

Files and their Relationships

The tables below give an overview of the Java source-code files found on the accompanying CD. The files used by the `rsf.jfe` package² are not included in any of the tables here. They are independent of the rest of the book and are discussed in Appendix B. All of the package names start with `rsf`. To save space in the tables, the `rsf` prefix is omitted from the package names in the tables.

The table below lists all of the programs, gives a brief description, and indicates the page number where the code can be found. Only those classes with a `main()` method are listed.

Package	Class	Page	Description
<i>default</i>	HelloWorld	3	Prints a simple message.
ui	LineReader	43	Parses text input.
ui	LoadOrSaveDialog	45	Dialog for loading or saving files.
ui	ChoiceDialogRadio	46	Dialog box based on radio buttons.
ui	TextInputDialog	49	Dialog box based on text input.
graphics.sphere.intro	SphereWindow0	69	Window onto a shaded sphere.
graphics.sphere.intro	SpherePane	74	Improved SphereWindow0.
graphics.sphere.intro	MobilePane	79	Shaded sphere with a mobile observer.
graphics.sphere.intro	DrawPane	85	A shaded sphere on which the user can draw.
graphics	JPEGViewer	90	Displays an arbitrary JPEG.
graphics.sphere.intro	ImagePastePane	91	Shows a sphere with an image pasted on it.
graphics.sphere.intro	SurfacePane	93	Shows a sphere with surface details.
astron.kepler	KeplersEqn	112	Tests of Kepler's equation.
astron.kepler	KeplerAnim	114	Animation of solutions of Kepler's equation.
astron.graphics.intro	SunMotion	136	Simple animation of the sun on the celestial sphere.
astron.graphics.intro	FancySunMotion	140	Improved version of SunMotion.
astron.time	CalDate	150	Tests code related to calendar dates and times.
astron.place	Coord	162	Tests code for working with celestial coordinates.
astron.graphics.intro	PrecessSphere	179	Animation of precession.
astron.time	EqnOfTime	186	Prints values for the equation of time.
astron.time	EqnOfTimeAnim	197	Animation of the equation of time.
astron.jpl	JPLConverter	218	Converts JPL data to Java format.
astron.place	PlaceUtil	229	Reports celestial coordinates of the planets.
astron.jpl.anim	SimpleAnim	231	Animation of the solar system.
astron.jpl.anim	MobileAnim	235	Improved animation of the solar

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²“Package”, “class” and other terms related to Java are defined in Chapter 1.

Package	Class	Page	Description
			system.
astron.stars	StarWindow	248	Shows the stars on the celestial sphere.
astron.stars	StarAnim	250	Animation of stars' proper motion.
astron.jpl.anim	JPLSphereAnim	254	Animation of the planets on the celestial sphere.
astron.graphics.cs	CSAnim	256	Animation of the stars and planets on the celestial sphere.
astron.graphics.incs	InsideStarWindow	275	View of the stars from inside the celestial sphere.
astron.graphics.incs	CEarthAnim	280	Animation of the stars and planets, as seen by an observer at the center of the earth.
astron.graphics.surface	SurfaceMain	291	Animation of the stars and planets, as seen from the surface of the earth.

The table below shows the classes that are developed in this book, along with a list of the programs that use the class. The entries under **Users** are classes that appeared in the previous table. The `main()` of some of the classes in the previous table is for testing or demonstration, and the class isn't really meant to be run in isolation; those classes do appear in left column of the table below. Other classes that appear above are final products and these classes do not appear in the left column below. In some cases, a class is used so often that it doesn't make sense to enumerate all of of the programs in which it is used. These classes are typically short utilities; e.g., `rsf.ui.SimpleWindow`, which many programs use as a basis for creating windows.

Class	Page	Users
ui.LineReader	43	astron.kepler.KeplersEqn astron.place.Coord astron.place.PlaceUtil astron.time.CalDate
ui.LoadOrSaveDialog	45	<i>numerous</i>
ui.ChoiceDialogRadio	46	astron.jpl.JPLConverter
ui.TextInputDialog	49	astron.graphics.surface.SurfaceMain
ui.WindowQuitter	71	<i>numerous</i>
ui.MyPanel	72	<i>numerous</i>
ui.SimpleWindow	72	<i>numerous</i>
ui.FocusTaker	80	graphics.sphere.intro.MobilePane graphics.sphere.intro.DrawPane graphics.sphere.intro.ImagePastePane graphics.sphere.intro.SurfacePane
graphics.sphere.intro.EyeKeyListener	81	graphics.sphere.intro.MobilePane graphics.sphere.intro.DrawPane graphics.sphere.intro.ImagePastePane graphics.sphere.intro.SurfacePane
astron.kepler.KeplersEqn	112	astron.kepler.KeplerAnim astron.time.EqnOffTime astron.time.EqnOffTimeAnim
graphics.sphere.OutSphere	122	astron.graphics.intro.SunMotion astron.graphics.intro.FancySunMotion astron.graphics.intro.PrecessSphere astron.stars.StarWindow astron.stars.StarAnim astron.jpl.anim.JPLSphereAnim astron.graphics.cs.CSAnim
graphics.sphere.EyeAdjuster	131	<i>numerous</i>
graphics.sphere.EyeKeyListener	132	<i>numerous</i>
astron.graphics.intro.EqEcSphere	133	astron.graphics.intro.SunMotion

