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Assignment Cover Letter
(Group Work)

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Course Code	**: COMP6505**	**Course Name**	**: Computer Graphics**
Class	**: L5AC**	**Name of Lecturer(s)**	
Major	**: Computer Science**		**: Andreas Kurniawan**
Title of Assignment (if any)	**: After the apocalypse**		
Type of Assignment	**: Final Project Report**		
Submission Pattern			
			: January 2020
Due Date	**: January 2020**	**Submission Date**	

The assignment should meet the below requirements.

1. Assignment (hard copy) is required to be submitted on clean paper, and (soft copy) as per lecturer's instructions.
2. Soft copy assignment also requires the signed (hardcopy) submission of this form, which automatically validates the soft copy submission.
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4. Compiled pages are firmly stapled.
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Signature of Student:

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Introduction

In this report we will be discussing the game project that we created for our Computer Graphics class. In this game, the player will be put in a ruined city setting, which takes place after an apocalypse, and the players goal is to gather spare parts for a helicopter so that they can get out of the city and find safety.

Implementation

Our project implements using JavaScript and WebGL. To complete the projects, we used a framework called BabylonJS. And for the coding process, we used Visual Studio Code from Microsoft. To complete the collaborations, we used Github repository to communicate with code and to save out last progress in the repo. For the 3D model, we created our 3D using 3D Studio Max application to complete the model and the textures. After the 3D models were done, we imported the model into babylon formats and imported the model using our babylon js code to preview the design into our game.

The game that we created is a story where the world has been destroyed by an unknown subject, leaving the city the player is in, in ruins. The player must find a way to get out of the city to find safety, and that is through a helicopter. However, the helicopter is broken from the attack. The player needs to find spare parts of the helicopter for the helicopter to operate again. Those spare parts are scattered around the city in three boxes. The player must collect all three boxes, and when all three boxes are collected, they then go to the helicopter where they will find the end screen indicating that they have beaten the game and finished it.

Before the game starts, the player is shown the following message to let them know the situation and how to proceed to play the game:

“They came, attacked, and left. Noone knew what had happened, it was too quick. There was no time to react to the attack. Everyone around you has died from the attack. Miraculously, for some odd reason, you managed to lay low and survived without them knowing you were still alive. There is one helicopter left that they didn't fully destroy. Your

job is to find spare parts around the city to fix the helicopter, and get out of there. Find civilization, and therefore safety. Act quick, you don't have much time.”
After the player has finished the game, they again are showed a message that indicates that they have finished the game:

“Congratulations, you made it. After you fixed the helicopter, you flew to the next city, trying to find civilization. There was none. you flew as far as you could, but there was nothing left. They destroyed everything. It was the apocalypse.”

The way the players play the game is through the keyboard. The controls to move are W to move forward, A to move to the left, S to move backwards, and D to move to the right.these controls are chosen because these are the universal standard of the gaming industry to move, therefore players will be familiar with the controls of the game right when they start to play the game. Furthermore, the mouse is used to rotate the camera to the direction that the player needs to go. Like the controls for the movement, we chose this rotation control because it is the universal standard of the gaming industry, making the players instantly familiar with the controls of the game.

