

Honors Special Topics in Computer Science
Summer Work 2017

Throughout the course of the year, you will be expected to write a plan for each of the four marking periods. The purpose of the plan is to:

- a) describe what it is you will be doing,
- b) lay out the goals for the marking period,
- c) identify any resources (e.g. books, software, etc.) that you will need, and
- d) provide a high-level timeline of what you will be doing each week

Your assignment this summer is to plan out your work for the first marking period of Honors Special Topics in Computer Science. In a document that will be checked for completion on the first day of the 2017/18 school year, please provide a description of your project, your goals for the marking period, the resources that you will require, and a high-level timeline of what you will be doing each week.

In addition, please identify one person on the Internet who seems to be an “expert” in your area of focus, and obtain his/her e-mail address.

Finally, identify at least three Internet resources (websites, forums, discussion groups, etc.) that can be used to help you throughout the marking period.

On the following pages, I have attached a sample marking period plan that addresses points a-d above. You may use this as a guide, although it does not have to be written in the same format.

If you need to contact me for clarification purposes, I can be reached at ghull@spsd.us

During the 1st marking period of special topics I am going to work on game development. I will be trying to get a 3d model into a world and have it interact with the world.

Goal:

- Finish animations 3d model
 - Finish texturing, posing, and animating
- Make simple 3d environment in either Visual Studio or use the Blender game engine
- Get the model to move with animations triggered by keyboard input
- Have character interact with the floor of the world

Resources:

- Visual Studio to put on laptop
- Game Coding Complete (Already Have)

Possible Mentors:

- <http://gmo.chronus.com/p/main/about>
- Mike McShaffry
 - mrmike@mcshaffry.com
 - <http://www.mcshaffry.com/mrmike/>
- David Graham

Timeline:

Week 1: Put Visual Studios and Blender on my new laptop. Research how blender reacts with Visual Studios and if I need to do anything to the model before putting it in Visual Studio. I will work on my 3d model and animations. At home, I have created the 3d model, rigged the model, weight painted, and started the textures so I just need to finish the textures then I can start with the poses and animations.

Week 2: To start on Monday, I will put the model in pose mode, and start to animate the figure. I will make a walk cycle animation. I should finish the walk animation at the end of the period on Wednesday. On Thursday and Friday I will make a jumping animation. Once I finish the animations I will go back to object mode, and make sure the model follows the animations and doesn't leave anything behind.

Week 3: I will finish checking over my animations by the end of the period on Tuesday. After that I will research the Blender game engine. I will compare it to XNA and see which one I should use.

Week 4: I will create a project in XNA or the Blender game engine. I have a project in XNA already started with a title screen, so I will probably start that way first. I will research how to move the model and its animations to the project. This will probably take me the rest of the week.

Week 5: I will most likely need Monday and some of Tuesday to finish moving the animation to the project. In XNA, it will be in the middle of an open screen with no floor. I will create a simple plane in Blender and move that into the project. This should not take me too long because I will already know how to move it over.

Week 6: I will start by reading the chapter in the XNA book about input. I will research how to use the keyboard to move the model and trigger the animations. I will use the w, a, s, and d keys to move up, left, down, and right. I will make the space bar trigger the jump animation and move the figure up.

Week 7: I will continue to work on getting the keys to control the animations. The hardest part will be to get the timing and spacing correct. I will have to move the model far enough so that the animation makes sense. I would not look right if the model moved 1 meter and the animation continued for a second. I will also make it so the position and angle of direction when the model moves lines up with the floor so it isn't floating or go through the floor.

Week 8: I will start putting a little bit of physics into the project. I will make a gravity system so that the model falls down after the jump animation. This should take me a few days and on Friday I will start having the model interact with the floor.

Week 9: I will continue to make the character interact with the floor; I will make it so that it does not go through the floor and stops the model from falling through when it jumps. I will start to work on a new animation for falling. It will be a two part animation, first an animation when in the air and an animation for when it hits the ground. These animations will be different depending on how high the model falls from. If it falls from high up it will hit the ground more violently and if it hits from a simple jump it will be smaller.

Week 10: I will implement these animations into the project. I will also change the floor model so that it is flat, then has a drop, and then is flat, then a larger drop, and then is flat. This new floor will allow me to test the falling animation from two different heights to make it so the landing animation is different. I will most likely need to fix mistakes like the landing animation taking too long or falling through the floor a little bit.