Tutorial Assignments

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1 Description

In this term we want to realize a virtual reality Escape the Room game. If you are unfamiliar with this concept, please check the description in Wikipedia: `https://en.wikipedia.org/wiki/Escape_the_room`.

In sum, an Escape Room is a scenario in which one or more players find themselves in an enclosed room. The door is locked and can only be opened by solving a puzzle. The more advanced Escape Rooms embed the puzzle in a story and often it is in fact a series of puzzles that finally provide the required information to open the door. Puzzles can be of any kind, logical ones or mechanical/physical ones, just like in good old fashioned adventure games.

To participate in the exam, you need to pass the exercises. To do so, **you will need to achieve 60 points**. The distribution of points can be seen below.

1.1 Your Task

In this term, your task is to design, model and implement a single room of an escape the room game. The requirements you have to fulfill to meet the goals of the assignment are specified in the Section Requirements.

The task is an individual task, we expect one escape room per participant and each escape room will be evaluated individually. However, we suggest that you join in teams to create a coherent study or theme spreading over your individual escape rooms. After all, this will provide a more coherent and immersive experience for the users. And, in the end, working in teams may be more fun.

2 Requirements

There are some requirements your creation has to meet. Please read all sections, as the requirements for later parts may have some implications for the concept of your puzzles:

2.1 Part 1: Concept - 10 Points

- The concept for your escape room has to consist of multiple puzzle mechanics
- There has to be at least one physics related puzzle mechanic, i.e. something colliding with something, achieving enough force on an object to do something with it etc.
- The puzzles have to make the user interact with at least 5 different objects, i.e. grasping them, manipulating them etc.
- The puzzle should be challenging and the time required for solving the puzzle should be no less than 30 seconds. There should be no mechanics that stretch the time for solving excessively.
- Submission of a PDF (english or german) that contains a description of the concept of your Escape Room (dates and path below). Keep the description short, but precise. How do the puzzles work? What exactly has to be done to solve the puzzles? Which objects are required to implement the puzzles?

2.2 Part 2: Modeling - 45 Points

- The Escape Room should have a standard size of 2m x 3m (and 2.4m high) so that it fits into the walking space covered by a room-scale tracked HMD, such as the HTC Vive. This will reduce efforts later, as we will not necessarily have to implement methods for navigation. At the same time, this leaves the controllers fully available for implementing puzzle specific controls. A basic room model is provided and can be found in the network volume in */vol/imlab/Lehre/2018_WS/room_basic/room.blend*
- The Escape Room should exhibit a coherent design theme, which means that the graphical style should not differ much between objects.
- The Escape Room has to be properly illuminated
- It is required that you have modeled all objects on your own. In particular:
  - You are required to provide at least 3 different models of higher complexity. As a rule of thumb, your tutor should not be able to recreate that model in less than 5 minutes. It should usually make use of multiple modifiers, have a good UV map, reasonable materials and individual characteristics.
  - Your room should at least include 20 unique objects (excluding the objects from the given room), not counting multiple instances of virtually the same object as multiple objects.
  - No model should have more than 100k vertices
  - Each model should have materials and textures assigned to them. Basic single colored objects are not allowed, except for special cases like glass, ceramics etc.
  - At least one object should be composed out of several objects which are tightly integrated, but movable. Examples are a chest of drawer, a puppet or a machinery.
- 5-minute slide-presentation of the Escape Room models (especially the ones of higher complexity) and the concept to solve the room during the tutorial (dates below). The room should also be prepared for a live demonstration within Blender.
- Submission of your updated models (assembled in Blender) into the network volume (dates and path below). Make sure not to send any .blend1 files with it and to include all textures. All third-party files, modules etc. (except for textures) have to be documented in a readme.txt.

2.3 Part 3: Implementation - 45 Points

- Your Escape Room has to be implemented in Unity3D 2018
- It should make use of a room-scale HMD interface with enabled physics.
- Your Escape Room should run at 90 fps on an HTC Vive using a NVidia GTX1080.
- The room should be reasonably illuminated and your objects should react reasonably to the light.
- The room should provide proper acoustics and actions/events should be supported by proper noises.
- At least one sophisticated animation is required, i.e. consisting of multiple keyframes, a meaningful interpolation etc. This can also be a rigging, spritesheet or particle based animation.
- The user needs to be able to completely solve your Escape Room.
- 5-minute slide-presentation and live demonstration of your functioning Escape Room during the tutorial (dates below).
- Submission of your updated Escape Room into the network volume (dates and path below). Make sure not to include the Library and Temp folders, as well as third party files, like Microsoft Visual Studio project files. Whenever there are two or more assets of the same type, they should be in a conventionally named folder. All third-party files, modules etc. (except for textures) have to be documented in a readme.txt.
- The produced code should be properly commented. A full documentation is not required.

3 Dates

- 11:59 p.m. 02. November 2018 - Submission of the Escape Room concept as a PDF into */vol/imlab/Lehre/2018_WS/Part1/forename_surname.pdf*
- 03.-06. December 2018 - Presentation of your Escape Room (assembled room, no functionality) in the tutorial to get live feedback from your tutor. This refers to the 5-minute slide-presentation listed in 2.2.
- 11:59 p.m. 14. December 2018 - Submission of your updated models as a .zip or .rar archive into */vol/imlab/Lehre/2018_WS/Part2/forename_surname.zip*
- 21.-24. January 2019 - Presentation of your Escape Room (functioning in VR) during the tutorial to get live feedback from your tutor. This refers to the 5-minute slide-presentation listed in 2.3.
- 11:59 p.m. 3. February 2019 - Submission of your updated Escape Room as a .zip or .rar archive into */vol/imlab/Lehre/2018_WS/Part3/forename_surname.zip*
- Before the exam - If you have achieved 60 points with your submissions, you may participate in the written exams. Otherwise, you will receive feedback from your tutor with a list of required/suggested updates. You will then have time until two weeks after the first exam and may participate at the second written exam.
- 20th February, 10 a.m., CITEC Auditorium - First written exam
- Two weeks after that - Final submission of the updated Escape Room
- One week later - Feedback from your tutor, whether you have achieved the 60 points for being allowed for the second written exam
- 27th March, 10 a.m., CITEC Auditorium - Second written exam

4 Changelog

This document will be updated online, when changes like the announcement of the day of the exam are applied. Therefor, we recommend not to download this document but instead check it out for changes regularly. Changes will be listed in the changelog below.

Changelog:

- October 31st:
  - 2.1: Concepts can be in english or german
- November 20th:
  - 2.2: Special cases for single colored objects
  - 2.3: More animation details
- November 25th:
  - 2.2 & 2.3: More details for the submission
  - 3: Clearer reference between the mentionings of presentations
- November 27th:
  - Added date and location for the exams
- January 2nd:
  - Dates of presentation shifted
  - Date of last submission shifted
- January 25th:
  - Date of submission shifted