

Final Report

Prelude

There are four versions of the virtual world. The last three versions are named “*vm1.wrl*”, “*vm2.wrl*”, and “*vm3.wrl*”. Comparing among these last three versions, *vm1.wrl* is less consuming the CPU time due to it has less objects (vehicles). *vm2.wrl* has more vehicles (with PlaneSensor) but vehicles of the same type are tied together via DEF and USE commands. *vm3.wrl* have the same number of vehicles as *vm2.wrl* but each vehicle can be moved separately that is why it demands the CPU time the most.

The first version *vm0.wrl* is without fog and terrain. This version is compatible with the physical world model. The viewer should try them and check which versions the viewer’s computer can run without problem, i.e. having smooth animation and sound, etc.

Remark: *Every unmoving vehicle is equipped with a plane sensor.*

Recommend: *wrl files are under “CAP 6830 Virtual World (SP)” directory.*

This directory should be run directly from a hard drive due to the virtual world’s high demand of CPU time.

The virtual world is created on vrm12 format. The creating tool is vrm1pad. The virtual world is tested under cortona version 3.1 (release 54) from Parallel Graphics.

The world represents an entity relationship (ER) diagram of a health care center – the description is on the last page of this report. The world is comprised of five buildings (entities) and four tower controls (relationships).

The design is influenced by Star Wars "the movies" and my obsession with military style plus the experience from visiting Kennedy Space Center (KSC). My intention is that the building is similar to assembly building of KSC. Each floor of the building itself is an assembly/storage/working place for scientists and engineers to design/fix/improve/ experiment about military vehicles, especially for fighter spaceships.

Patient entity as *Design building* ('P' character is on top of the building).

Doctor entity as *Creating building* ('D' character is on top of the building).

Appointment entity as *Assignment building* ('A' character is on top of the building).

Person entity as *Training building* ('PS' character is on top of the building).

Treatment entity as *Testing building* ('T' character is on top of the building). Each control tower acts as a security control and sounds its siren when there is a security breach or an (air) attack.

Inside the virtual world

The world is starting as a viewer is in a spacecraft floating just outside the front of the base. The viewer can navigate freely, however there are a lot of viewpoints that he or she can use to navigate the world. For describing the world, we will follow each viewpoint.

First start with viewpoint named "*Start*":

The viewer is positioning outside the front of the base. The viewer will hear Star Wars theme as an ambient music – its intensity is set at 0.1 – as he or she navigates the world.

Next viewpoint is named "*Patient Entity*":

The viewer is above the top of *Design Building*. He or she can move the mouse over the 'P' character and a billboard will show up with information attributes of "*Patient entity*".

Then next viewpoint is "*Appointment Entity*":

The viewer is above the top of *Assignment Building*. Again he or she can move the mouse over the 'A' character and a billboard will show up with information attributes of "*Appointment entity*".

The next three viewpoints act the same way as the above two viewpoints. Their names are "*Doctor Entity*", "*Person Entity*", and "*Treatment Entity*" respectively.

Then "*at the gate of the A building*" view point shows the first level entrance of the "*Assignment Building*".

There are three gates at the first level of each building. The gates are opening and closing according to a proximity sensor. While the gate is opening, the viewer will hear Top Gun theme until the gate is closed. When the gate is closing, an effect sound will be played. Each gate is acting the same way, which the sound source is from the center of the gate.

Next three viewpoints are "*sky (highest)*", "*sky (middle)*", and "*sky (lowest)*":

The viewer is right above at the center of the base, which the level of height described inside ellipses. The viewer can try to rotate the ball of control tower. When the ball is moving, it sounds a siren sound to indicate an break in, for example. The closer the viewer is at the ball, the louder the siren when the ball is moving. The position of the ball

actually tells about ERD relationship whether it is optional or mandatory for each direction. Therefore, for returning the original position, the viewer can just click the ball with the mouse without moving the mouse then release the mouse, and the ball will return to its original position.

The next three viewpoints are

"at the gate of the PS building",

"at the entrance of PS building (with wider view angle [68.75 deg])" and

"at the entrance of PS building (with widest view angle [90 deg])" respectively:

They all bring the viewer to the front of the *PS building*, but with different angle of view.

The first one is the default view angle that is 45 degrees.

Then viewpoint named *"outside at ground level"*:

This is just an outside view at ground level.

Then the last viewpoint is *"outside at sky level"*:

This is a nice angle of view. The viewer can see the three guarding x-wings flying above the base.

Warning: *A moving x-wing, also a moving tank, has a bit of loud sound. The viewer can hear the sound clearly when comes close to the vehicle.*

Note1: *VRML files for vehicles are downloaded from www.3dcafe.com, and converted from VRML 1 to VRML 2. Sounds, images, and textures, except a few, are downloaded from the Internet.*

Note2: *There are ten photos of my physical world with some decoration (vehicles) saved in "MyPhysicalWorld" directory.*

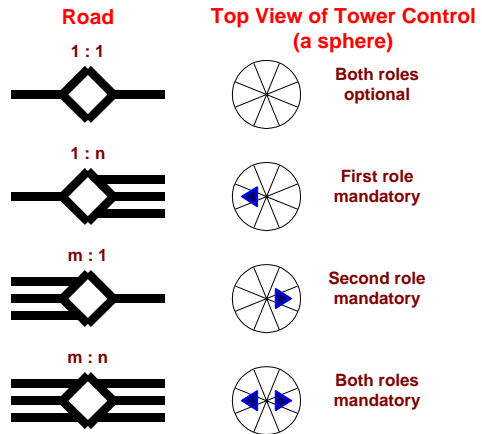
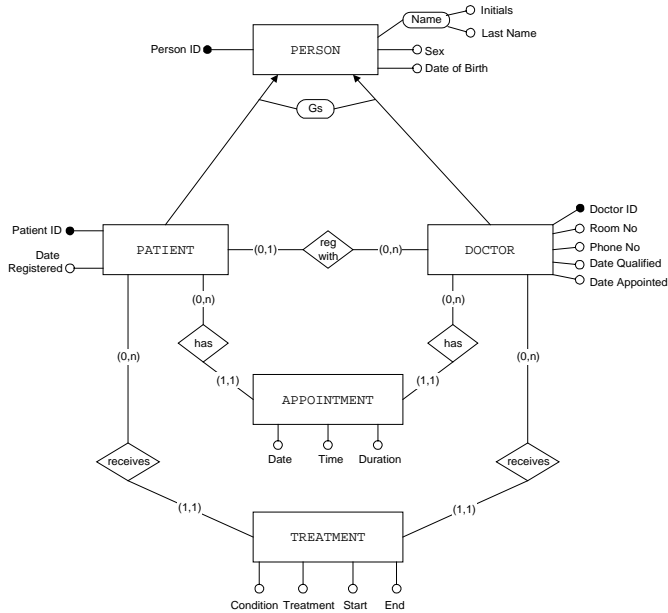
[This report is saved in Documents directory of the CD.](#)

Description

Static Model (Source): ER (Entity Relationship) Diagram

Entity Relationship diagram of a health care center

This ERD is from a lecture of a database class of University of Florida. It shows relationship between patients, doctors, and the system of the health care center. There are five entities: Person, Patient, Doctor, Appointment, and Treatment.



Below is the modified ER and the physical model designed after the modified ER.

