Virtual Children's Museum

Group Members:

❖ **Bette Donahue**
❖ **Daryl Davis**
❖ **Tyreek Edward**
❖ **Emily Mudede**

GOAL AND OBJECTIVES:

The goal of our project is to create a virtual children's museum that gives users the opportunity to explore and play with various objects and games for their entertainment. The museum contains 6 main regions: an outdoor area (including a playground and a playhouse), the lobby, a kid's room containing movie characters and objects, a maze, an obstacle course and a treasure hunting game. Additional objects may be added to the final project before its submission next week time permitting including a car racing game.

LINKS/ TEXTURES/ SENSORS/ LIGHTS:

The project used a variety of textures, lights, sensors, and lights to enhance the users experience as they wonder through the marvels of the children's museum. Below is a listing of such items for each component of the museum:

Outside Area:

- ➢ **Objects:** buildings

- ➢ **Images:** museum exterior

- ➢ **Textures:** see links below

- ➢ **Sensors:** Touch sensors and anchors

- ➢ **Links:** http://www.greatbuildings.com

Lobby and Kid's Room:

- ➢ **Objects:** couches and airplane, statues: Patrick Star, Peter Griffem, Harry Potter's Dobby

- ➢ **Images:** Monsters Inc. and Lion King

- ➢ **Textures:** see links below

- ➢ **Sensors:** Touch sensors, cylinder sensors and anchors

- ➢ **Lights:** Spot and point lights

- ➢ **Links:**

  http://www.luciddreamexplorers.com/images/monsters_inc.jpg

  https://www.buddytv.com/battleimages/usr3385920/3385920_ce2d9c56-40a7-44e1-ab2a-767be1652ddc-circle-of-life---lion-king.jpg

  http://www.3dvalley.com/3d-models/household

Obstacle Course/Treasure Hunting Room:

- **Textures:** 3ds Max 2009

- **Sensors:** Touch sensors, orientation and position interpolators and anchors

- **Lights:** Point and directional lights

Maze:

- **Sensors:** Touch sensors, anchors, and proximity sensors

- **Lights:** Point and directional lights

- **Objects:** Key, Door

Software / Hardware Used:

Software:

- ➢ 3DS Studio Max 2009
- ➢ VRMLPad 2.0
- ➢ MS Paint
- ➢ CosmoPlayer
- ➢ Windows XP

Hardware:

- ➢ Dell Precision T3400 Workstation
- ➢ Core 2 Quad Processor 2.4 GHz
- ➢ 8 GB Ram

MODELING:

Outside Region:

The outside region consists of the background, the main museum building, a playhouse and a play area. The playground has a swing set, multiple slides and a whirl around which all have sensors to provide animation. The playhouse area will have a fountain in its courtyard and both external and internal views. Different camera views of the exterior area will be available to allow the user to move quickly from one region to another. Touch sensors on the doors to both the museum and the playhouse will function as anchors to internal views for the buildings. See links for structures and images used.

Figure: Outside region - museum external, playground and playhouse.

**Figure:** Playground - swing set, slides and whirl around.
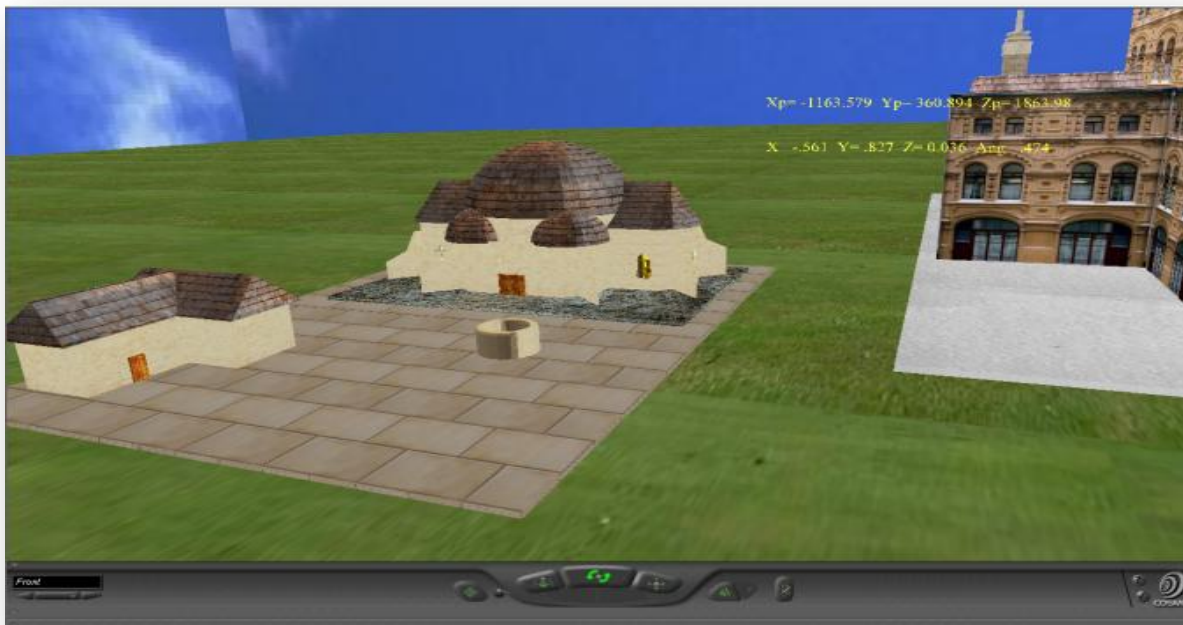
Figure: Playhouse - both external and internal areas with fountain.