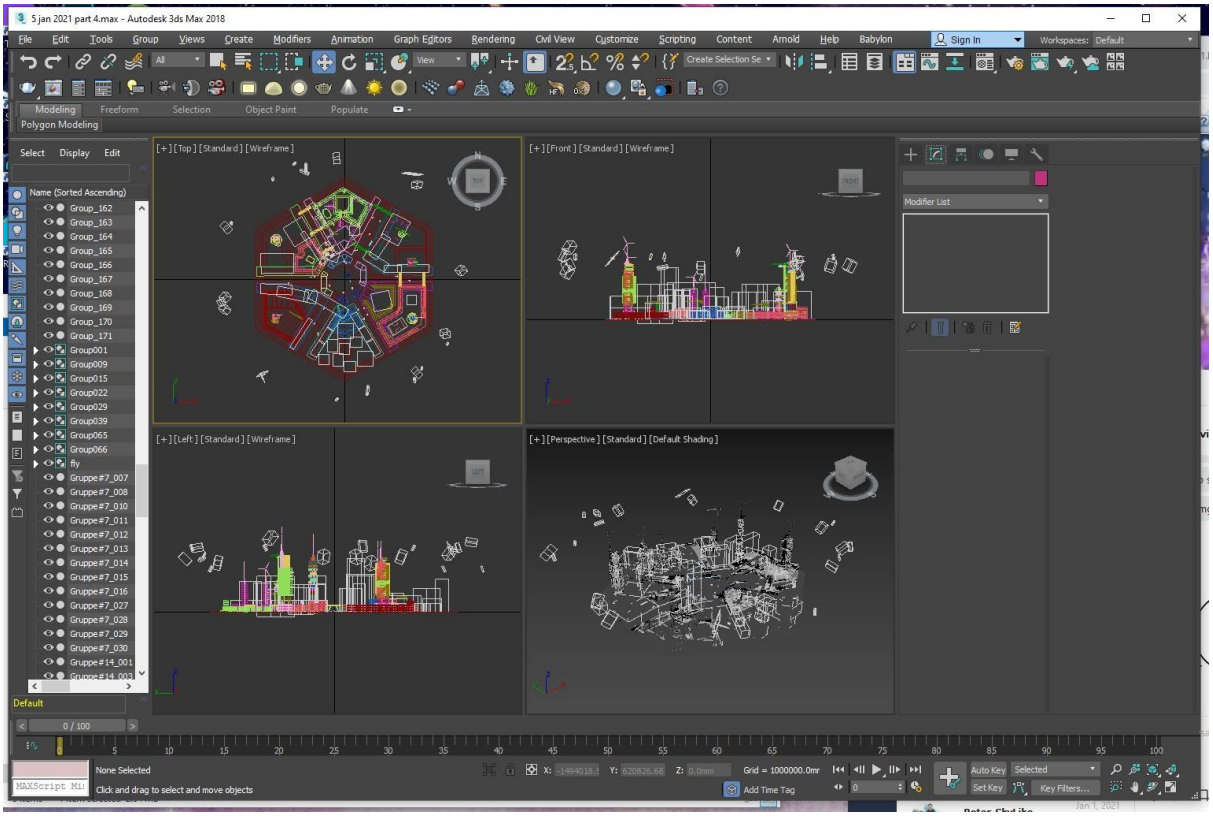
Afterwards, we implemented our model that we already made and imported as a Baylon format. The textures itself are applied inside the model. In this game, we adjusted the camera spawn position which is in the middle of a ruined city and applied gravity physics for the camera. We showed them an option button which the player could pick which situation they want to change the sky or using fog mode for the game. We also implemented the main menu screen for the game which had a button and directly moved to a story scene, what should the player do and why this situation happened. In the story scene, it has a next button after the player has read the story and is willing to move to the game. The player must find several spare parts around the ruined city to fix the helicopter before the player could move to another city. We implemented the animations for the boxes of spare parts which always rotate to x coordinate and stick in those places. If the player collides with one of the sparepart boxes then the text of “Gear owned” will be shown on the left top of the screen. After finding 6 parts of boxes, the player only has one mission which goes to a broken helicopter to move out to another city. We also implemented the ending scene which is a pop up scene which explains the ending story of the game. Lastly, we implemented background music which

accompanies the player from the game start until the end. The boxes of sparepart we used the textures photo which had several spare part photos

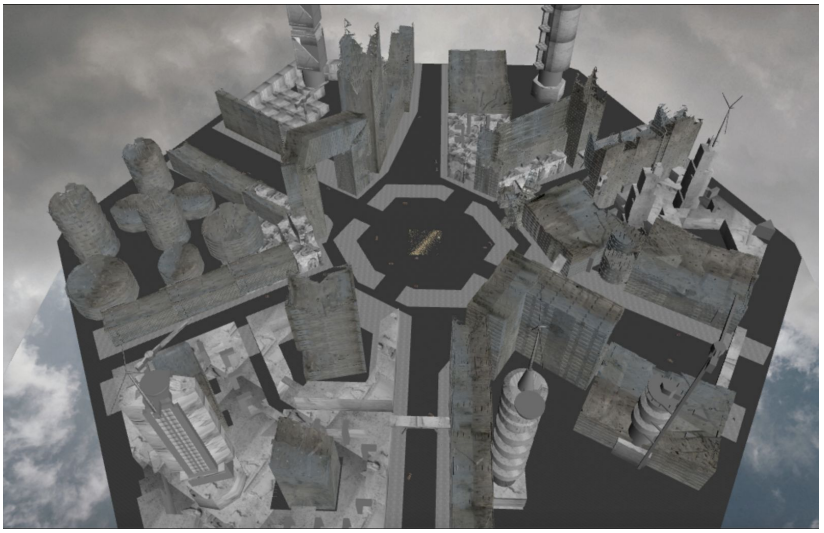
3D Objects & Audio

In order for this game to work, we implemented 3D objects as visuals for the game, and downloaded a song to set the ambiance of the game. Furthermore, we downloaded a sound for when the spare part boxes are collected as an indication that the player has succeeded collecting the spare part boxes. These are how we implemented the assets:

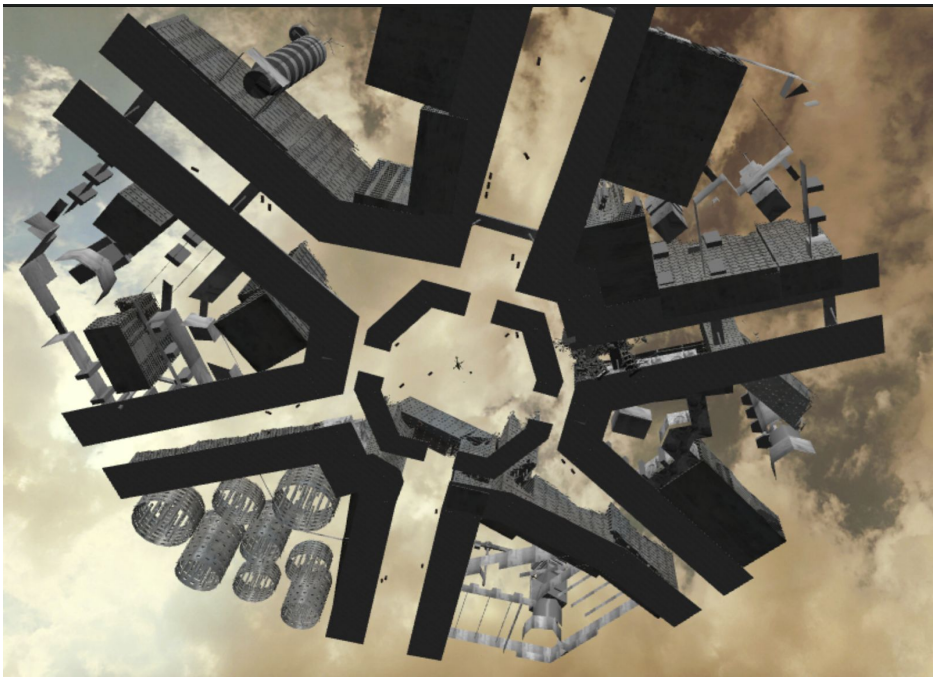
- Modeling Techniques : 3D Studio Max



- Design of the models
    - From Above view



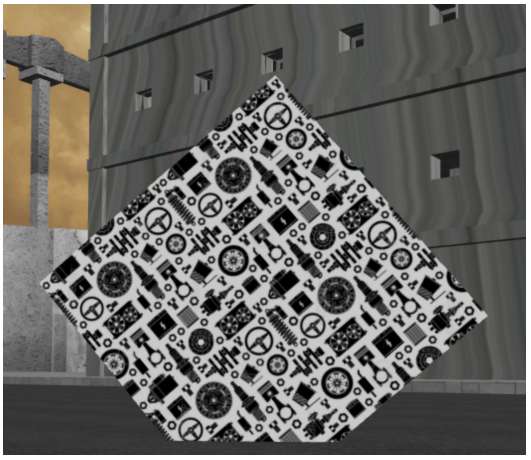
- From Below view



- From Sky view (Ruined flying)

