EXAM – DESIGN AND PROGRAMMING FOR VIDEOGAMES

Spring-Summer 2018

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Time: 90 minutes

Question 1 – Player's Mind	8 pts	
Question 2 – Story	10 pts	
Question 3 – Balancing	12 pts	
Question 4 – Elemental Tetrad	10 pts	
Question 5 – Particle Systems	10 pts	
Question 6 – User Interface	10 pts	
Total	**60 pts**	

Grade

Question 1 – Player's Mind

The game designer should take advantage of the player's mental abilities. For each ability:

a. Explain in your own words what the ability is.
b. Give an example that clearly shows the advantage of considering it.

Modeling

a. Because reality is really complex our mind is simplifying it by abstracting models. Also games are models for reality such that a player's mind should be able to integrate within the games reality.

b. By considering the modeling of a player's mind we can predict how the player is observing the model of the game's reality and also can predict how the experience of a player towards the game environment might be.

Focus

a. Because in our reality there are many different things someone can concentrate on, we are able to focus on one thing and filter out not interesting noise.

b. For the game development it is an advantage to consider the focus, because we need to find a good balance between anxiety and boredom throughout the playthrough such that the game stays interesting and the player is not focusing on the "noise" around him, but on the game.

Empathy

a. Empathy describes the ability to project yourself into the places of others.

b. It is useful to consider empathy because the player can be made part of the story and he might feel the same as the playable character which increases the immersive experience of said player.

Imagination

a. Imagination is the ability to complete incomplete information.

b. Imagination can be useful because we need less ressources to make the player understand the story, because the player can complete the information given by the developer to create a complete story of his own.

/ 8 points

Question 2 – Story

1) Give the two most commonly used manners of storytelling.

   a. The string of pearls

   b. The story machine

2) Describe them in your own words. You can use drawings or examples.

   a. The string of pearls design describes a mostly linear storytelling which is divided into sections of text communication and cutscenes and sections of free movement and control.

   b. A story machine is using the fact that a story is a sequence of related events. A game using this kind of storytelling generates many of these interesting events such that a player is stimulated to tell others about his experience with the game and what happened.

3) Choose and give 4 tricks useful for making stories involving and interesting. Explain the tricks with a short sentence (use can also give an example).

a. The player has a goal but obstacles keep him from reaching it. When overcoming such obstacles conflicts can arise which can lead to unpredictable results.

b. Because the game world is simpler than the reality the player feels more powerful and therefore might be in a state of transcendence.

c. The story should be consistent because inconsistency might break the reality of the world. Therefore the developer should define a set of rules which are respected in any case, for example if an battle axe can be put in the inventory, also a small apple should be able to be placed in it as well.

d. As a game developer we can use cliches to create a feeling of familiarity, but the usage of them should be combined with caution because a common criticism is that they are mostly overused.

/ 10 points

Question 3 – Balancing

You have been hired as a game designer to create a strategy game, where the player is part of a group of 4 cavemen. His goal is to help the small tribe to survive. Briefly analyse each balancing type in the context of this game (don't hesitate to invent examples):

Fairness

My game is a strategy game for 4 players. Each of them controls a caveman, which has a special skill (e.g. distance attacks, stealth movement, healer, walls constructor). Each skill influences the gameplay and stimulates players to change the character and the manner to enter the game. The gameplay is asymmetrical, because each player can choose how to play the game to his/her preferences. But in the end everybody is working on the same task to help and survive within the community.

Meaningful choices

The caveman have a limited inventory, where they can put food, weapons, special objects, etc. The limited amount of inventory space forces the player to choose which items one should take into a battle to maximize the probability to achieve the goal of winning. Also many different strategies with many different equipments occur what makes the game more interesting and more diverse.

Competition VS Cooperation

The players have to collaborate to defeat the end boss, but before they can farm equipment from easier enemies to be better prepared for the battle and to deal more damage. The more damage someone makes against the end boss the more experience he/she gets and the more likely rare drops will occur which will introduce a kind of competition to the game.

Rewards

When defeating the end boss rarer drops occur than when defeating his minions which have better stats than the common equipment the player got in the beginning.

Simple VS Complex

It is possible to get equipment in many different ways. For example some can work in the mines to get ressources such that he is able to smith armor or weapons himself or someone can defeat enemies and minions to get a drop. This creates complexity because as a smith the first armor the player makes might be not as strong as the one's you would drop but the more the player is smithing the better the armor or weapons get.

Detail VS Imagination

Minor details such like gathering food can be told but the player does not need to take part of it and it is up to the player's imagination how the food like berries are gathered. But when the tribe is going on a hunt the player can take part in it and may change the outcome of the hunt as well.

/ 12 points

Question 4 – Elemental Tetrad

You are involved in the development of a **stealth** videogame for PlayStation 4 and Xbox One, where the player is a monster and his goal is to survive while hunters are seeking him. Your task is to invent the concept of the videogame.

