



SCHOOL OF DESIGN AND MASS COMMUNICATION

AMM373

Fur Simulation & Rendering

TOPIC: PROJECT SETUP & HAIR CREATION

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INTRODUCTION: -

Autodesk Maya is a powerful 3D computer graphics application that is widely used in animation, visual effects (VFX), game development, and film production. It provides a wide range of tools for modeling, texturing, animation, simulation, and rendering. One of the most important steps before starting any work in Maya is project setup, which assists in organizing all the data and resources required for a project. By creating a project in Maya, artists can handle a variety of data types within predefined folders, such as scene files, textures, rendered pictures, caches, and scripts. This well-organized structure prevents missing file problems and ensures that all elements are correctly linked throughout the production process. Proper project setup is essential in professional pipelines because it improves team member collaboration, streamlines file management, and boosts workflow efficiency.

In addition to project management, Maya provides advanced capabilities for creating realistic settings and characters. One such feature is the Interactive Groom Splines Tool, which can be used to generate and style fur, hair, and other strand-based objects. Artists can create and interactively style hair right on a character's surface using brushes and modifiers with the Interactive Groom Splines workflow, users may manipulate the length, density, direction, and shape of hair strands to create fur effects and natural-looking hairstyles. Character design for films, cartoons, and video games often uses realistic hair modeling and styling.

Because of this, mastering Maya project setup and hair creation with the Interactive Groom Splines tool is essential to the 3D production process, helping artists create realistic and complex character features while maintaining project structure.

Developing a New Project

Before beginning to create hair, you must first create a new project in Maya. Models, textures, scene files, and rendered images are among the many elements typically used in hair production projects. All of these components are kept in an orderly folder structure when a project is set up, which facilitates appropriate file management and improves efficiency.

Detailed Project Configuration in Maya:

1: Open Maya

Start by launching the Autodesk Maya software on your PC. The main workspace, where all modeling, animation, and grooming operations are carried out, will show up after the software loads.

2: Click on the Project Window

Choose Project Window from the File menu at the top of the interface. All project-related files will be kept in project folders, which you can create and manage using this window.

3: Create a New Project

inside the Project Window:

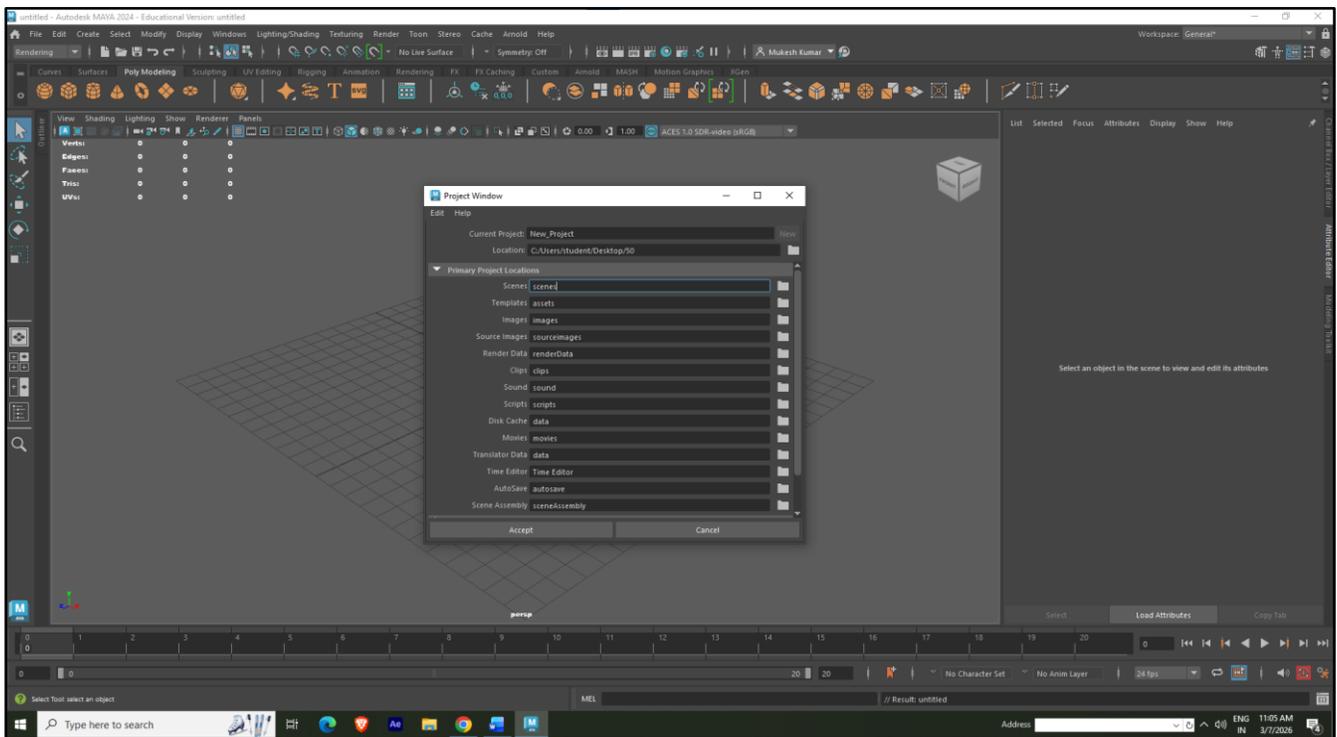
- Select "New."
- Enter the project name, such as HairCreationProject.
- Select the location on your computer where the project folder will be stored.