Lobby:

The lobby area will contain posters, sitting areas, a front desk a plane and statues. It will be the main connection to all the other rooms in the museum. Anchors will be placed on the various doors to enter the other rooms includes the kid's room, the obstacle course, the treasure hunting game and maze. See links for structures and objects used.


Figure: Lobby - back wall.
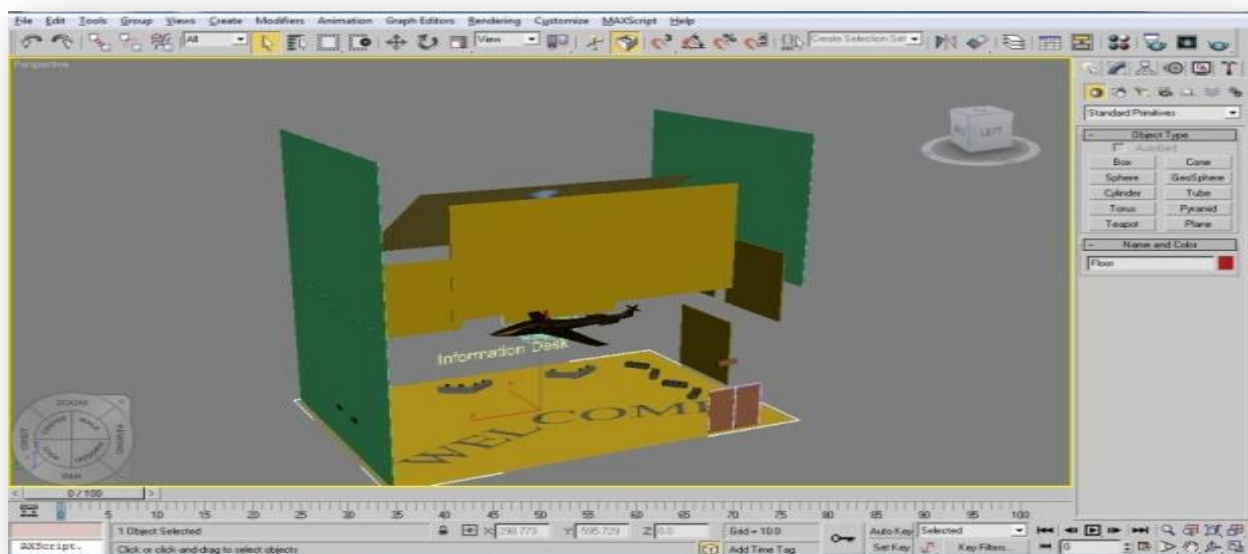

Figure: Lobby - overall view

Kids Room:

This room will features different cartoon characters. You will be able to navigate throughout the room and interact with the pictures and characters in the room. You may be able to click them and get some information about them or even spin them around to get a better view of them. When buttons on the wall are touched the pictures on the wall will change. There will be a cylinder sensor with the statues that will let the avatar rotate the statues for a 360 view.
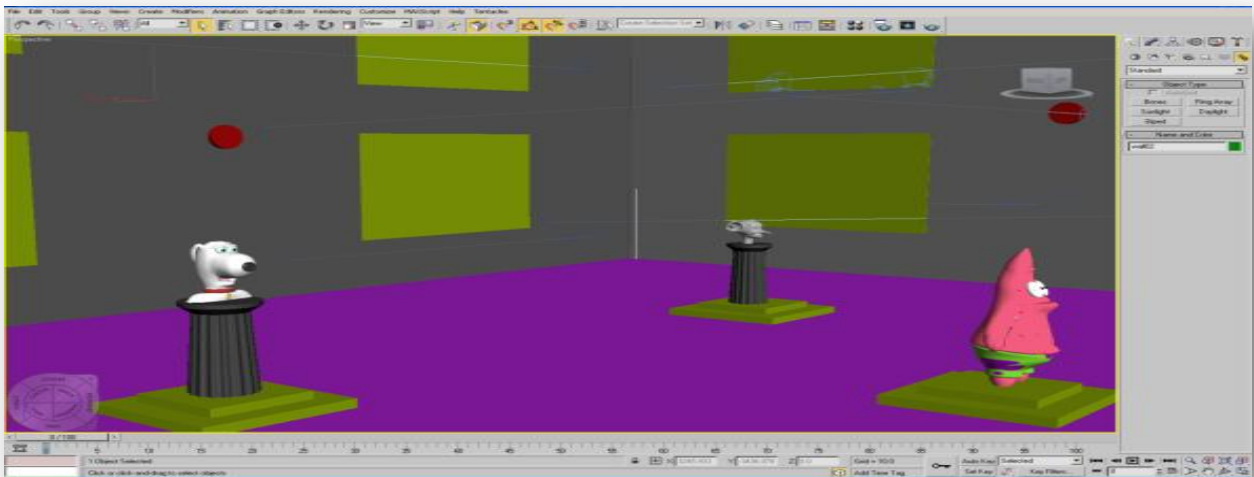

Figure: Kids Room - Statues
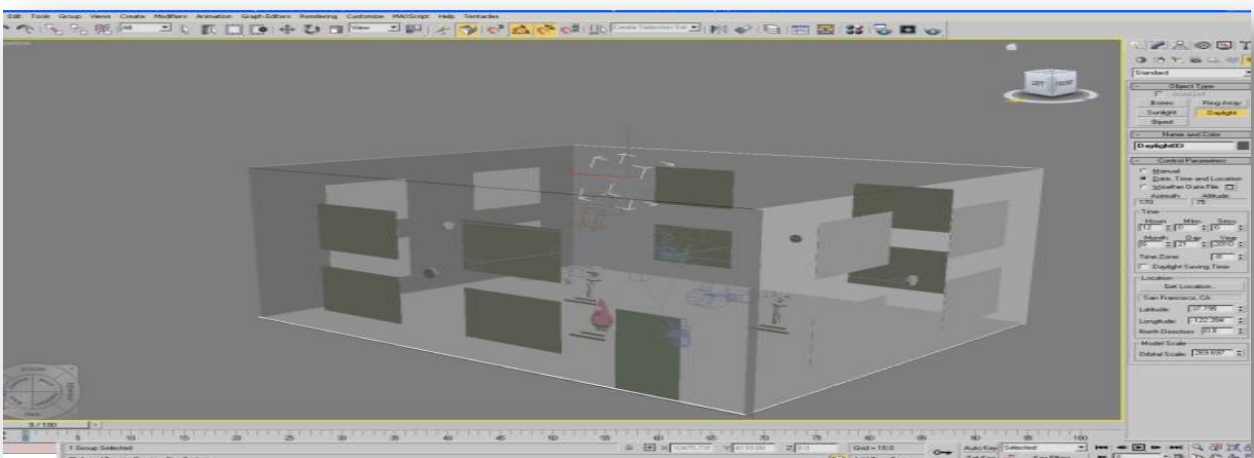
Figure: Kids Room - Overall View

Obstacle Room:

