Research and UML

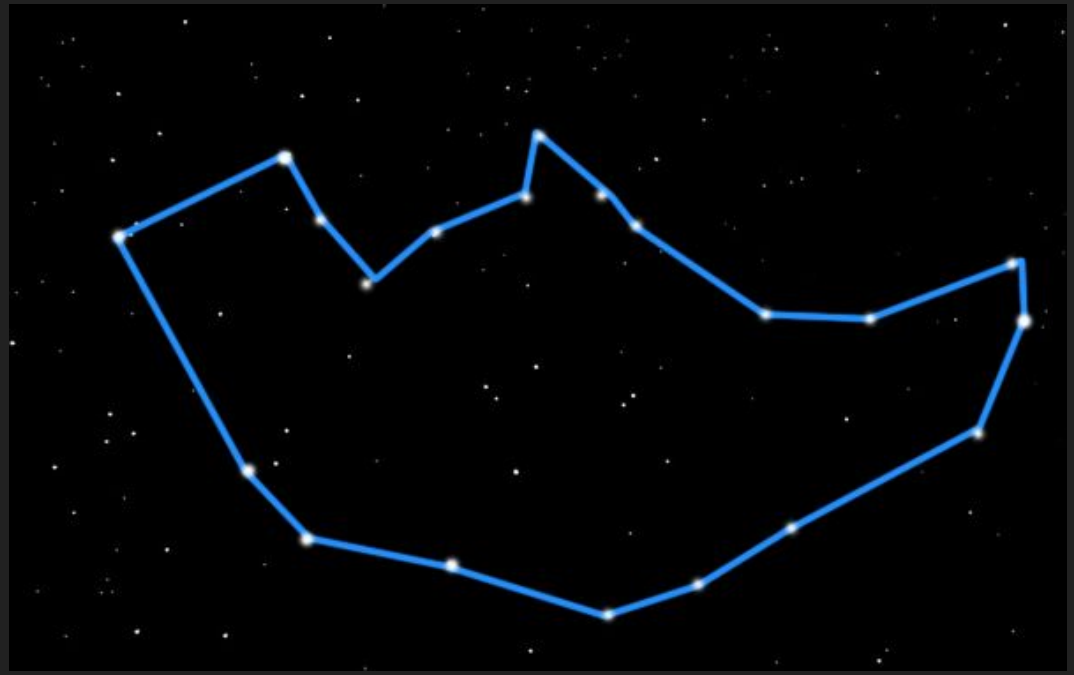
By Cody Gaudet

The concept

- 3D Night Sky simulator where the user clicks and drags to look around
- Allows the user to connect existing stars to form their own constellations

  Eg: my newest constellation: the teapot

- Time is sped up so the user can see how planets/stars move around throughout the year



Research sources

- NASA website

Libraries

- SketchMapper to map textures onto planets/stars.
- PeasyCam to rotate the camera around
- Planetarium, which “project 3D Processing sketches on spherical domes, with minimal changes in the code of the sketch.” (still figuring out how it works).