The primary directory where Maya will keep all project files is defined in this stage.

4: Create the Project Folder Layout

Maya automatically generates a collection of folders inside the project directory after you click Accept. Among the crucial folders are:

- Scenes
- Source images
- Pictures
- Cache
- Scripts



All assets are kept organized with the use of this folder structure.

5: Establish the Project

Once the project has been created, choose the newly created project folder by going to File → Set Project. This instructs Maya to load and save files using this directory as the primary workspace.

6: Save the Scene File

Lastly, save your scene file in the project's Scenes folder by selecting File → Save Scene As. This guarantees that every project asset stays correctly connected and arranged.

New Project Flow

OPEN MAYA

**CLICK ON THE
PROJECT WINDOW**

**CREATE A NEW
PROJECT**

**CREATE THE
PROJECT FOLDER**

**ESTABLISH THE
PROJECT**

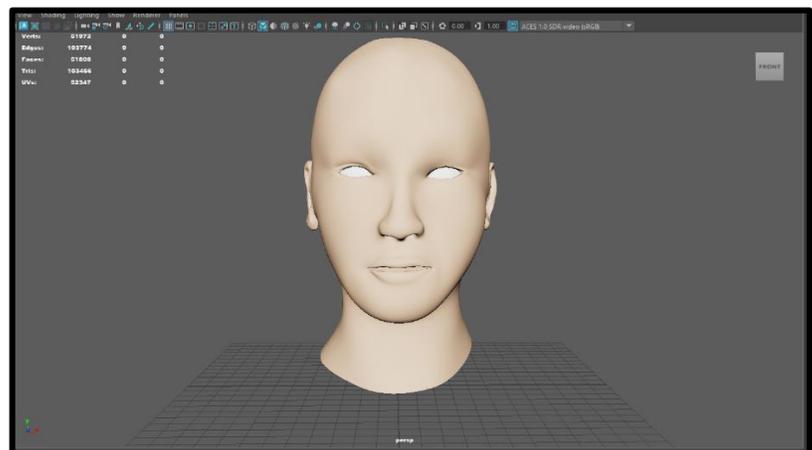
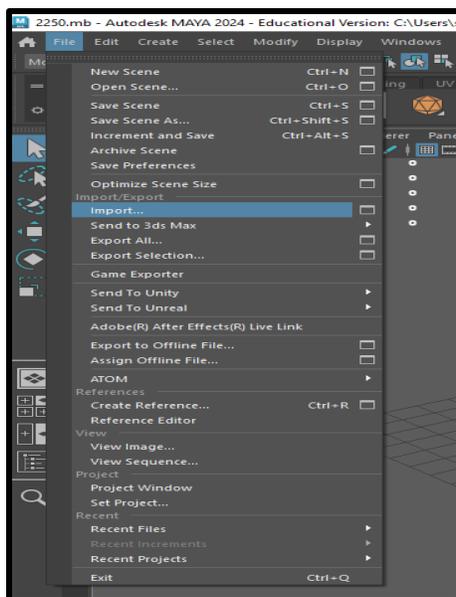
**SAVE THE SCENE
FILE**

IMPORTING THE 3D MODEL

Importing the 3D model into the scene is a crucial step after project creation. To import a 3D model into a scenario, follow these steps:

1. Open **Autodesk Maya**.
2. Go to the **File** menu at the top.
3. Click **Import**.
4. A file browser window will open.
5. Locate your 3D model file.
6. Select the file and click **Import**.

The model will show up on the viewport, the primary workspace where objects are shown and manipulated, once the import procedure is finished. To appropriately position the model within the scene, the transform tools can be used to modify its scale, rotation, and position as needed.

