Steps to run the script
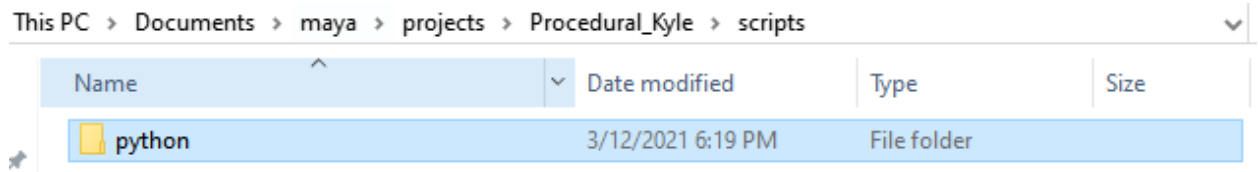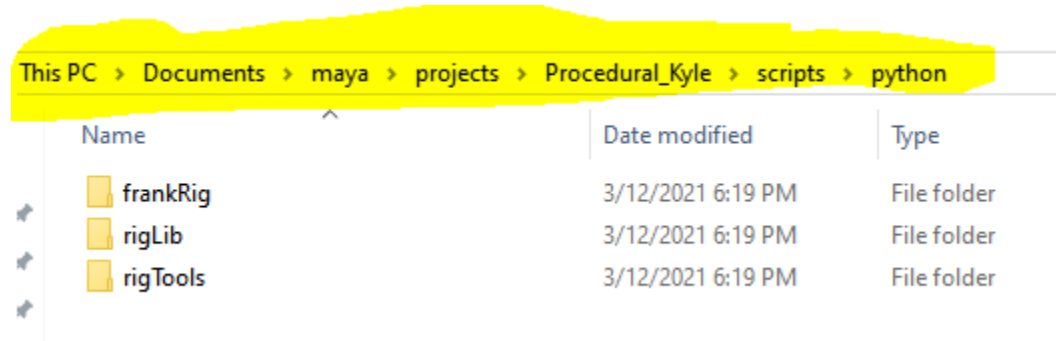
PART-A INSTALLING THE SCRIPT
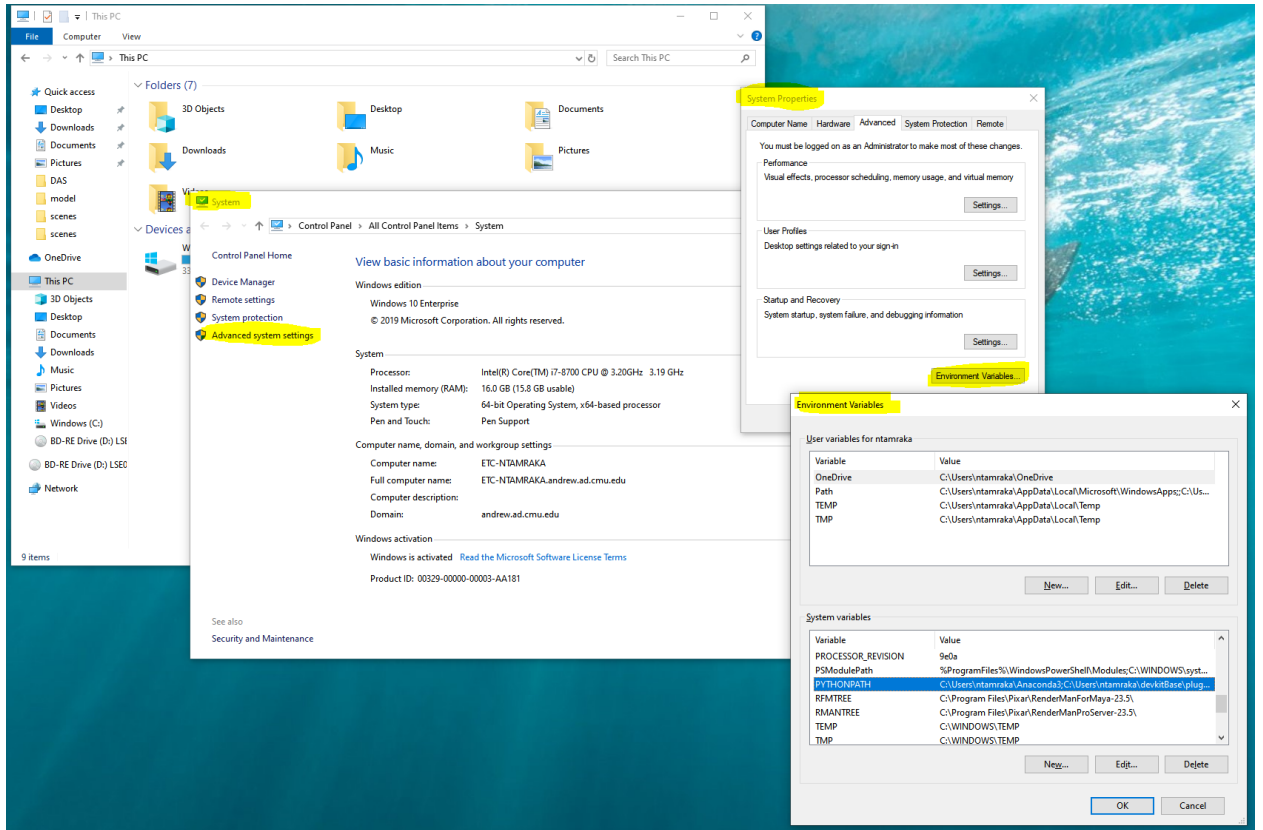
1. Install python if it is not installed already. You can go here: https://www.python.org/.
2. You should have my scripts. Paste the "python" folder anywhere. (I would recommend pasting it under- This PC\Documents\maya\2020\scripts)