- Helicopter

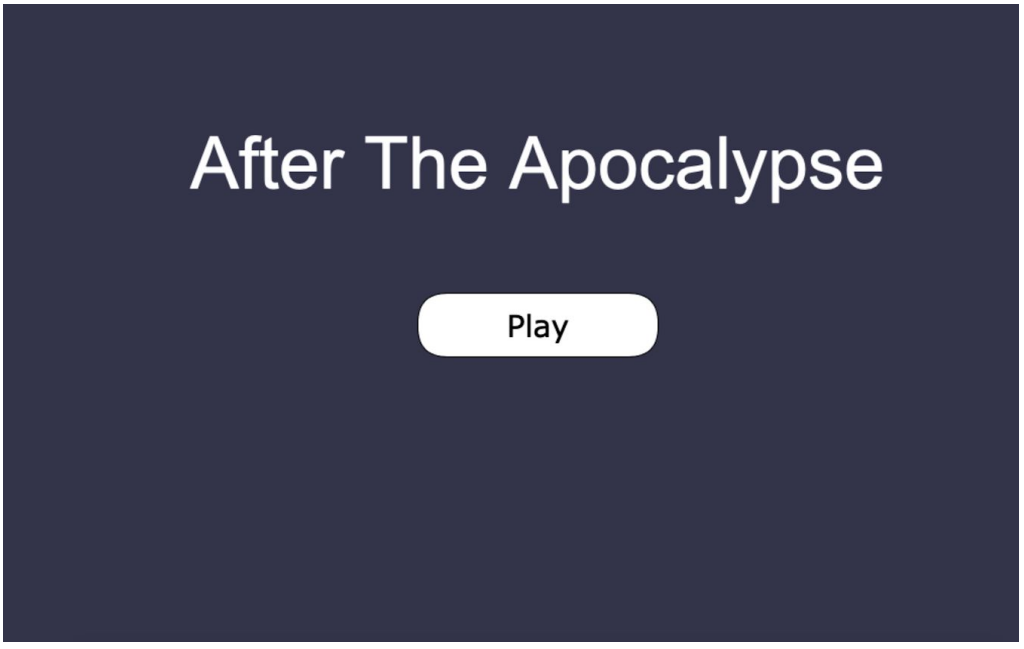
- 3 types of Spare Parts box



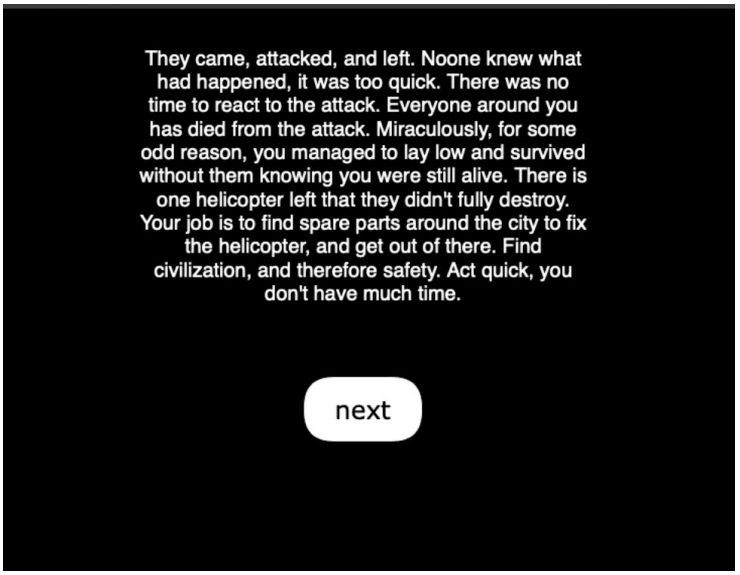
- Audio
    - Apocalypse song; used from 0:00 - 2:33: https://www.youtube.com/watch?v=wBUQppVsMp0&t=440s&ab_channel=SecessionStudios
    - Spare part box audio: https://www.youtube.com/watch?v=-TwMD434VX8&ab_channel=%C4%B0skender%C3%87a%C4%9Flar

