

**SM6P07NI Digital Media Project**

**20% Report**

**2021-22 Autumn**

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*I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a marks of zero will be awarded.*

**Abstract**

*-* The following documentation gives a brief overview of the research and development part of the project idea for the Final Year Project. The content of this documentation provides a thorough introduction to the topic of the Final Year Project i.e., Game Environment/ Asset Creation. It further elaborates on the topic of history of big game industries and indie game developers, impact of game easily accessible game engines and finally the unreal marketplace and its advantages.

In early years of game development, only big companies were able to make industry standard games as it required a huge number of artists working together but with the introduction of game development software like Unreal Engine and Unity, this number has been decreased to as small as a single person. Today, artist/developer have the tools required to make AAA game on their own. (Beattie, 2021). Some developers tend to create all their assets by themselves as they have control over everything but most of the developers look for the required assets on the internet and marketplaces to meet the deadline or avoid unnecessary tedious work. Being a field that is always developing and changing, the game development community has gained lots of new tools and techniques that has made the process of creating 3D environments and game levels in no time. Artists love to bring their 3D environment concepts to life as fast as possible. With the help of online asset marketplaces like unreal engine marketplace, artist can choose from thousands of pre-made assets that fits their style. With this workflow, artist can spend their time on other areas like lighting, post-processing, composition and just in general world building from block out without having to spend a lot of time on creating assets.

The following documentation covers the research part of what it takes to create a personalized game environment. The reason this project can be called “personalized” is because the art style and aesthetical influence for this project comes from traditional and cultural sites in Nepal.

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# 1 Introduction

This documentation provides a brief overview for the second coursework for the module “Digital Media Project (SM6P07NI)”. The coursework covers 20% of the total assessment weight. In previous documentation for the module, the students had to provide research and development for their individual projects. Thus, for this semester the students must complete their individual projects and provide the supervisors with proper documentations comprising of overall production process, evidence, problem solving, and overall testing of the finished product.

This document briefly covers the efforts of an individual to create a game environment from scratch. It further covers the aims of the project, its target audience, technologies employed, and the resources and techniques used to deliver the final product.

## 1.1 Topic

**“PATAN – A Nepalese Environment Stylized Asset Pack”**

The topic for the project was inspired by various environment artists who were putting up different asset packs related to their country and tradition on the unreal marketplace. The whole idea for this project is to provide an asset pack and overview of the pack that contains different assets to create a game environment inspired by the traditions and colours of **Nepalese culture and tradition**.



*Figure 1 Patan Final Map*

## 1.2 Area of Research

As mentioned earlier, the game development topic is a vast one. Thus, the amount and area of research is very large as well. From texturing, modelling, texture creation, shader setup, effects, to game environment building, all these topics had to be properly researched before starting the production process.

First was the research for texture creation. Texture creation and texturing process is completely different. In texture creation, the texture is created using different noises where else in texturing the assets are textured using various presets provided by the software. After the texture creation, the assets had to be modelled. Thus, the research for modelling included the creation of foliage meshes such as flowers, trees, and other plants. In addition, the modelling process of modular building meshes were researched. This was done to create maximum variation by using least amount of meshes.



*Figure 2 Collection of Software workflow*

# 2 Aims of Project

If any artist has to create their own assets, the production time would add to their overall project time which would then lead them spending unnecessary time in creating something that is already available on the marketplace. The overall process of asset creation alone is very time consuming and technique heavy. The process of asset creation involves of small staps like concept art, high poly modelling, low poly modelling, baking and UV, texture mapping, rigging, animating and many more. The project management skill alone would not be enough to finish this process in time. Further the whole process of asset creation needs research and skills on variety of different software. An artist alone would have to spend years to master the skills to make industry standard game assets. Thus, the trend of game developers using the marketplace assets is growing regularly. This is simply because these asset packs reduce the overall effort and time consumption of the production.

Patan contains various modular meshes, pieces from small architectural pieces to large buildings. Together with high quality rocks, foliage and traditional rural Nepalese modular pieces, this asset pack allows game developers and environment artists to create a map with traditional Nepalese influenced assets. Using this asset pack, the environment creation and detailing process is made faster. As mentioned above, the production process is all about testing the functionality of the game and making the game look more pretty. Thus, this asset pack contains perfect optimized assets to make any game level look pretty. Since the pack is stylized, the asset is minimalistic and simple. All the details in the asset comes from either the normal map or the shader setups. In addition to the assets, this pack also comes with personalized shader setups for FX and one particle system. The personalized shader uses different tools and techniques inside unreal like Runtime Virtual Texture and Custom Stylized Fog system to make the game look more stylized.