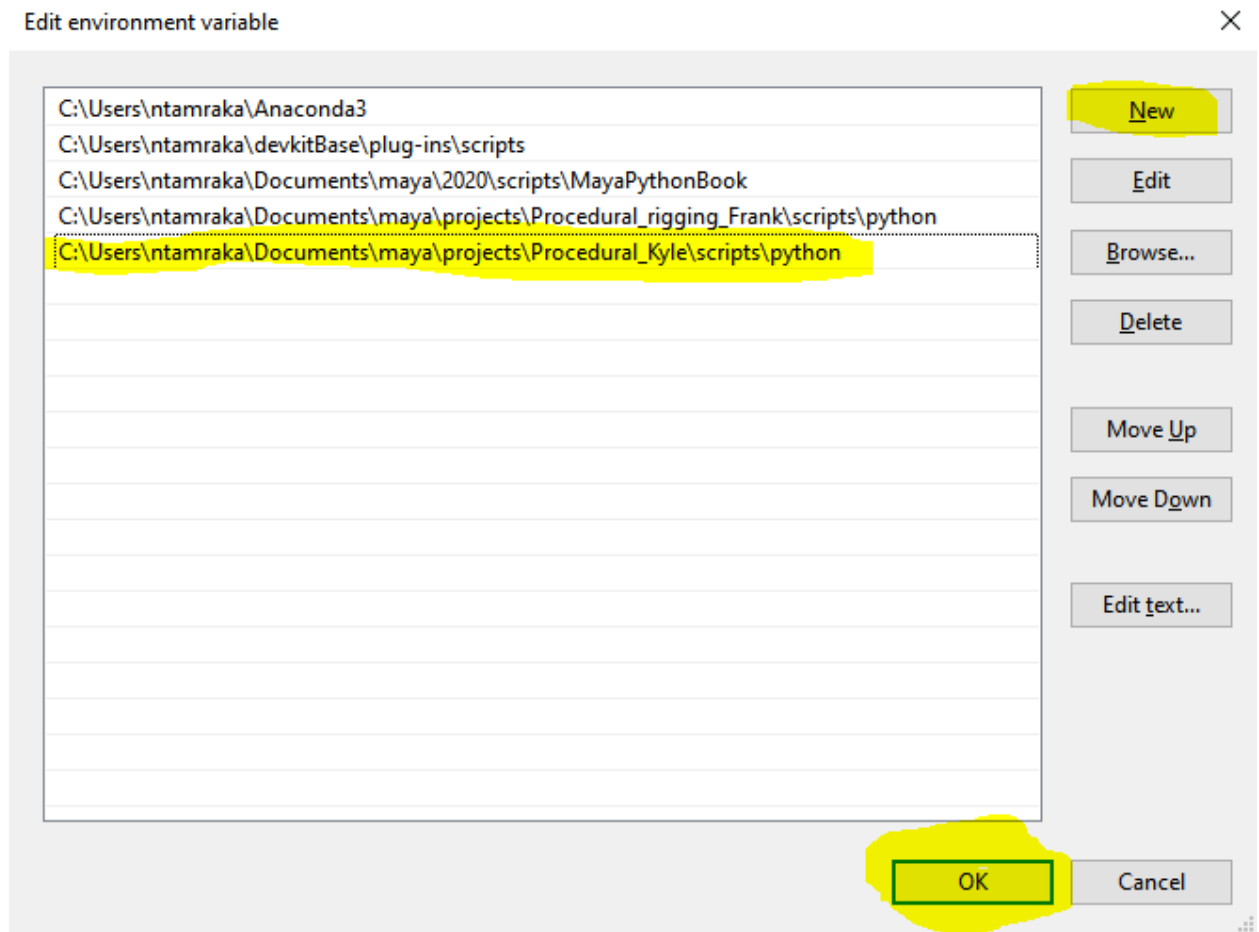| This PC › Documents › maya › projects › Procedural_Kyle › scripts				∨
Name	Date modified	Type	Size	
📁 python	3/12/2021 6:19 PM	File folder		