Invent the concept and analyse it by taking into the account the elemental tetrad.

1. Aestethics
   [write here the name of the tetrad's element]

Analyse your concept with respect to the tetrad's element:

While the hunters have not discovered a dark, mysterious theme is playing in the background. The world feels dark and mysterious as well which is enhanced by taking place in the twilight zone. When discovered by the hunters the music gets more hectic such that the players heartbeat rises and the stress level increases.

2. Mechanics
   [write here the name of the tetrad's element]

Analyse your concept with respect to the tetrad's element:

Takes place in a 3 dimensional world, most likely a forrested area. Then there are hunters which are in search for the player. It is possible to execute sneak attacks on the hunters while you were not discovered by them. The player is able to sneak (noiseless), walk (quite), and run (loud) to escape the hunters or to prepare a sneak attack. The player needs memory and observation skilly because he needs to know where the hunters are.

3. Story……..
[write here the name of the tetrad's element]

Analyse your concept with respect to the tetrad's element:

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4. Technology……..
[write here the name of the tetrad's element]

Analyse your concept with respect to the tetrad's element:

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/ 10 points

Question 5 – Particle Systems

1) Explain in your own words what a particle system is.

A particle system is used to simulate different effects like fire, rain, snow etc, to create a more immersive game environment. Every particle has a texture, size, velocity, and lifetime.

2) What's the difference between **local** and **global** particle systems?

In a local particle system each particle is independent from one another. In a global particle system the various particles can interact and react to each other.

In videogames, which category (local or global) is the most frequently used?

Local particle systems are most frequently used.

Why?

A global particle system needs much more computation time because the collisions and their effects must be computed in real time.

3) Particle systems are composed of the **system** (or engine) and **particles**. Give their characteristics:

System

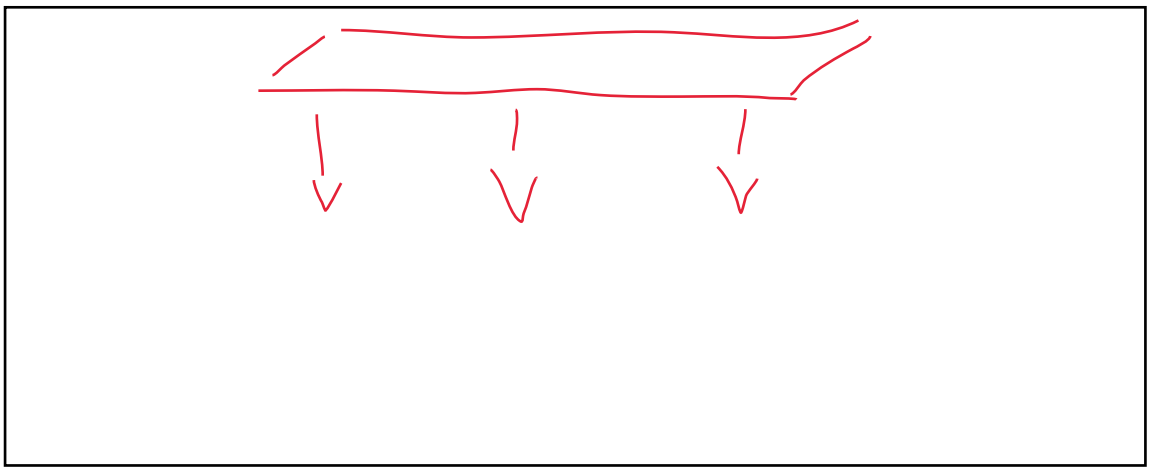
A system produces the particles according to their predefined characteristics. The system is responsible for how many particles are generated and in which time intervals they are emitted.

Particles

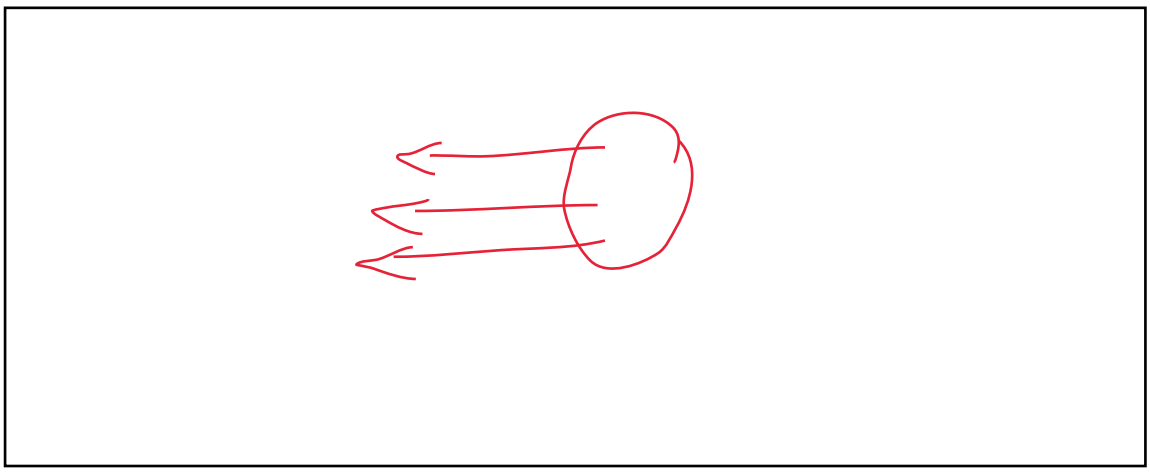
A particle is an object which has a velocity, texture, size, and lifetime, which are predefined by the system.