In conclusion, the main aim of this asset pack is to help game developers in creating optimized stylized environments easily with premade personalized assets. In addition, this project also has an objective of introducing and inspiring game developers to creating traditionally influenced **Nepalese art style** game environments which would then be a step forward in games creation that would be relatable to Nepalese gaming audiences as well as game developers.

# 3 Target Audience

## 3.1 Primary Target audience: Game Developers/ Environment Artists

**Age:** 12-50 years old

**Gender:** All genders

**Genre Specification:** Stylized Game Environment/Level Artists

**Nationality:** All Nationality

The overall process of asset creation is very time consuming and would add unnecessary production time to the process of game creation. The process of asset creation involves of small staps like concept art, high poly modelling, low poly modelling, baking and UV, texture mapping, rigging, animating and many more.

## 3.2 Secondary Audience: Players/Gamers

**Age:** 12-50 years old

**Gender:** All genders

**Genre Specification:** Stylized Games

**Nationality:** All Nationality

# 4 Product Research

## 4.1 Stylized Fantasy Provencal

The first product that was researched was the Stylized Fantasy Provencal. The first thing that was noticed for the research was the stylization of the assets



*Figure 3 Product Review 01*

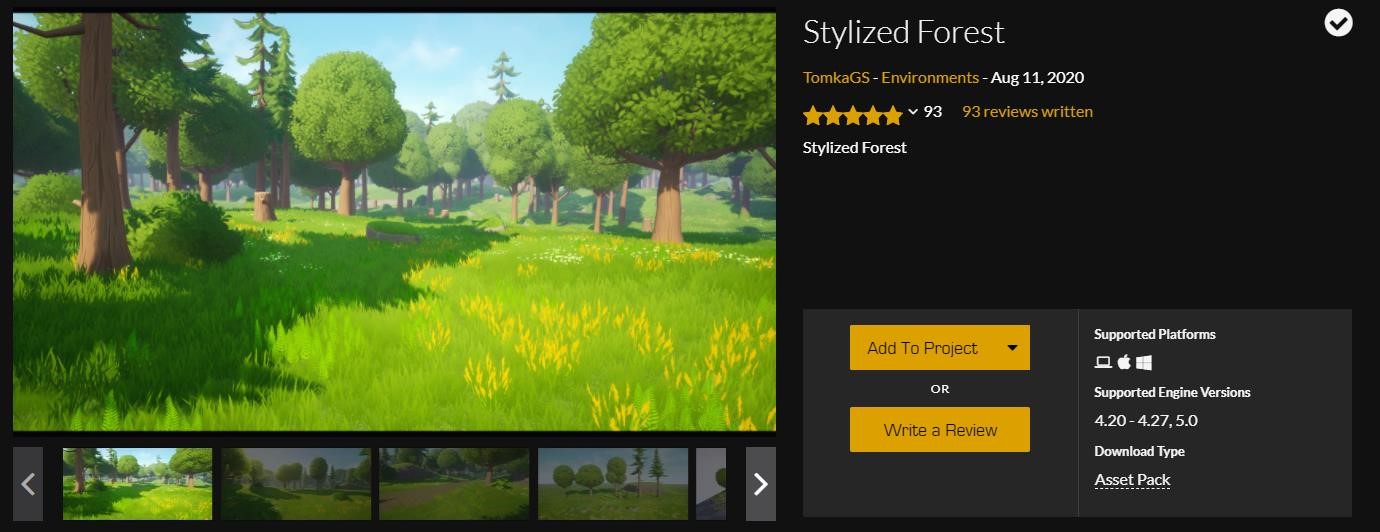
* **Supported Platforms**: HoloLens 2, Linux, MacOs, Oculus, Windows, Android and IOS
* **Supported Unreal Versions:** 4.26 – 4.27, 5.0
* **Download Type:** Asset Pack

**Review:**

The attention to detail is very high/ The asset pack has a unique style that is reflected in the overview map. The style can be noticed in the concept and design of the props as wellThe pack also includes a landscape material that can be painted on the get the desired foliage scattering effect as well as to make different pathways between a green grass layer. The collisions are automatically generated, and the assets have LODs. The pack also provides three different texture sizes which can help in optimizing the asset or the whole level on the basic of what machine the game is going to run on.