3. Open the "python" folder and copy the address of that folder. Ex- C:\Users\<username>\Documents\maya\2020\scripts\procedural_rig_scripts\python (Filename in the screenshot is different because the script was stored at a different location. Basically, you need the address of the "python" folder)

This PC › Documents › maya › projects › Procedural_Kyle › scripts › python		
Name	Date modified	Type
📁 frankRig	3/12/2021 6:19 PM	File folder
📁 rigLib	3/12/2021 6:19 PM	File folder
📁 rigTools	3/12/2021 6:19 PM	File folder

4. Open the environment variables by going to your - This PC > system properties > Advanced system settings > Environment variables. You should look for "PYTHONPATH" under system variables but if it is not there, you can create a new variable named "PYTHONPATH" and add the address you copied above in that.

This PC

File   Computer   View

← → ↑   This PC   Search This PC

Quick access
Desktop
Downloads
Documents
Pictures
DAS
model
scenes
scenes

OneDrive

This PC
3D Objects
Desktop
Documents
Downloads
Music
Pictures
Videos
Windows (C:)
BD-RE Drive (D:) LSE
BD-RE Drive (D:) LSE0

Network

9 items

Folders (7)

3D Objects   Desktop   Documents

Downloads   Music   Pictures

Videos

System

Control Panel → All Control Panel Items → System

Control Panel Home
Device Manager
Remote settings
System protection
Advanced system settings

View basic information about your computer

Windows edition
Windows 10 Enterprise
© 2019 Microsoft Corporation. All rights reserved.

System
Processor: Intel(R) Core(TM) i7-8700 CPU @ 3.20GHz   3.19 GHz
Installed memory (RAM): 16.0 GB (15.8 GB usable)
System type: 64-bit Operating System, x64-based processor
Pen and Touch: Pen Support

Computer name, domain, and workgroup settings
Computer name: ETC-NTAMRAKA
Full computer name: ETC-NTAMRAKA.andrew.ad.cmu.edu
Computer description:
Domain: andrew.ad.cmu.edu

Windows activation
Windows is activated   Read the Microsoft Software License Terms
Product ID: 00329-00000-00003-AA181

See also
Security and Maintenance

System Properties

Computer Name   Hardware   Advanced   System Protection   Remote

You must be logged on as an Administrator to make most of these changes.