Inspirations

- Stellarium
- StarWalk
- Planetarium - Daniel Linssen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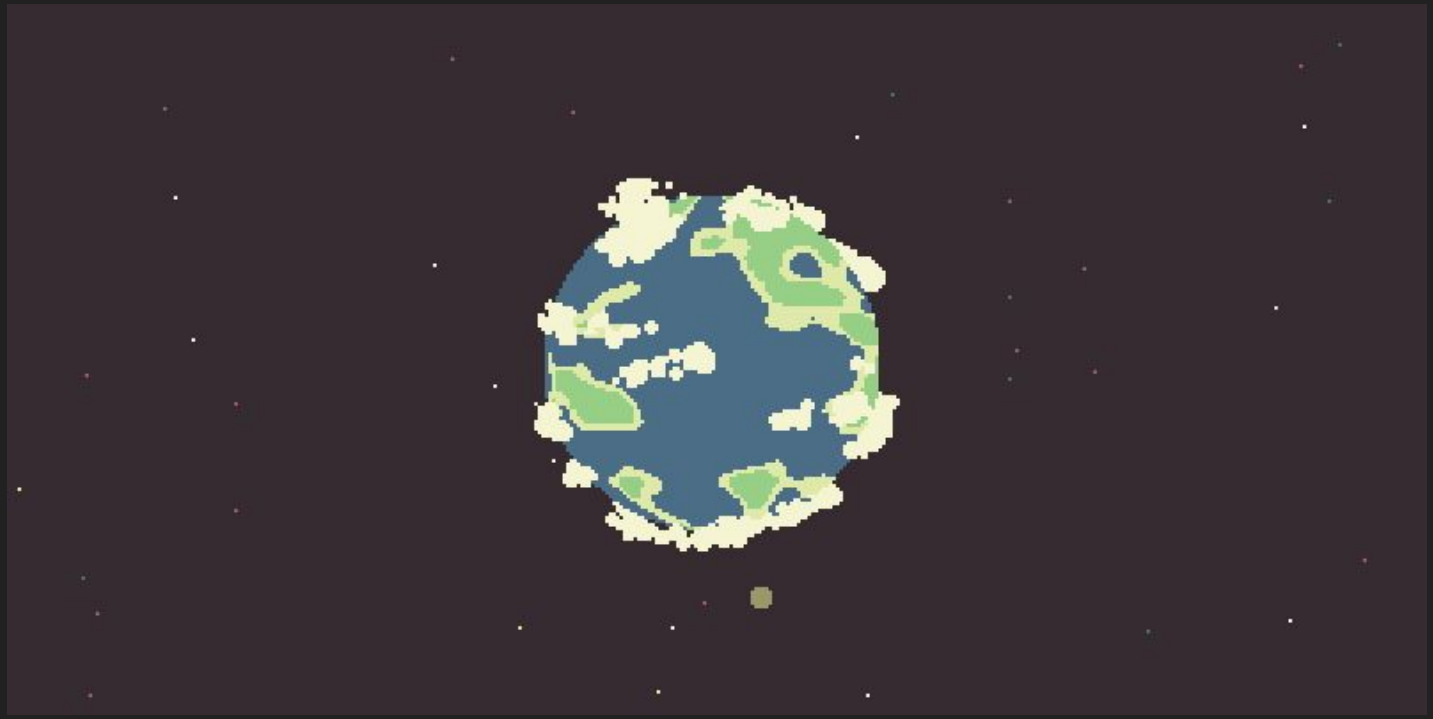
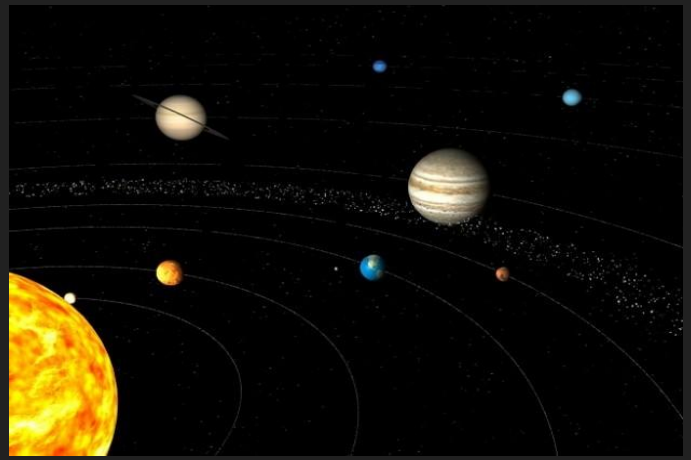
Kocab
LYNX
Dubhe
Alioth
Benetnash
LEO MINOR
CANES VENATICI
N
Ursa Major

Planetarium - Daniel Linssen



Project Scope - Goals

- Creating a solar system where planets orbit around a sun
- Set the camera where Earth is
- Mapping all the stars around the Solar System in 3D;
- Allow the user to connect stars in the sky to create new constellations
- Create a drawing panel where the user can draw an outline on top of their new constellation after connecting the stars.



