

# Assignment 1

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## Excercise 1 Virtual Reality, (*4 Credits*)

- a) Try to define the following in your own words. Use no more than 2 sentences per concept: **Virtual Reality, Virtual Environment, Immersion, Presence, Fidelity and Suspension of Disbelief.**
- **Virtual Reality** It is made with three-dimensional assets to imitate our reality by using I/O devices to trick the human brain by rendering in real-time, simulating in real-time, interacting in real-time, and stimulating some senses consistently. Basically, it can be said that the idea of Virtual Reality is virtualizing the real environment.
  - **Virtual Environment** A virtual environment represents an environment which, unlike a real environment, can be both a real and a fictional environment. It is a place made with three-dimensional assets and contains three-dimensional objects and people. People can interact with objects or communicate with other avatars that can be AI or real-person there.
  - **Immersion** It is a perception that users think virtual reality is the real world because their some senses are stimulated consistently.
  - **Presence** It is an illusion and feeling that users know, however, they feel they are there or experience something that is real for them. The illusion can be place or plausibility.
  - **Fidelity** It is related to how much a virtual reality imitates real world.
  - **Suspension of Disbelief** It means that although users experience something in virtual reality and they are aware that this is not real, they feel what they experience is real.
- b) Imagine the following scenario: You are standing on a glass floor, from beneath that glass floor avirtual skyscraper is being projected, so that you can see your own body standing on the virtual building. Is that AR or VR? Provide some arguments for your position.

It is AR, because the real environment is extended by a virtual part and the virtual part is exclusively visual and no direct interaction is possible. In addition, the rest of the environment is real.

- c) Give three possible applications of VR. Can you find some examples where VR is not being applied, but could be?
1. Remote Controlling Robot and go around in the environment the robot create with real Data.

2. VR can be used in historical or science lesson to simulate events. For example, student can experience what happens if they mix two different matters in chemistry.
3. VR can be used in driving license lesson. There would be different situations that users will face in the future and they will have experience by using VR.

## **Excercise 2   Presence, (4 Credits)**

Think about a possible VR program or game that can simulate different levels of presence.

### **a)   Describe the concept of your demo.**

We want to create a horror game. The game will be in a Office. User plays an Office worker who wants to go to home. The worker has some mental problem and use pills but this time s/he did not take her/his pills. S/he sees some paranormal events.

### **b)   What would be necessary to provide enough immersion for the demo to work?**

Noises, adjusting light and asset placement would be necessary to provide enough immersion for the demo to work.

### **c)   What would have to be adjusted to change the level of presence?**

Sounds, effects like decay and light would have to be adjusted to change the level of presence.

### **d)   How could you measure the presence?**

The presence could measure how user reacts when s/he faces with jump scares or with measuring the pulse of the Participant. Also we're planning to create a survey at the end of the game.

## **Excercise 3   Unreal editor, (4 Credits)**

In this exercise, the goal is to create an actor constructed from different parts arranged in a scene graph.

f) Draw the scene graph of your actor by hand or in a computer program.

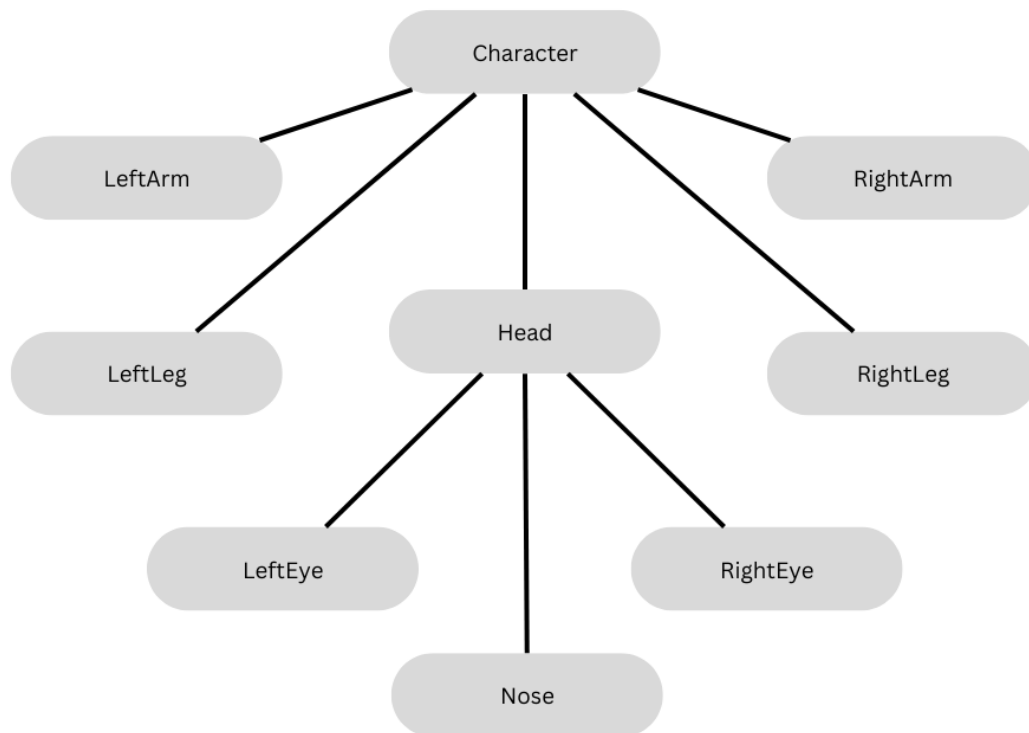


Figure 1: Scene Graph