Performance
Visual effects, processor scheduling, memory usage, and virtual memory
                                                        Settings...

User Profiles
Desktop settings related to your sign-in
                                                        Settings...

Startup and Recovery
System startup, system failure, and debugging information
                                                        Settings...

                                                        Environment Variables...

Environment Variables

User variables for ntamraka

Variable	Value
OneDrive	C:\Users\ntamraka\OneDrive
Path	C:\Users\ntamraka\AppData\Local\Microsoft\WindowsApps;;C:\Us...
TEMP	C:\Users\ntamraka\AppData\Local\Temp
TMP	C:\Users\ntamraka\AppData\Local\Temp

New...   Edit...   Delete

System variables

Variable	Value
PROCESSOR_REVISION	9e0a
PSModulePath	%ProgramFiles%\WindowsPowerShell\Modules;C:\WINDOWS\syst...
PYTHONPATH	C:\Users\ntamraka\Anaconda3;C:\Users\ntamraka\devkitBase\plug...
RFMTREE	C:\Program Files\Pixar\RenderManForMaya-23.5\
RMANTREE	C:\Program Files\Pixar\RenderManProServer-23.5\
TEMP	C:\WINDOWS\TEMP
TMP	C:\WINDOWS\TEMP

New...   Edit...   Delete

OK   Cancel

5. It should look like this. Click Ok on all the above popup screens.

Edit environment variable   ✕

C:\Users\ntamraka\Anaconda3	**New**
C:\Users\ntamraka\devkitBase\plug-ins\scripts	
C:\Users\ntamraka\Documents\maya\2020\scripts\MayaPythonBook	Edit
C:\Users\ntamraka\Documents\maya\projects\Procedural_rigging_Frank\scripts\python	
C:\Users\ntamraka\Documents\maya\projects\Procedural_Kyle\scripts\python	Browse...
	Delete
	Move Up
	Move Down
	Edit text...
	OK Cancel

6. Now maya can look into the above folder for the scripts.
7. If it doesn't work- read the content this link:
https://namrakant23.wixsite.com/home/post/variables-in-the-environment

Note: By this point, you should have your python script folder ready and maya should be able to access all the scripts in the python folder. To check this, you can open a new maya scene, open the script editor and execute the below lines of code and check if the address you added in the PYTHONPATH is show in the output or not-

     import sys
     for i in sys.path:
          print(i)

     OR
You can execute the below code and if it doesn't throws error, it means maya can read the scripts-
     import characterRig
     import rigLib

PART-B: SETTING THE BASE RIG

1. Create a new project
2. Copy and paste the project folders to your scenes folder for model, rig and weight (names must be the same as in below screenshot). Model and weight folders are empty.
3. Paste your model under the "model" folder and name it " <characterName>_model.ma". Ex- Kyle_model.ma or Kyle_model.mb.