Gameplay

1. Menu Scene



2. Game Scene

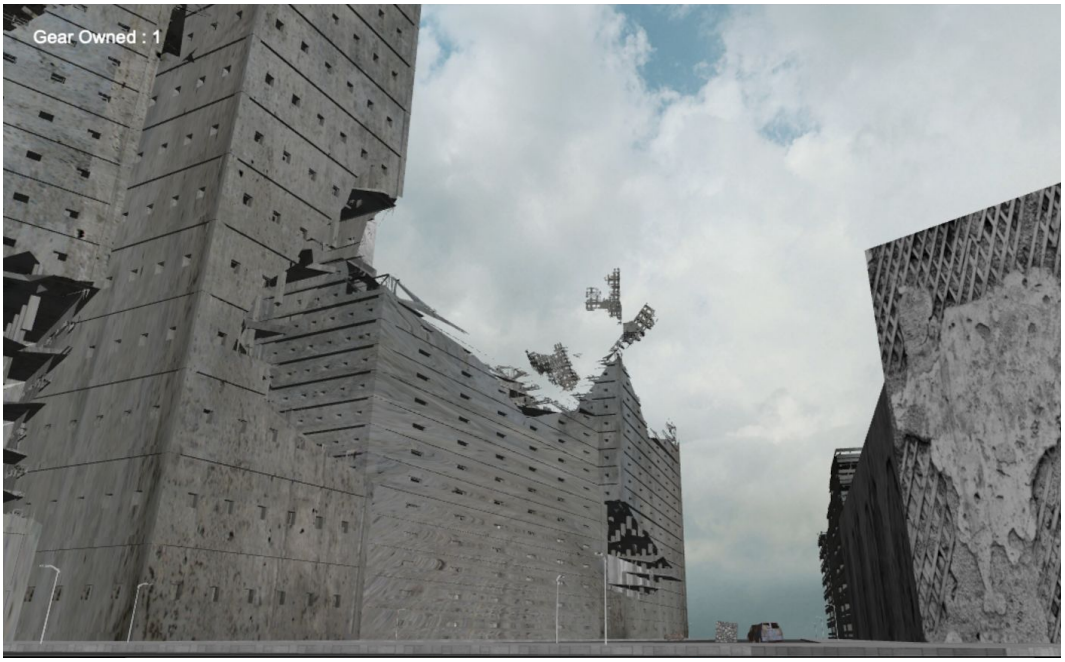


a. Button to change the mode

b. Brown Sky

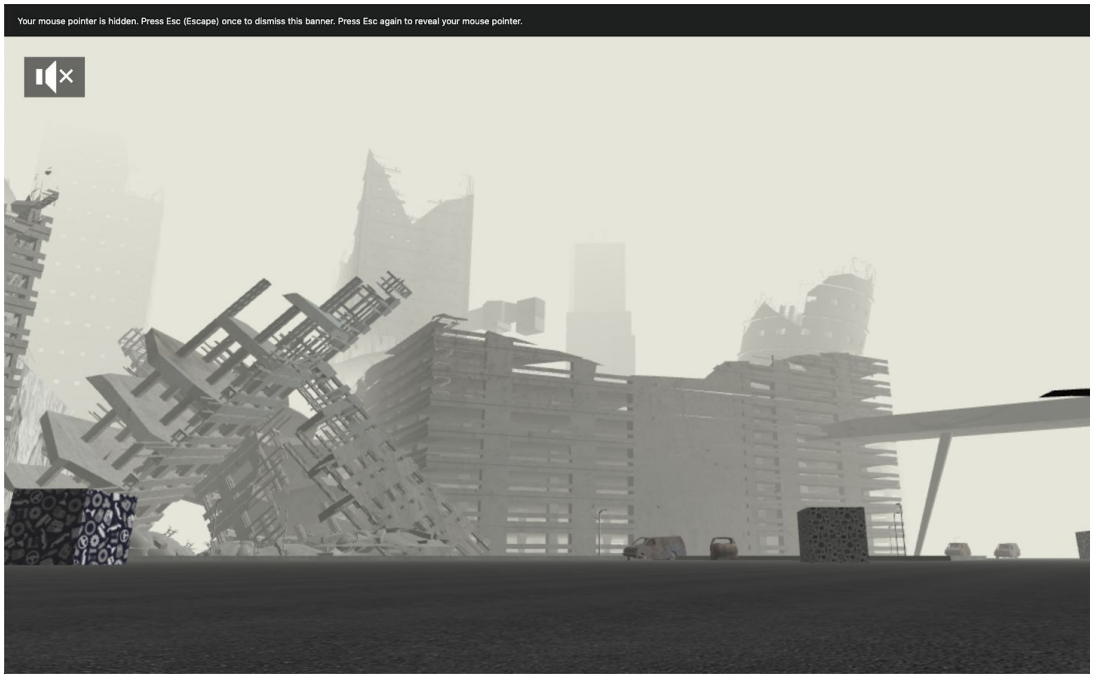
c. Yellow Sky

d. Blue Sky



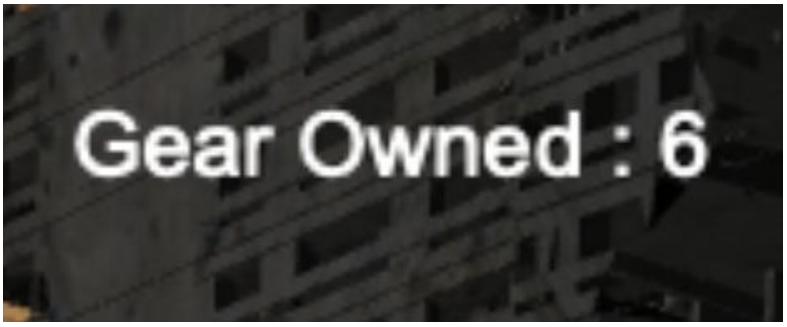
e. Gray Sky

f. Fog Mode



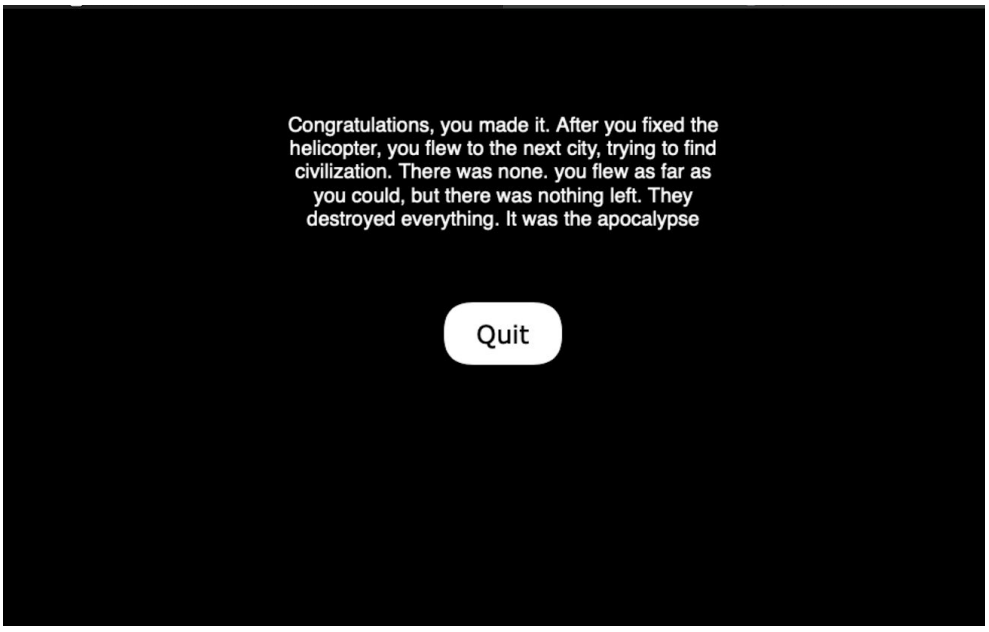
3. Collecting the box

4. Gears Owned



5. Go to Helicopter

6. Ending Scene



Conclusion

During the creation of this project, we learned a lot of things. We learned about how to use BabylonJS, picking out the best objects to use to create the city, and how to create a story that makes the game interesting. We both love to play games, but we have never made one before and it opened our eyes to the many steps and the effort that goes into making a video game. This project is a fun experience that we both enjoyed as it was something that we have never done before, and looking forward to doing more in the future.

References

JavaScript library used:

Babylon.js : https://www.babylonjs.com/

Model Textures :

https://www.pexels.com

Skybox Textures :

https://opengameart.org/content/cloudy-skyboxes

3D model and inspiration before build into complete ruined city :

1. https://sketchfab.com/3d-models/post-apocalyptic-ruined-city-d8d4eb23487241dbac231914675491c0
2. https://3dsky.org/