The obstacle room was designed to challenge the users to navigate the various obstacles to explore the room without falling. The obstacles being navigated include moving bridge pieces, spinning rooms and traps from which the user cannot escape. The user will be given the option of retrying the obstacle course as many times as he wishes or he can leave this room to enter the treasure game or the lobby.
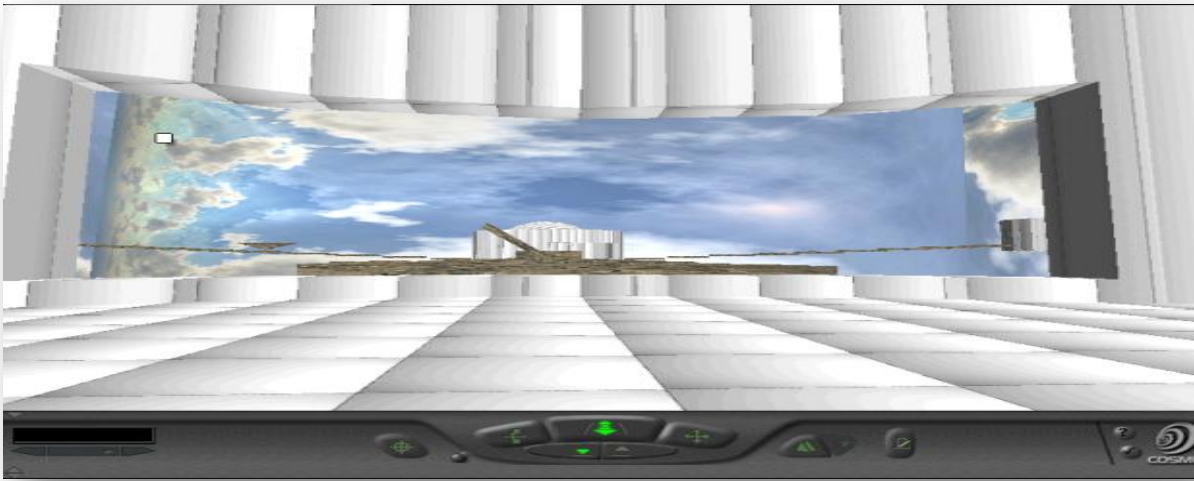