4. Open the maya file under the "rig" folder and rename <characterName> with your character's name. It should be the same as the model except that instead of "_model", it should be "_rig".
5. Go to File> Create Reference and select your model so that you can modify the base rig on top of that.
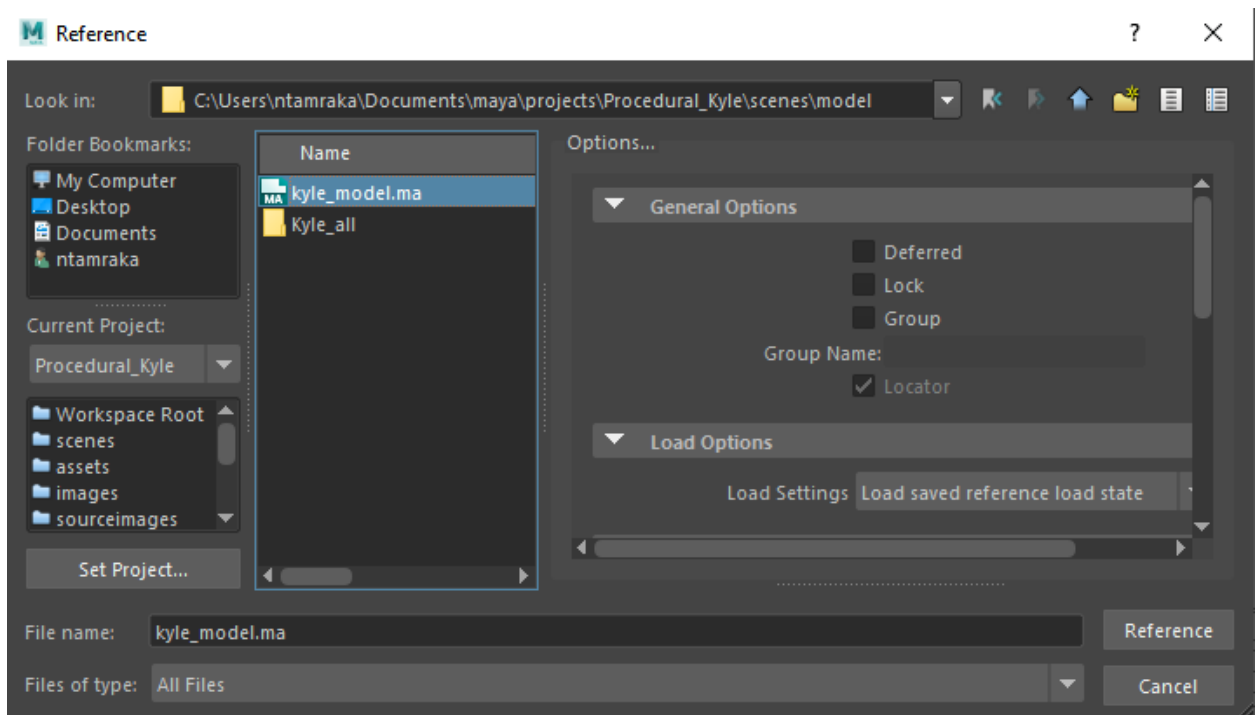
6. Base rig could look like this. Do not change the number of joints or any of the joint's naming convention. Simply translate the joints in your desired location.
For the best result, instead of translating the joints, you might want to rotate its parent joint in only 1 axis and freeze the rotation of the joints. At this point, you should have the

