# Team Members

Eric Klukovich – CS 680

Christine Johnson – CS 680

Thomas Rushton – CS 480

# Running the program

1. Navigate to the "bin" folder.

2. Type "./SolarSystem"

# Controls

## Keyboard

|  |  |
| --- | --- |
| **Key** | **Description** |
| **w** | **Move Forward** |
| **a** | **Move Left** |
| **s** | **Move Backward** |
| **d** | **Move Right** |
| **q** | **Move Down** |
| **e** | **Move Up** |
| **i** | **Look Up** |
| **j** | **Roll Left** |
| **k** | **Look Down** |
| **l** | **Roll Right** |
| **u** | **Look Left** |
| **o** | **Look Right** |
| **+** | **Speed Up Movement** |
| **-** | **Slow Down Movement** |
| **ESC** | **Exit the Program** |

Press keys 1-9 to follow a specific planet. Pressing a movement key will return the free-moving camera.

|  |  |
| --- | --- |
| **Key** | **Description** |
| **1** | **Mercury** |
| **2** | **Venus** |
| **3** | **Earth** |
| **4** | **Mars** |
| **5** | **Jupiter** |
| **6** | **Saturn** |
| **7** | **Uranus** |
| **8** | **Neptune** |
| **9** | **Pluto** |

## Menu

To open the menu, press the mouse right-click button.

|  |  |
| --- | --- |
| **Menu Option** | **Description** |
| **Start Orbit** | **Resume all planets’ orbit** |
| **Stop Orbit** | **Pause all planets’ orbit** |
| **Change Scale** | **Switch between realistic and scaled views** |
| **Toggle Orbit Paths** | **Turn drawing orbit paths on or off** |
| **Quit** | **Exit the program** |

# Extra Credit

## Orbit paths

An arbitrary radius is used to create 360 points along the circumference of a circle. The points are stored in a vertex buffer object and drawn using GL\_DRAW\_LINES. The same circle model is rendered for each planet, but it is scaled according to each planet’s distance from the sun.

## Change scale

Two data files are used to store different planet data; one set representing a realistic view, and the other representing a scaled view. Depending on the file being read, different operations are performed to store the data and update the movement of the planets.

## Uranus rings

In addition to the rings on Saturn's model, rings were also added to the Uranus model.