

## Design Document

For this project, I feel that its purpose is to help us better understand how inheritance, polymorphism, and GUI's work. I believe that this is one of the most important aspects of programming. That is why we are getting so much practice with it and will continue to practice this. I also feel that this project to help us understand how to implement real world concepts into the programming world.

The classes that I am to create are the Planet, Star, and Flotsam classes. These classes will all be children classes from the parent class Satellite. This means that a Planet, a star, and a flotsam are all satellites. The reason that a Planet, a Star, and a Flotsam are all satellites is because they all have similar properties. They all have a position in space, a velocity, and a mass. This will allow me to use polymorphism in my coding, allowing me to let the compiler decide what each object will be at run time. I will also create a Junit tester to test my Geometry\_Vector class.

I believe that it would probably take 1 second to process 2000 bodies on your desktop computer and 4 seconds on your laptop. I believe this to be the case because most things in life are not linear. They are quadratic. This means that the more bodies that you try to process, the longer it will take. I also believe that the older and or slower processor will take more time to process the same amount of bodies.

I know that it will take me every second of everyday that I am able to work on this project if I want to get a C in this project and class. I will approximately work 20 hours if it is a good week. This sound like a lot but I am a slow learner. I know this because this is what happened in my CS 1410 class. The other reason for this is that I don't have a lot of time to work on this project or any project for that matter. I am working full time hours trying to provide the necessities of life, taking care of my expecting wife, and trying to be faithful in my religion. When I was in 1410, I was single, working far less hours, and not taking care of anyone but myself. It took Tuesdays off so that I could get help from the TA's all day. I did that again this semester, only this time, I have a lab that I have to go to from 2pm until 5pm. With that said however, I promise to give my all.

The three interesting points that I found interesting in the starting point code was the fact that I can decide which methods are abstract, which classes talk to each other, and which how the additional classes are designed. In the Satellite class, I can decide if I want to add additional information there, in the child class, or in both classes. Basically, I get to decide if I want to generalize the information or be more specific. It is up to me to find a way to have the classes that I create talk to the other classes that were previously created. This means that I can decide how I want the classes to be called.

I hope to be able to finish this program and have it look at least a little bit like the example that we were shown in class. If I get lucky, I may be able to even do something interesting. If nothing else, it will be a good learning experience and help me get more familiar with writing good code.