base rig ready on top of your character.
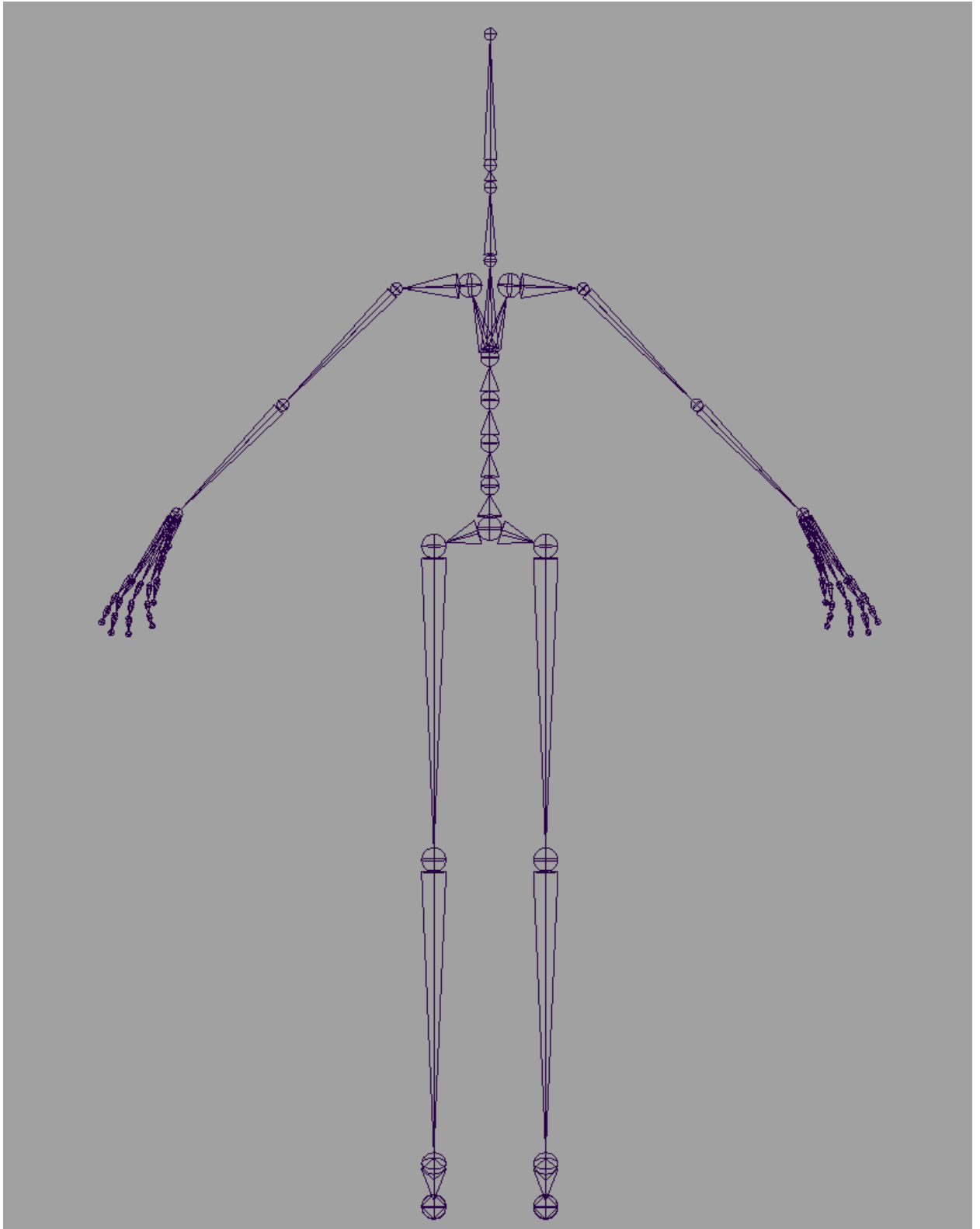
7. At this point, you can skin your joints to the character and you can save those skin weights in your "weight" folder by following the below steps-

a. Select the root joint and skin it to the mesh using joint hierarchy
b. Weight paint the joints as per your satisfaction (I would recommend saving a basic skinning first to see how the process goes, before committing to the final skinning)
c. Once weight painting is complete, open your script editor (Windows> General editor > Script Editor).
d. Go to the python tab and write below code-
   from rigTools import bSkinSaver
   bSkinSaver.showUI()
e. Execute the above code. You should see below popup-