4) Draw the shape of an emitter for simulating:

Snow



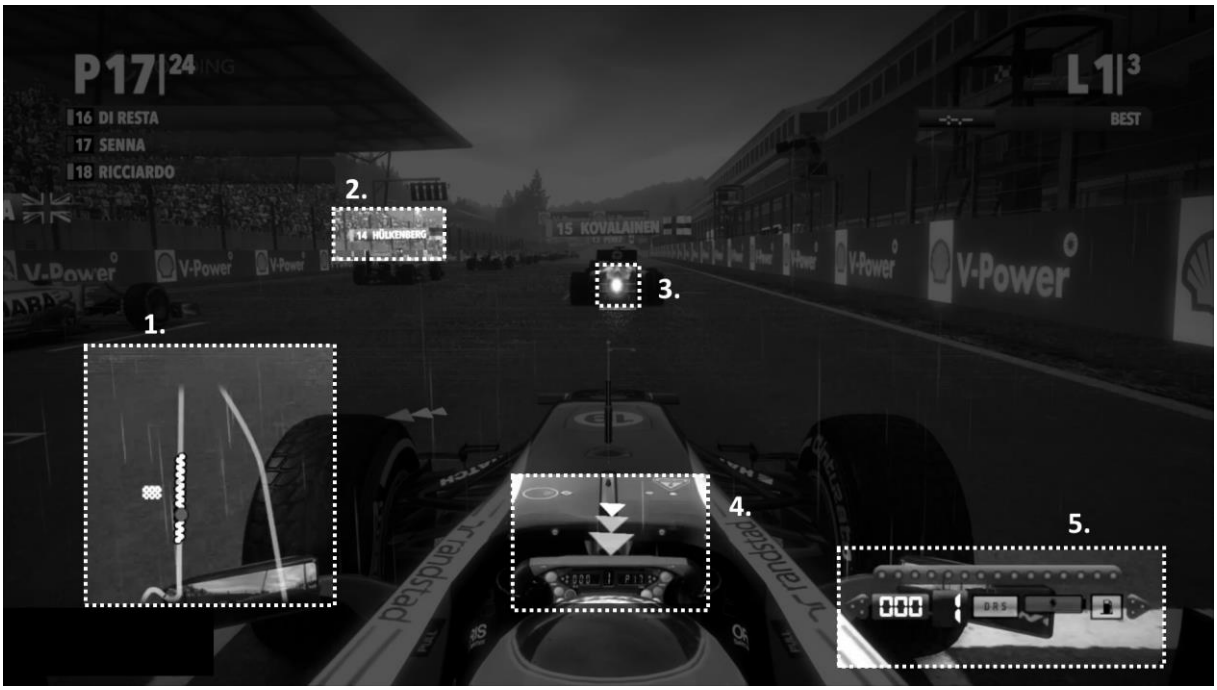
The reactor of an airplane



/ 10 points

Question 6 – User Interface

Given the following image:



a. Define the category of each UI element in respect of the **Fagerholt & Lorentzon's** model.
b. Explain why.

1.

a. non-diegetic representation

b. A minimap is not part real game world but only extra information for the player. It cannot be interacted with the character in the game itself. It is only part of the UI HUD which is not part of the 3D game space.

2.

a. spatial representation

b. The name of the competitive driver is part of the 3D game space because it is displayed above the contrahent's car. But the ingame character cannot interact with this information and is only displayed to give the player more information.

3.

a. diegetic representation

b. The light on the heck of a formula 1 car is existing in the fictional game world and is also visualized in the 3D game space.

4.

a. spatial representation

b. The arrows imply where a car which is following you currently is and how far away it is. It is not part of the fictional game world but the arrow are visualized in the 3D game space to give the player an imagination on where exactly the components car is.

5.

a. meta representation

b. The information display on the bottom right corner is also displayed on the steering wheel of the car. For better visibility it is enlargened to give the player the information he needs to drive the car. As the minimap it is directly displayed on the HUD and therefore not part of the 3D game space.

/ 10 points