3. https://www.cgtrader.com/free-3d-models/exterior/sci-fi/argo-architects-ideal-future-eco-city

Source Code

Github: https://github.com/Marcell20/After-the-Apocalypse
Github: https://github.com/KevDeem/TheApocalypse

Application Manual

A. How to download the game:
    a. Download the code using this link: https://github.com/Marcell20/After-the-Apocalypse or https://github.com/KevDeem/TheApocalypse
    b. Download the assets using this link: https://drive.google.com/drive/folders/1BVKKZKtMEQxGc-VIRFrhHuwuiHKdfG7K?usp=sharing
    c. Extract everything into the same folder
    d. Open the folder using VScode
    e. Download Live Server Plugin
    f. Open Index.html in VScode
    g. Press go live in the bottom right hand corner
B. How to play the game:
    a. Open the game by clicking index.html
    b. The UI of the game will show up on your browser
C. Game Controls:
    a. Press W or up arrow to move forwards

b. Press A or left arrow to move to the left
c. Press S or bottom arrow to move backwards
d. Press D or right arrow to move to the right
e. Use the mouse to rotate the camera

D. Settings Menu:
On the bottom right of the game screen, there will be five options that the player can customize to their liking. Those options are:
a. Turning the clouds to yellow
b. Turning the clouds to blue
c. Turning the clouds to brown
d. Turning the clouds to gray
e. Turning on fog mode