Procedure

- Planets and stars will be created using sphere()
  - Still figuring out shininess(), specular(), emissive() for the material
- Still unsure how to place the stars in the 3D environment - could place them along the surface of a sphere that surround the whole solar system.
- Using PeasyCam (or a modified version of it to lock its movement on earth's orbit, but keep the rotating aspect) as a camera
- For the outline drawing, I can use this code from the Processing Website
- line() to draw lines between stars
- If time permits, particle systems could be integrated as comets, asteroids, etc
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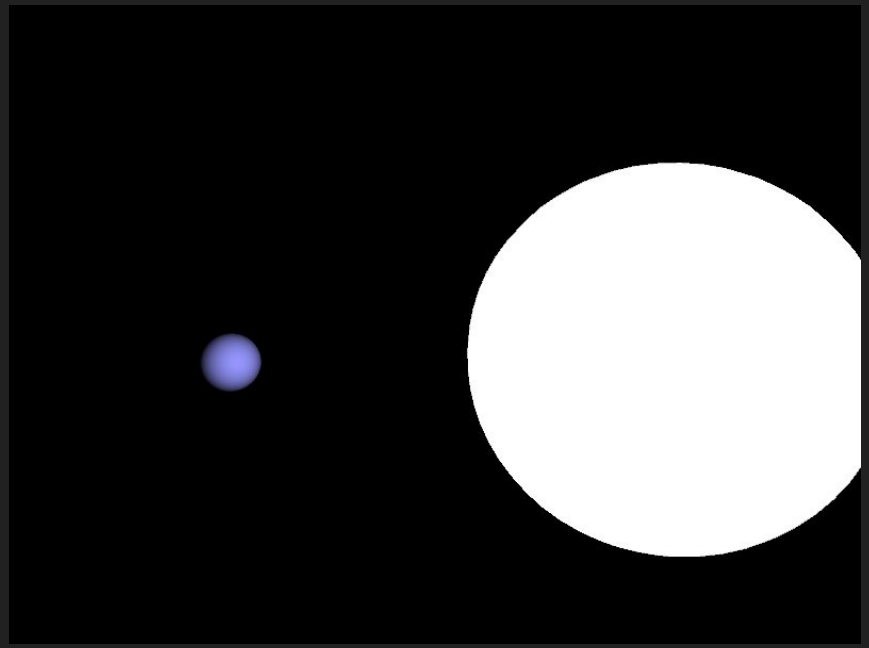
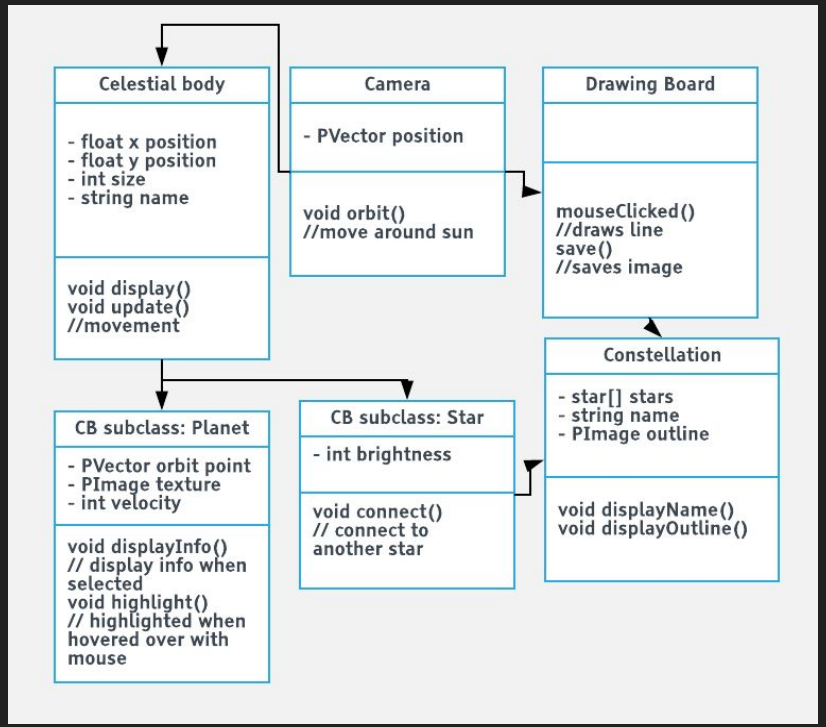
Test - planet and sun



UML


Celestial body
- float x position
- float y position
- int size
- string name
void display()
void update()
//movement
Camera
- PVector position
void orbit()
//move around sun
Drawing Board
mouseClicked()
//draws line
save()
//saves image
Constellation
- star[] stars
- string name
- PImage outline
void displayName()
void displayOutline()
CB subclass: Planet
- PVector orbit point
- PImage texture
- int velocity
void displayInfo()
// display info when selected
void highlight()
// highlighted when hovered over with mouse
CB subclass: Star
- int brightness
void connect()
// connect to another star

Thanks!