Milestone 1 – Character Animation

This is an *INDIVIDUAL* assignment.

***** SPECIAL NOTE *****
Please remove all unnecessary assets from the projects you are submitting.

Due Date

September 25, 2015 @ 11:55 PM

Late Policy

Starting with Milestone 1, we will use a 2^(*n*+1) late policy point penalty, where *n* is the number of days late. For example, 1 day late is a reduction of 2^(1+1) or minus 4 points. Assignments are considered late if submitted any amount of time beyond the due date/time. Each 24 hours late beyond the due date determines the number of days late. More examples: 2 days late is minus 8, 3 days late is minus 16, 4 days late is minus 32, 5 days late is minus 64 (no assignments accepted any later). Note that this late policy does not apply to assignments that involve in-class presentation, and is subject to change for any specific assignment.

Description

For this assignment you will be creating a 3D humanoid character controller in Unity using Mechanim's advanced state-based animation blending. You will also create a simple level for the character to run around and explore.

Mechanim is Unity3d's animation system, which combines Blend Trees and Finite State Machines (FSMs) to support creation of fluid animations for characters. (Mechanim can be extended to also work with legacy animations in the world by providing FSM control of environmental objects.)

You will be creating/obtaining a rigged 3D human character model of your choosing, applying a variety of locomotion animations, and combining these assets with a Mechanim control and script.

The level should at minimum provide a variety of terrain to traverse, including obstacles that block the character's path, or require climbing and jumping to navigate.

For this animation you will need to complete the following requirements.

- Create a level for your character to explore with varied floor surfaces or terrain **(15 pts)**
- Create or obtain a model that you feel might be useful for your team project. Even a character that is not player-controlled in the future could be useful for a non-player character (NPC). (If you acquire a model make sure it is different than the ones your teammates select. Also note that you cannot use any of the models from the Unity tutorials or any 1st or 3rd party source that provides a bundle of rigged model, animation set, *and a pre-made Unity mechanim controller*. When in doubt, contact your TA!) **(15 pts)**
- Create a Mechanim Animation Controller for the animation that:

- Contains at least 3 input parameters defined for the controller (e.g. forward/backward, left/right, and jump) **(10 pts)**
- From the default state the character animation transitions to (and possibly through) states and blend trees with conditions set on the transitions using the values of the parameters. *You need to have at least 3 different states or blend trees beyond the default state*. States will likely include at least an idle state, a locomotion state, and perhaps turning in place and jumping states. **(25 pts)**
- One of the animation states must be a Blend Tree with at least 2 animation clip motions that are blended appropriately based on a parameter (e.g. the parameter might be forward translation speed causing a blend from walking to running). **(10 pts)**
- Translation of the avatar must occur via root motion (animation of translation) **(10 pts)**

- Implement a script that sets the parameters you use in the animation controller based on inputs from the player **(15 pts)**

Resources:

- Character Animation - https://www.youtube.com/watch?v=Xx21y9eJq1U
- Environmental Animation - http://www.lynda.com/3D-Animation-Games-tutorials/Unity-43-Essential-Training/150613-2.html
  - [see Chapter 7 Keyframing Animation]
- Unity Animations From Blender Rigify - http://docs.unity3d.com/Manual/BlenderAndRigify.html
- More Blender: http://zakjr.com/blog/blender-to-unity-workflow-part-1
- Mixamo Fuse Basic - Free
  - Windows - http://www.mixamo.com/download/fuse_basic?platform=windows
  - Mac - http://www.mixamo.com/download/fuse_basic?platform=osx
- Mixamo Animations - https://www.mixamo.com/
- Blender - https://www.blender.org/
- Autodesk Education Free Software - http://www.autodesk.com/education/free-software/all
- Autodesk Tools also on mycloud.gatech.edu on CoC-GPU-Desktop VM

Submission:

Submit your assignment in two ways.

First, as discussed in class and done in previous assignments, you should put your working demo on the web, embedded in a web page with all the directions and guidance necessary to try it out and verify the features above. This is especially important so the grader can assess this aspect of the assignment.

Second, you should submit a ZIP file of your Unity project directory via t-square. **Please clean the project directory to remove unused assets, intermediate and final build files, etc., to minimize the file size and make it easier for the TA to understand.**

The submissions should follow these guidelines:

a) Your name should appear on the HUD of your game when it is running.
b) ZIP file name: <lastName_firstInitial>_m1.zip
c) Readme file should be in the top level directory: < lastName_firstInitial >_m1_readme.txt and should contain the following
   i. Full name, email, and prism account name
   ii. Detail which requirements you have completed, which are incomplete, and which are buggy (be specific)

iii. Detail any and all resources that were acquired outside of class and what it is being used for(e.g. Asset Bundles downloaded from the Asset Store for double sided cutout shaders, or this file was found on the internet has link http://example.com/test and does the orbit camera tracking).
iv. Detail any special install instructions the grader will need to be aware of for building and running your code
v. Detail exact steps grader should take to demonstrate that your game meets assignment requirements.
vi. Which scene file is the main file that should be opened first in Unity
vii. URL of the web page where you posted your assignment

d) Complete Unity project (any file you acquired externally should be attributed with the appropriate source information)

Submission total: (**up to 20 points deducted** by grader if submission doesn't meet submission format requirements)

Be sure to save a copy of the Unity project in the state that you submitted, in case we have any problems with grading (such as forgetting to submit a file we need).