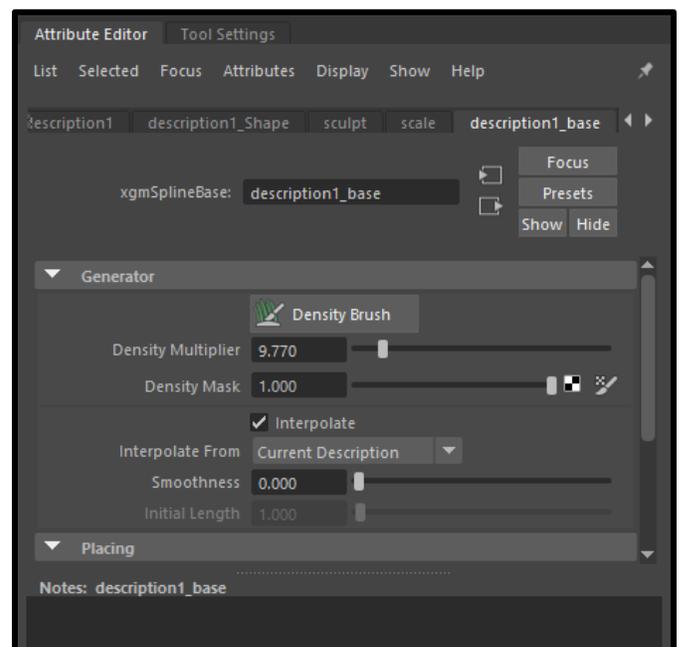
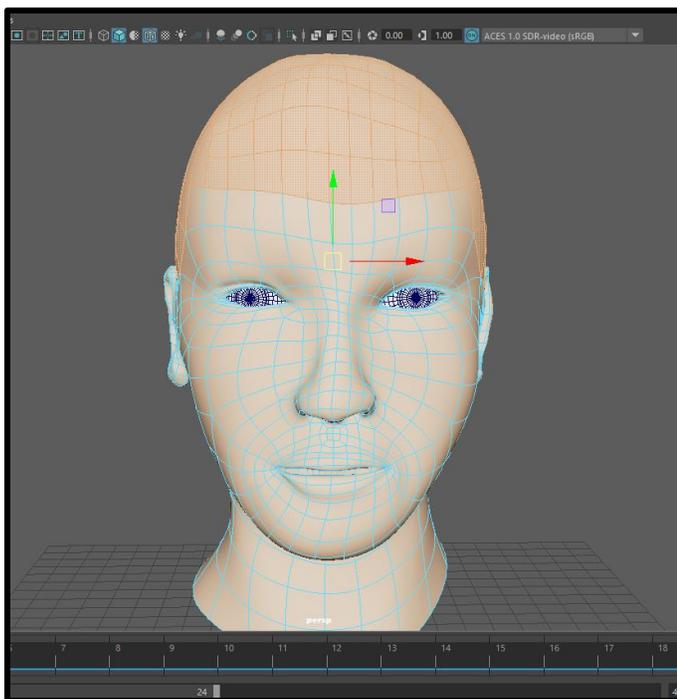


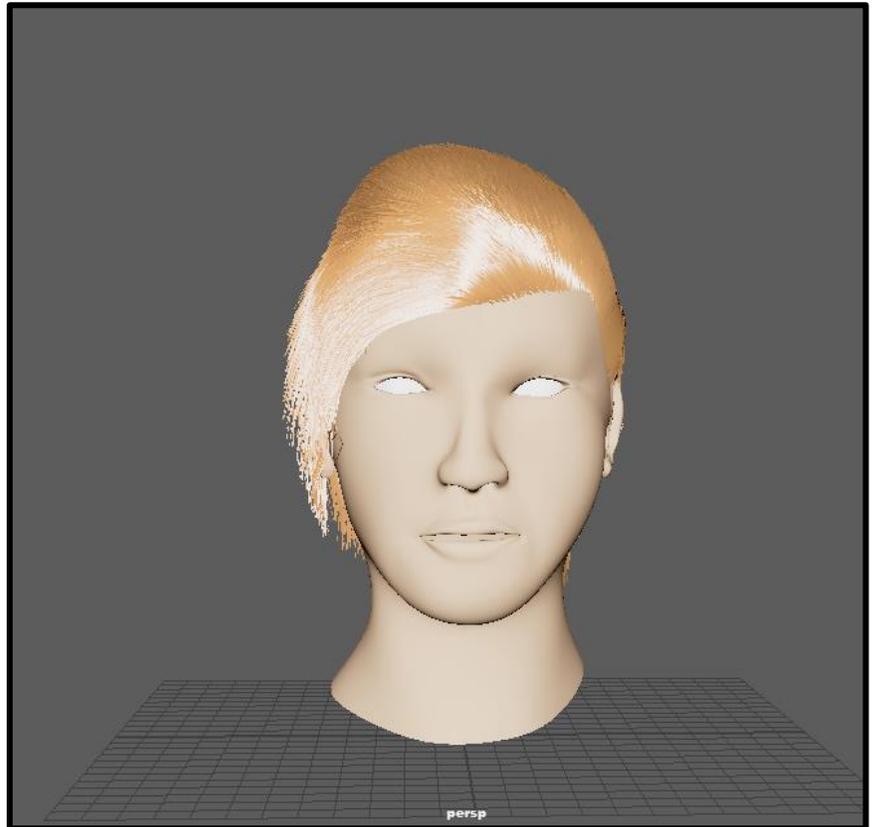
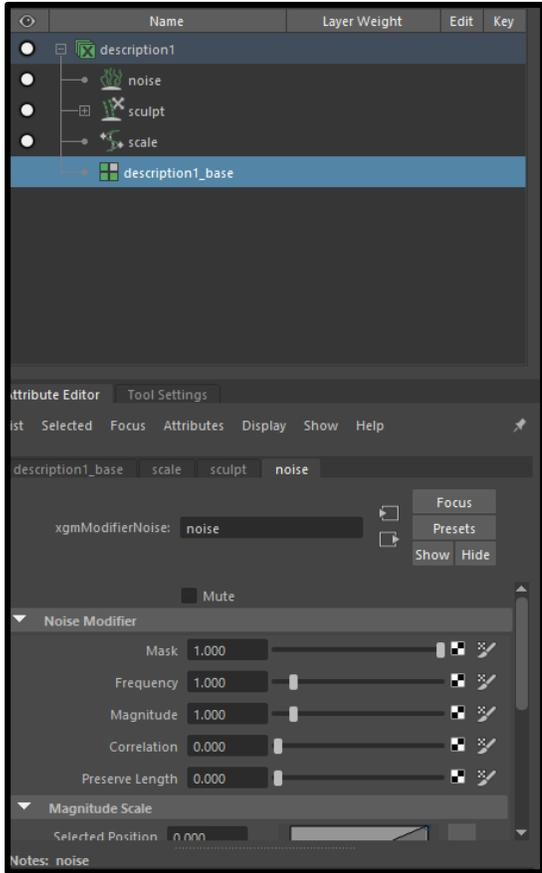
HAIR ADDITION FOR THE MODEL