Figure: Obstacle Course - Entrance, floating path, and rotating steps, rooms and sphere.

Figure: Obstacle Course - Overall view.

Treasure Hunting Game:

The treasure hunt game allows the user to explore different areas in this room using the different doors on the staircase. The user can also exit this region of the room by using the doorways in the spinning wall.
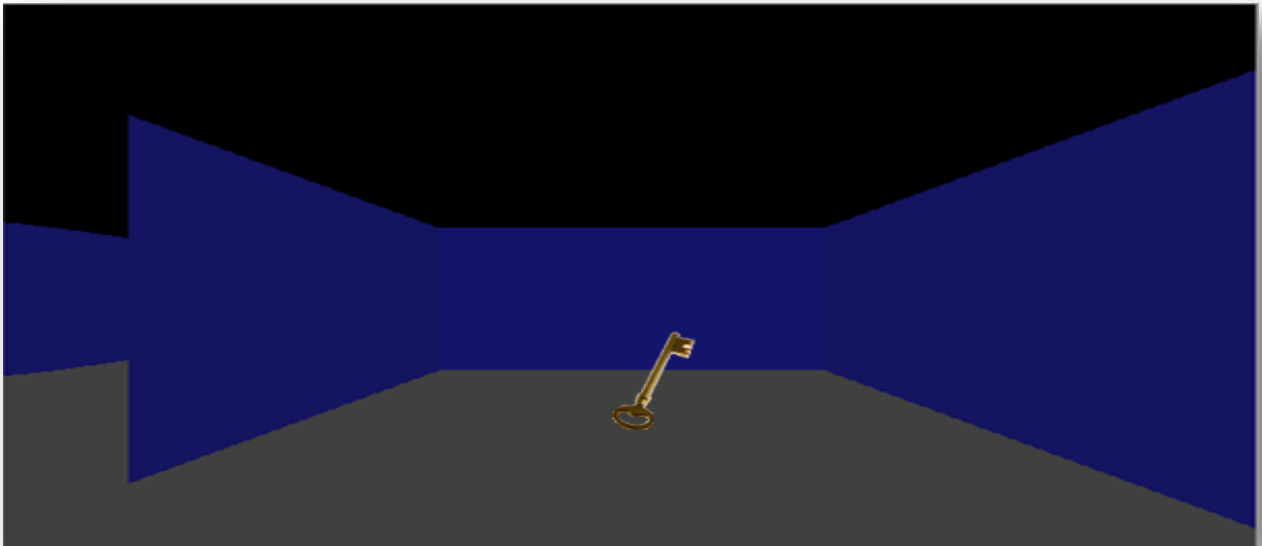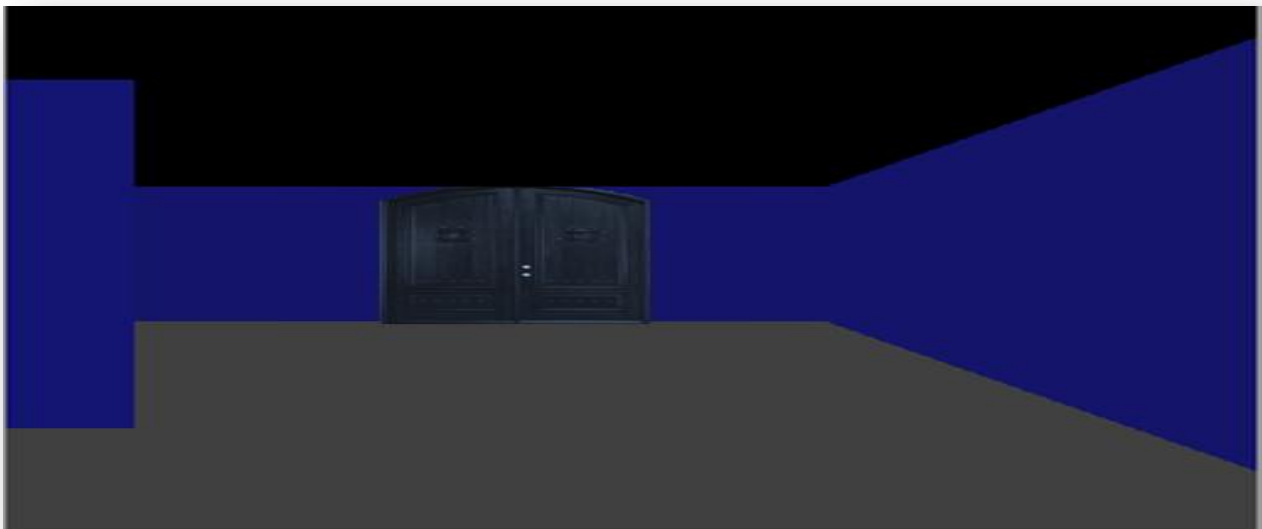

