroid will break and depending on the size, create more asteroids.

The saucer will be destroyed and disappear/despawn.

## Lighting Models

### Overview

# The World Layout

## Overview

(image level)

## World Layout Detail

The levels are very simple and open. The levels will be filled with random asteroids, that you will have to shoot. The edges of the map will transfer objects to the other side of the level.

# Game Characters

## Overview

The only characters in this game are the spaceship and the saucers.

## Enemies

The asteroids and saucers can be considered enemies in this game. The asteroids have different sizes and also different sprites for each size. The saucers has one sprite, that is from a top down view.

**Concept Art**

**(images from asteroids, spaceship and saucers)**

# User Interface

## Overview

In-game the player will see the current level they are on, current score and the lives they have.

The menu interface is a simple menu, that you can control with the movement buttons.

## User Interface Detail #1

Every time the player finishes a level, a text will be displayed, signaling that the level is completed and the next level is starting.

## User Interface Detail #2

---

# Weapons

## Overview

We only have one weapon in our Classic game mode. This weapon is your spaceship’s gun.

## Weapons Details

Your spaceship’s gun has 2 different fires, single bullet and burst-fire.

The single bullet has a low cooldown, so it can be fired quickly. The burst-fire method shoots 3 bullets right after each other. This does however have a longer cooldown, so you can’t fire as often.

The bullets fired despawn after hitting an asteroid or a saucer or after traveling for about 1 second. The bullets have a constant traveling speed.

Each bullet does the same amount of damage.

# Musical Scores and Sound Effects

## Overview

## Red Book Audio

We are not going to use Red Book Audio. We are going to use Unity’s audio to play sounds.

## Sound Design

We will use online assets and sounds we found ourselves. Sounds like shooting and the breaking of objects.

## Music Play List

We won’t be using any real songs. We will be using soundtracks and sounds.

# Single-Player Game

## Overview

In the Classic mode the player will control a spaceship in space. The player has to destroy the oncoming asteroids and aggressive saucers. The main objective is getting the highest score by destroying asteroids and surviving

## Single Player Game Detail #1

## Story

The original Asteroids didn’t have a story, so our Asteroids will also not have any story elements.

## Hours of Game play

The Classic mode features a level system. Every level gets harder and harder. The length of the Classic mode will be an average of 10 minutes, from start to Game Over. This length varies for each player and how they perform.

## Victory Conditions

Asteroids is a game that you can only win by getting the highest score from everyone else.

# “The First Ideas Appendix”

In this appendix you will find our very first concept for this game. It is just us brainstorming about what we wanted to see happening and us thinking about the story.

# “In or Out Appendix”

In this appendix you will find an overview of the things we got into the game and things that had to be left out due to time or technical constraints.

# “Who Did What?”

This will be an overview of who did what in the game.

# The First Ideas Document

## General Setup:

* Players: one player, spaceship, shooting, high scores
* Premises: the player has to shoot asteroids to gain points and continue to the next level.
* Obstacles: asteroids and saucers.
* Objective: get as many points as possible to get the highest score on the highscore list by shooting asteroids.
* Boundaries: The map-space, as the edges of the map are actually looping objects to the other side of the map. The map is essentially a sphere.
* Rules: The player has 3 lives, but can gain more lives by getting 10000 points. Shooting asteroids and saucers gives you points. When there are no more obstacles on the screen, the player goes to the next level.
* Other: There will be a high score menu, that can be seen after the game over screen and from the title screen. There will also be an Option menu where you can change settings like resolution, Vsync and controls.

## Plotline:

There is no plot.

## Storyline:

There is no story.

## Bonus idea:

Multiple game modes. A game mode could be our own twist on the game.

# In or Out Appendix

In this appendix we will describe the things that made it in to the game and things that we had to leave out or skip.

## In the game

* Spaceship
* Shooting
* Movement
* Rotate

## Not in the Game

* 3D World
* VR Functionality
* AR Functionality
* Multiplayer mode
* Mobile Application

# Who Did What?

**Iwan van der Bruggen**

**Max Bogaers**

**Roel Mast**

**Armin Fahim**

**Duncan Martens**

**Wael Al Rabia**