Applying hair to the human model comes after the 3D model has been imported into the scene. The fur or grooming system gives artists control over a number of crucial aspects of hair development, including length, thickness, density, and direction. A more realistic and natural-looking haircut can be achieved by modifying these characteristics. The model's hair is created and styled using Autodesk Maya's Interactive Groom Splines tool. With this tool, artists can style the model's hair right on its surface. Artists can comb, smooth, cut, or add hair strands with various grooming brushes. These tools aid in managing both the overall hairdo and the hair's natural movement.

- ❖ Open **Autodesk Maya** and select the human model in the scene.
- ❖ Switch to **Face Selection Mode** and select the faces of the head where you want the hair to appear.
- ❖ Duplicate the selected faces so Artist can be used as the **base surface for generating hair**.
- ❖ Select the **duplicated faces**.
- ❖ Go to the **Generate** menu on the top toolbar and click **Create Interactive Groom Splines**.
- ❖ Hair strands will be **generated automatically** on the selected surface.
- ❖ On the right side, open the **Attribute Editor** and go to **Description1** to adjust properties such as **hair width and taper** according to your preference.
- ❖ To control **hair density**, go to **Description1_Base**, enable the **Density Mask**, and adjust the values as needed.
- ❖ Use the **Scale parameter** to increase or decrease the overall **hair length**.

- ❖ To style the hair, go to the **XGen options** in the top menu.
- ❖ Select the **Comb Tool** from the grooming tools to start styling the hair.
- ❖ The **Comb Tool** will become active, allowing you to groom the hair strands.
- ❖ Before combing the hair, enable **collision** so the hair interacts correctly with the scalp.
- ❖ Go to **Description Base** → **Attribute Editor** → **Tool Settings** and enable **Collide With Meshes**.
- ❖ To increase or decrease the **brush size**, press **B + Left Mouse Button** and drag the mouse.
- ❖ Now **comb and style the hair** according to your desired hairstyle.
- ❖ To add **natural variation**, apply a **Noise Modifier** and adjust its settings to randomize the hair strands.





CONCLUSION

Our project is now complete and well-organized. Through this process, we created a basic project to understand how the system functions in real-world scenarios and learned the fundamentals of project preparation for fur simulation. Setting up the project correctly from the start ensures that all files—including scenes, textures, caches, and renderings—are stored in the proper folders, making project management much easier.

Project setup is a crucial step in any 3D production pipeline. For artists, a well-structured project framework enables a smoother and more efficient workflow. When multiple team members work on the same project, it simplifies file location, reduces confusion, and improves collaboration. Proper setup also helps prevent technical issues such as missing textures, broken file paths, or simulation errors. Moreover, a well-organized project lowers the risk of data loss and software malfunctions. With a clear and thoughtfully planned project structure, artists can work more efficiently, consistently, and on schedule, producing higher-quality results.

Thank you!