**Computer graphics and animation**

**Assignment I Report**

**3D Models**

* Ana-Sabina Irimia
  + Asteroid B612
  + City Planet
  + Nature Planet
  + Sun
* Andrew Alford
  + Dying Planet
  + Moon – waving flag
  + Space Plane
  + Treasure Planet

**User Interaction** – Implemented by Andrew Alford

* Main Project:
  + The application can be controlled using the THREE JS Device Orientation Controls library. This allows the user to look around the scene from a first-person perspective.
* Object Viewer:
  + The Object viewer is controlled using the THREE JS Orbit Controls library. This allows the user to orbit the camera around the object being focused on.
  + Objects can be cycled using the “d” key to cycle forwards and the “a” key to cycle backwards. On mobile devices the user is able to tap the screen to cycle forward.

**Graphical Rendering**

* Trade-off between visual quality and interactive performance

All the 3D Models that we have created are low poly and are using a physical material with flat shading. This allows for an art style with high performance rendering.

* The light was implemented by Ana-Sabina Irimia, using an ambient light and 3 point lights, one of them being the Sun.
* Shadows are used throughout the project by letting the models cast and receive the shadows projected by the lights. The shadows were implemented by each student.
* For each model it was used the physical material allowing to change the texture. For example, on the Nature planet the surface of the water differs from the rest of the materials, having a shinier texture. This was possible by increasing the reflection of the material.

**Special Effects**

* Andrew Alford
  + Volcanic eruption particle effect
  + Objects orbiting other objects
* Ana-Sabina Irimia – The shield on the City Planet can cycles opacity, creating a blinking effect.

**Proposed Features**

* Andrew Alford
  + Using JavaScript Object Oriented programming to abstract the code into “engine code” and “object code”. This allows for reusable and easy to use code. E.g. The programmer does not need to worry about animating and rendering their objects, if the object has an update() function, then the engine code will do the animating and rendering for them.
  + Created the object viewer. This is a separate HTML file which allow for each object to be cycled through and viewed individually. This application can be used to get a close up view of each object created in the project.
* Ana-Sabina Irimia
  + Loading screen – is implemented to run while the main code is loading and displays an animation of a changing planet Earth.
  + The style of the 3D models. The use of rough shapes were the edges can be seen.

**References**

planetmoonstars. (2015). *Purple saturn*. Retrieved from favicon.cc: <https://www.favicon.cc/?action=icon&file_id=843526>

StumpyStrust. (2014, January 07). *Space Skyboxes*. Retrieved from opengameart.org: <https://opengameart.org/content/space-skyboxes-0>