f. Select the geometry you want to save skin weights for. Copy the name of the geometry.
g. Click on "Set file" and open the directory "weights", write the name of the file you want to create including the extension name. Ex- body.swt, L_eye.swt, R_eye.swt, hair_swt, etc.
   (name of the file should be same as the name of the geometry, except the extension)
   Note: Each weight paint file will have only 1 geometry's skin weights.
h. Click on "Save weights from selected Objects" and it should create a new file with the name and extension as you provided above.
   (We will use these .swt files to automatically load the skin weights while autorigging)
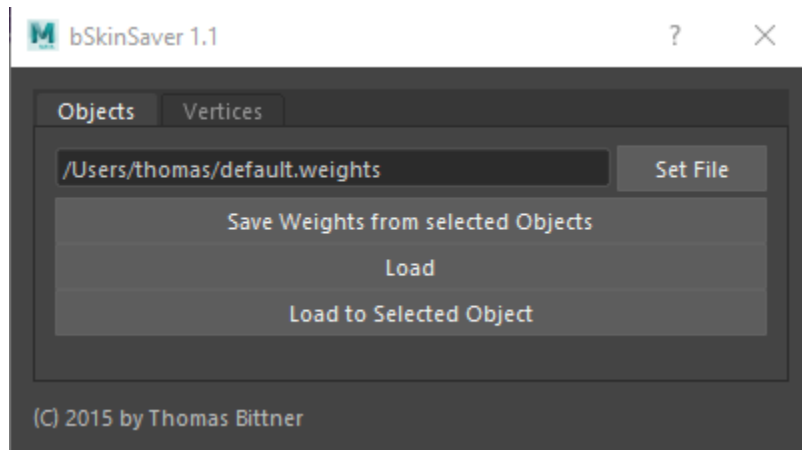
8. Remove the reference model once you have adjusted the base rig.
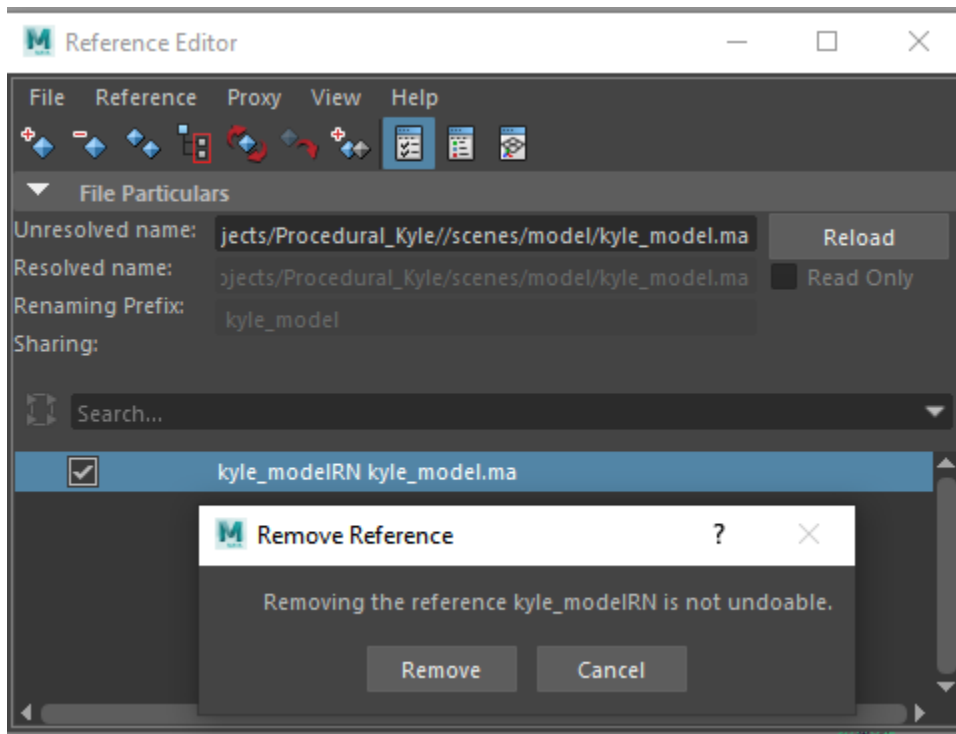
Note: At this point, you should have -
- A <characterName>_model.ma (or .mb) file in "model" folder
- A <characterName<_rig.ma (or .mb) file in "rig" folder
- One or more skin weights file with extension .swt, name should be the same as your geometry's name as seen in the maya outliner, in the "weight" folder.

PART C- EXECUTING THE FINAL SCRIPT
1. Open a new maya scene
2. You should have your scripts ready (check PART A of this document)
3. You should have your model, rig, weight ready (check PART B of this document)
4. Write below code in your script editor's python tab and execute it.

    import characterRig
    import rigLib

    characterName = 'Kyle'
    mainProjectPath = 'C:/Users/ntamraka/Documents/maya/projects/test'
    characterRig.character_setup.build(characterName, mainProjectPath)
5. Write your character's name in the line - characterName = 'xyz'
6. Write your project's path where you have the folders scene > model/rig/weight.
   Note Replace the backslash ('\') with forward slash ('/') in the address

7. Execute the code in script editor
8. It should throw some warnings, but it should also load your geometry, rig, skin weights and controls. If this works, you can go back to the skinning phase and save a better quality skinning.
9. The End.