Figure: Treasure Hunting Game - Stairway

Figure: Treasure Hunting Game - Stairway and Doorway

3D Maze:

The 3D maze is comprised of a series of strategically placed boxes that create the illusion of hallways. The user must navigate the numerous hallways in order to find the hidden key that unlocks the doors to get back to the museum. The doors will only function after the key has been located and collected.



Figure: Maze - Hidden Key


Figure: Maze - Hidden Door

PROBLEMS /FUTURE IMPROVEMENTS:

- ➢ **Lobby/Kid's Room:** A major problem was the placement of objects in the rooms. Misplacement caused some zebra print on objects.

- ➢ **Obstacle Course/Treasure Hunting Game:** I had a problem making by spinning spheres and the spinning walls solid. Users could sometimes get caught between the two walls of the objects.

- ➢ **Maze:** More hallways can be added to the maze to make it more complex. Additionally, changing the anchor on the exit door to link to another maze level would add to the complexity of the maze.

Additional Screenshots / Sensors:
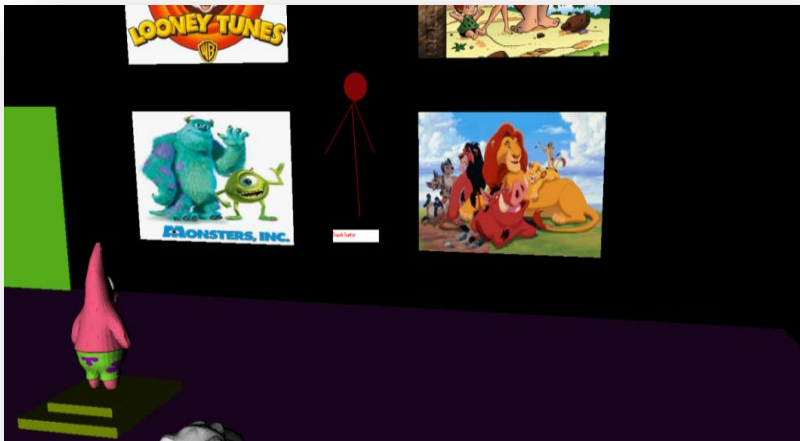
Lobby: The red cylinder is a touch sensor. This sensor will cause all four images to change. This sensor is located on all four walls.
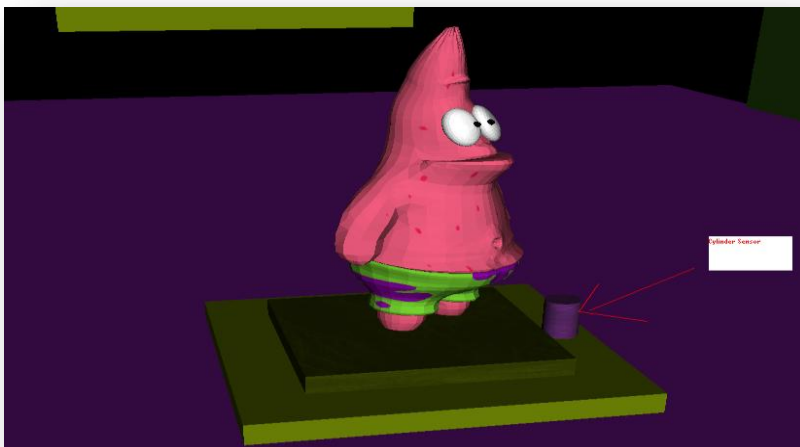
Lobby: This cylinder sensor lets the user rotate the statue to get s 360 degree view of the statue. This sensor is located on to other statues.

Kids Room: This sensor is anchored to another .wrl file. When the doors are clicked the user will be directed to a new file.
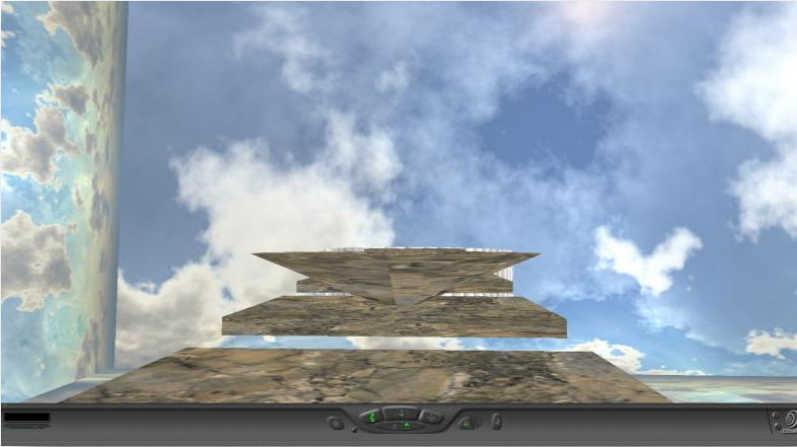
**Obstacle:** uses Touch Sensor to move object out of the path using a Position Interpolator

Entrance Room: contains a box with a Touch Sensor to change the room's background image and a door with an anchor to go back to the Lobby.