## 4.2 Stylized Forest

Another product that was quite similar to the layout and concept of this asset pack was the stylized forest pack.



*Figure 4 Product Review 02*

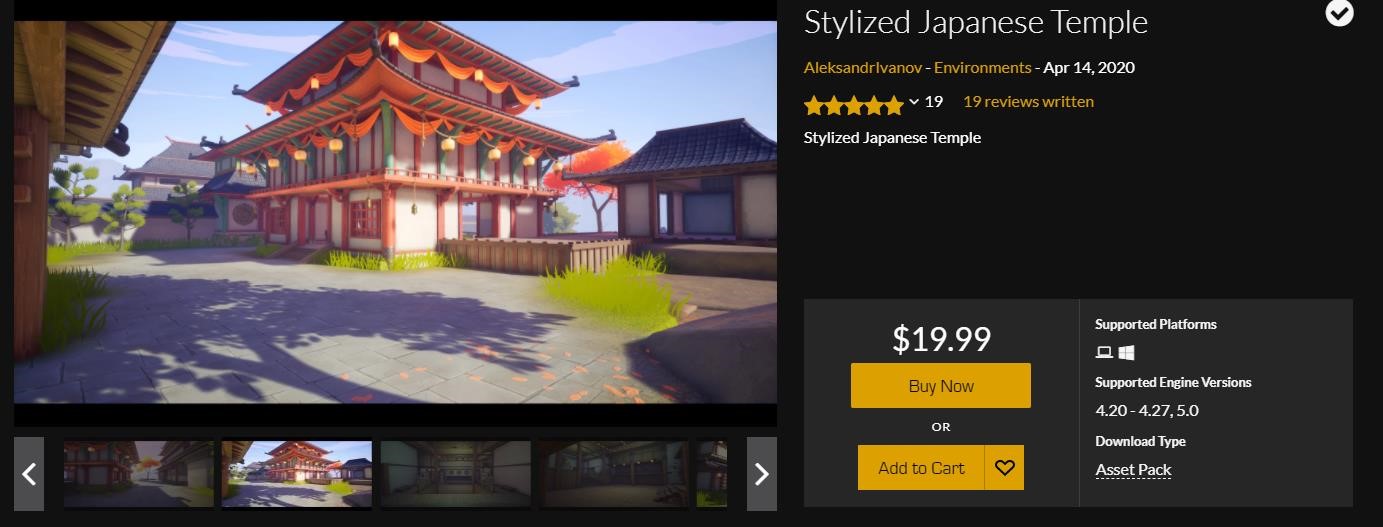
* **Supported Platforms**: Windows and MacOS
* **Supported Unreal Versions:** 4.20 – 4.27, 5.0
* **Download Type:** Asset Pack

❖ **Review:**

Right from the first glance the foliage looks well optimized. Different variety of same foliage type can be seen in the overview map that helps break up the. Same thing was done in this product as well. The foliage meshes are all different but textured using the same texture. This way the texture required count becomes low and the scene becomes more optimized. Further this pack also contains an auto landscape material. Which means the developers don’t have to go and paint every bit of landscape that they want to feature in their work. The wind is added to all kinds of foliage in the asset pack. Most of the material can be instanced which provides the user with different finer controls over the material. The overview map is small but showcases the assets in the asset pack very well.

## 4.3 Stylized Japanese Temple

The third and final map chosen for the product review was the stylized Japanese Temple map.



*Figure 5 Product Review 03*

* **Supported Platforms**: Windows
* **Supported Unreal Versions:** 4.20 – 4.27, 5.0
* **Download Type:** Asset Pack

❖ **Review:**

The showcase video provides a total overview of the asset pack. It shows the overall showcase map created to display all the assets together. This way a buyer can evaluate the map and decided to buy the pack or not. The players can walk around the environment exploring the area of the map. Further the players can also enter the buildings. The building and the temples look very optimized and well-made as the players can enter through them. The foliage looks stylized and blends right in with the rest of the environment. The trees are given a bright red orange colour. The map even contains a flag rope that extends from building to building. This is very similar to what was planned for this project asset pack as well.

# 5 Technologies Employed

*Figure 6 Software Logos*

* **Adobe Illustrator 2020**

Adobe Illustrator was used to create foliage alpha and textures.

* **Blender 3.0**

Blender was used to create the leaf meshes for the tress and make custom alphas for the tree leaf meshes.

