NBody Simulation

Drawing the Initial Universe State (main)

Next, build the functionality to draw the universe in its starting position. You'll do this in four steps. Because all code for this part of the assignment is in main, this part of the assignment will NOT have automated tests to check each little piece.

Collecting All Needed Input

Create a **main** method in the NBody class. Write code so that your NBody class performs the following steps:

- Store the 0th and 1st command line arguments as doubles named **T** and **dt**. Hint: the arguments come in as Strings. You will have to Google around in order to learn how to convert the Strings to doubles!
- Store the 2nd command line argument as a String named **filename**.
- Read in the bodies and the universe radius from the file described by **filename** using your methods from earlier in this assignment.

Drawing the Background

After your main method has read everything from the files, it's time to get drawing. First, set the scale so that it matches the radius of the universe. Then draw the image **starfield.jpg** as the background. To do these, you'll need to figure out how to use the StdDraw library.

See **StdDrawDemo.java** in the examples folder for a demonstration of StdDraw. This example, like **InDemo.java**, does not perfectly match what you're doing.

In addition, make sure to check out the StdDraw section of this mini-tutorial, and if you're feeling bold, the full StdDraw documentation. This will probably take some trial and error. This may seem slightly frustrating, but it's good practice! Note that, you may notice that putting starfield.jpg as a parameter into StdDraw.picture() results in a blank screen. This is because our starfield.jpg is inside the images folder. Thus, **you will need to use the full relative path from the proj0 directory**, i.e. images/starfield.jpg in order to get your image. This applies to any other images you may use in the future.

Drawing One Body

Next, we'll want a Body, such as a planet, to be able to draw itself at its appropriate position. To do this, take a brief detour back to the Body.java file. Add one last method to the Body class, **draw**, that uses the StdDraw API mentioned above to draw the Body's image at the Body's position. The **draw** method should return nothing and take in no parameters.

Drawing More than One Body

Return to the main method in NBody.java and use the **draw** method you just wrote to draw each one of the bodies in the **Body**s array you created. Be sure to do this after drawing the starfield.jpg file so that the planets don't get covered up by the background.

Test that your main method works by compiling:

```
javac NBody.java
```

And running the following command:

```
java NBody 157788000.0 25000.0 data/planets.txt
```

You should see the sun and four planets sitting motionless. You are almost done.