Revolving Room: used Orientation Interpolator to generate rotation and create an interesting visual effect while making it more challenging for the user to traverse the course.
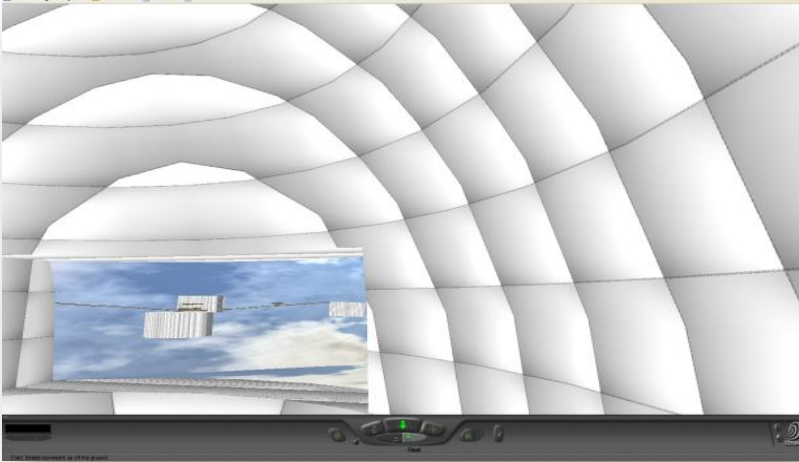
Rotating Sphere: Used Orientation Interpolator to create the rotation of sphere. The user will find entering the object through the opening challenging and will experience interesting visual effects as he moves around inside.
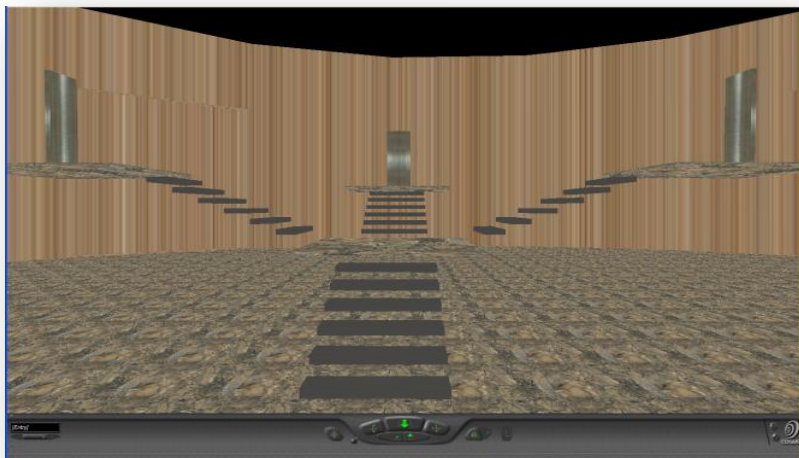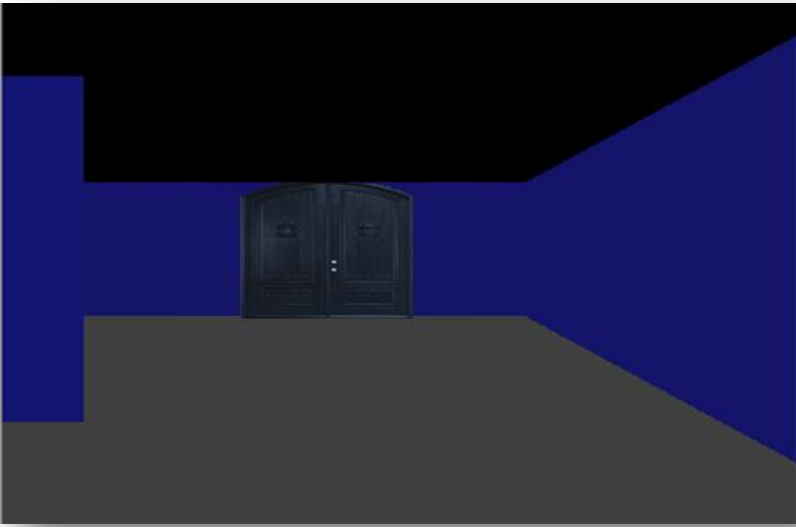

Treasure Room Game: User can transport to different locations in this room using the anchors associated with the three doors.
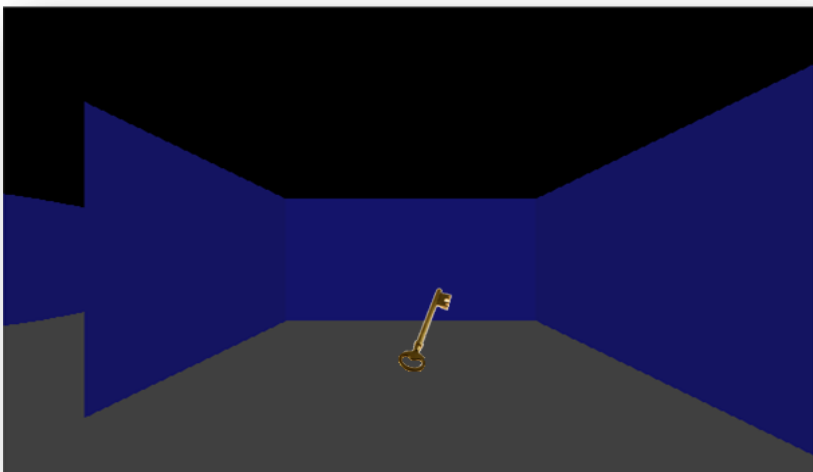
Maze: User is able to collect the key which will unlock the door to the exit. The key has an anchor associated with it. When the user clicks the key, it disappears.

Maze: If the user has already found the key, they can click the door to exit the maze. The door has an anchor that will transport them back to the lobby of the museum.