

## Interactive Solar System

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Upon loading the application, the user sees a view of the entire solar system. From here, the user has a number of options, as described below:

**Inner/Full View:** allows the user to switch between viewing the entire solar system, or just the inner 4 planets that are hard to see when the whole system is viewed. This mode allows the user to use any of the functions available in full view mode.

**Model Transformations:** allows the user to scale, or rotate the entire solar system about its local axes, by left-click dragging the mouse.

**World Transformations:** allows the user to translate the solar system along the world coordinate axes, or rotate it about the axes, by left-click dragging the mouse.

**View Transformations:** allows the user to rotate or translate the view point with respect to the world axes, and modify the near and far clipping planes. All this is done by left-click dragging the mouse.

**Planet Selection:** this menu lets the user choose what planet is currently selected.

**Edit Selected Planet:** this lets the user modify four attributes of the currently selected planet; the equatorial radius of the planet, the radius of orbit, the local body rotation speed, and the speed at which it orbits the sun. All of these are increased by left-click dragging the mouse to the right, and decreased by dragging to the left.

**View Selected/Restore:** this lets the user jump to a close up view of the currently selected planet. This view still allows the user to use any of the model or view transformations, and when finished, this option will return to the solar system view.

**Modify Speed:** this function lets the user modify the speed of the overall solar system. By left-click dragging the mouse to the right, time passes faster, and the speeds of local and orbit rotation are increased. By left-click dragging the mouse to the left, time slows down, and the speeds are decreased.

**Pause/Resume:** this feature lets the user pause the solar system animation and, upon clicking the option again, resume it when desired.

**Toggle Axes On/Off:** allows the user to toggle the x, y, and z coordinate axes on or off. This option is available in the view planet mode as well.

**Toggle Orbital Paths On/Off:** allows the user to toggle the white orbit path for all planets on or off.

**Save System:** saves the current solar system to file (can be modified by editing the planet attributes).

**Load Saved System:** loads the system that was most recently saved.

**Quit:** exits the application.