* **Gaea**

Gaea is a specialized software which creates terrains and landscapes. For this project Gaea was used to create the distant hero mountain.

* **Autodesk Maya**

Autodesk Maya was used to model and texture different assets for the project.

* **Substance Designer**

Substance Designer was used to create textures by combining noises together.

* **Substance Painter**

The majority of sculpted assets were textured in substance painter and then exported to Unreal Engine.

* **Speedtree**

Speedtree was used in this project to create personalized stylized looking trees which were a huge part of this project.

* **zBrush**

zBrush is used in this project for sculpting different assets and adding high level of details.

* **Unreal Engine**

The majority of the production work was done inside Unreal Engine. It was used for blockout levels, prototyping, shader setup, mesh setup, asset texturing, lookdev, fx creation, blueprints and finally setting up the audio for the final product.

# 6 Project Plan

## 6.1 Production Flowchart

# 7 Production Phases

## 7.1 Introduction to GDLC approach

## ❖ Pre-Production

## 7.2 Story/Idea

## 7.3 Phase 2: Conceptual Analysis

**7.7.1.1 Trees Modelling**

* **Normal Grass Texture Output:**
* **Rocky Grass Texture Output:**
* **Tiled Grass Texture Output:**

**7.7.2.3 Ground Dirt Texture and its Variations**

* **Normal Dirt Texture Output:**
* **Rocky Dirt Texture Output:**

* **Tiled Dirt Texture Output:**

**7.7.2.4 Moss Texture**

* **Final Moss Texture Output:**

**7.7.2.5 Foliage Texture Creation**

**7.7.2.6 Final Foliage Textures**

### 

### 7.7.3 Texturing

**7.7.3.1 Boat Texturing**

### 7.7.4 Unreal Engine 4.27

**7.7.4.1 Shader Setup**

* **M\_Grass\_RVT**

* **M\_Log**

* **M\_Flower**

* **M\_Props**

**7.7.4.2 Landscape Material Setup**

**7.7.4.3 Assets and Props Setup**

**7.7.4.4 Procedural Foliage Scattering**

**7.7.4.5 FX Creation**

**7.7.4.6 Final Levels Creation**

### 

### 7.7.5 Blueprints

### 7.7.6 Audio Setup

# 8 Resources

## 8.1 Hardware and Devices:

* MSI Desktop Monitors
* LEGION 5 with NVIDIA GTX 1650ti

## 8.2 Software

A total of 3 software was used in the production of this product.



*Figure 214 Software List Logo*

* **Adobe Photoshop 2020.**
* **Blender.**
* **Autodesk Maya.**
* **Substance Painter.**

# 9 User Testing & Findings

Testing is said to be the most important phase of the GDLC model process. Testing and game design have the same weight in the game/concept development architecture. This is performed when a game development is accomplished for one cycle. So, the testing was carried out on four respondents ranging with 3D industry experience of 4 to 5 years. The criterial and elements of the testing process is mentioned in the table below.

|  |  |  |  |
| --- | --- | --- | --- |
| **Element** | **Criteria** | **Marking (out of 50)** | **Experiences** |
| Gameplay | The game can  quickly attract the attention the players. | 10 | Excellent  Pleasant Poor |
| Traditionally Relatable | The visual of the map is relatable to the artists. | 10 | Excellent  Pleasant Poor |
| Assets Look and Feel | Game feels optimized and ran smoothly. | 10 | Excellent  Pleasant Poor |
| UI and Audio | The UI feels easy and are easily guided by it. | 10 | Excellent  Pleasant Poor |
| Immersion | Players immerge in the game and  feel less aware of the surrounding environment. | 10 | Excellent  Pleasant Poor |

### 9.1.1 Test 01

### 9.1.2 Test 02

### 9.1.3 Test 03

### 9.1.4 Test 04

### 9.1.5 Testing Results

# 10 Conclusion

The 20% documentation for the Digital Media Project is now complete. The history of gaming and game creation, how it developed, and the breadth of game production in the modern world were initially covered because this coursework was all about creating game environments.

Due to its scale and prospects, this project has made a positive impact on the 3D sector. The tools developed for this project facilitate the building of gaming environments. Focus and perseverance were needed for this project at every stage of creation. Eventually, this project has produced an incredible degree of productivity thanks to each stage being carried out precisely and thoroughly.

# 11 References

# 12 Bibliography

# *13* Appendix

