Prof. G. Zachmann
C. Schröder (schroeder.c@cs.uni-bremen.de)

University of Bremen
School of Computer Science
CGVR Group
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Assignment on Virtual Reality and Physically-Based Simulation - Sheet 1

Due Date 04. 11. 2015

Exercise 1 (Virtual Reality, *4 Credits*)

a) Try to define the following in your own words: "Virtual Reality", "Virtual Environment", "Immersion", "Presence", "Fidelity" and "Suspension of Disbelief "

b) Imagine the following scenario: You are standing on a glass floor, from beneath that glass floor a virtual 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.

c) Give some possible applications of VR. Can you find some examples where VR is not being applied, but could be?

Exercise 2 (Presence, *4 Credits*)

a) Form groups of four people and **either** try out the demo "Titan of Space" **and** the Unreal 4 demo Showdown on Oculus Rift 2 device **or** watch a movie in the cinema theatre and answer the following questions in table 1. Each question corresponds to a factor thought to be correlated with presence, such as, for example: 'How much were you able to control events?' and from scale of 1 to 7.

b) Plot box-and-whisker plots (using simple medians) for the data obtained from your group for each of the above questions and for the total score obtained.

Hint: You can create box-and-whisker plots, for instance, with:

R (ggplot2) `http://docs.ggplot2.org/current/geom_boxplot.html`

Excel `http://support.microsoft.com/kb/155130`

Gnuplot `http://gnuplot.sourceforge.net/demo/candlesticks.html`

Exercise 3 (Unreal Engine, *0 Credits*)

a) Register an account and download the Unreal Engine 4 at `https://www.unrealengine.com`.

b) Make sure you have at least 15GB of free space on your hard drive. Install the Launcher and let it download the engine version 4.9. You can see the progress in the *Library* tab of the launcher.

c) Download and install Microsoft Visual Studio 2013.

Questions	"Titan of Space" Demo	"Showdown" Demo	Movie
To what extent were there times during the experience when the **x** was a reality for you? 1 = At no time & 7 = Almost all the time.			
Please rate your sense of being in the virtual spacecraft, on the following scale from 1 to 7, where 7 represents your normal experience of being in a place.			
When you think back about your experience, do you think of the **x** as more as images that you saw, or more as somewhere that you visited? 1 = Images that I saw & 7 = Somewhere that I visited.			
During the time of the experience, did you often think to yourself that you were actually in the **x**? 1 = Not very often & 7 = Very much so.			

Table 1: Questions Table. **x** is either "Titan of Space" Demo or "Lava" Demo or Movie