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Class	Page	Users
		astron.graphics.intro.FancySunMotion
		astron.stars.StarWindow
		astron.stars.StarAnim
		astron.jpl.anim.JPLSphereAnim
astron.graphics.intro.BaseSphereMgr	135	astron.graphics.cs.CSAnim
		astron.graphics.intro.SunMotion
		astron.graphics.intro.PrecessSphere
		astron.stars.StarWindow
		astron.stars.StarAnim
		astron.jpl.anim.JPLSphereAnim
		astron.graphics.cs.CSAnim
astron.graphics.intro.FancySphereMgr	139	astron.graphics.intro.FancySunMotion
astron.time.CalDate	150	astron.graphics.intro.PrecessSphere
astron.time.TimeUtil0	151	astron.graphics.intro.PrecessSphere
		astron.place.PlaceUtil
		astron.graphics.surface.SurfaceMain
astron.place.Coord	162	<i>numerous</i>
astron.place.PlaceUtil0	176	astron.graphics.intro.PrecessSphere
		astron.place.PlaceUtil
		astron.graphics.surface.SurfaceMain
astron.time.EqnOfTime	186	astron.time.EqnOfTimeAnim
astron.time.TimeUtil	190	astron.place.PlaceUtil
		astron.graphics.surface.SurfaceMain
graphics.graphing.GraphPanel	192	astron.time.EqnOfTimeAnim
graphics.graphing.GraphAnimWindow	195	astron.time.EqnOfTimeAnim
astron.jpl.JPLData	210	<i>numerous</i>
astron.place.PlaceUtil	229	astron.graphics.surface.SurfaceMain
astron.jpl.anim.PlanetState	234	astron.jpl.anim.MobileAnim
astron.jpl.anim.MobilePane	237	astron.jpl.anim.MobileAnim
astron.stars.StarList	244	<i>numerous</i>
astron.stars.StarSphere	246	astron.stars.StarWindow
		astron.stars.StarAnim
		astron.graphics.cs.CSAnim
astron.jpl.anim.JPLSphere	252	astron.jpl.anim.JPLSphereAnim
		astron.graphics.cs.CSAnim
		astron.graphics.incs.CEarthAnim
astron.graphics.cs.CelestialSphere	255	astron.graphics.cs.CSAnim
graphics.sphere.InSphere	259	astron.graphics.incs.InsideStarWindow
		astron.graphics.incs.CEarthAnim
		astron.graphics.surface.SurfaceMain
graphics.sphere.InsideEyeAdjuster	267	astron.graphics.incs.InsideStarWindow
		astron.graphics.incs.CEarthAnim
		astron.graphics.surface.SurfaceMain
graphics.sphere.InsideKeyListener	267	astron.graphics.incs.InsideStarWindow
		astron.graphics.incs.CEarthAnim
		astron.graphics.surface.SurfaceMain
astron.graphics.incs.InsideSphereMgr	269	astron.graphics.incs.InsideStarWindow
		astron.graphics.incs.CEarthAnim
		astron.graphics.surface.SurfaceMain
astron.graphics.incs.InsideStarSphere	273	astron.graphics.incs.InsideStarWindow
		astron.graphics.incs.CEarthAnim
		astron.graphics.incs.CEarthAnim
		astron.graphics.surface.SurfaceMain
astron.graphics.incs.CEarthPane	278	astron.graphics.incs.CEarthAnim
astron.graphics.surface.SurfacePane	285	astron.graphics.surface.SurfaceMain
graphics.GUtil	324	<i>numerous</i>

The following table lists all of the classes with a `main()` that are meant to be run as stand-alone programs. For each of these programs, the **Requires** column lists all of the classes needed to run the program. Various classes that are built-in to Java are required as well, but they are not listed. See Section (1.5) for a complete list of the Java classes used by all of the classes developed here.

<u>Class/Program</u>	<u>Requires</u>
HelloWorld	<i>none</i>
graphics.sphere.intro.SphereWindow0	graphics.sphere.intro.SpherePane ui.MyPanel ui.SimpleWindow ui.WindowQuitter
graphics.sphere.intro.SpherePane	graphics.GUtil ui.MyPanel ui.SimpleWindow ui.WindowQuitter
graphics.sphere.intro.MobilePane	graphics.sphere.intro.SpherePane graphics.sphere.intro.EyeKeyListener graphics.sphere.EyeAdjuster ui.MyPanel ui.SimpleWindow ui.WindowQuitter ui.FocusTaker
graphics.sphere.intro.DrawPane	graphics.GUtil graphics.sphere.intro.MobilePane graphics.sphere.intro.SpherePane graphics.sphere.intro.EyeKeyListener graphics.sphere.EyeAdjuster ui.MyPanel ui.SimpleWindow ui.WindowQuitter ui.FocusTaker
graphics.JPGViewer	graphics.GUtil ui.LoadOrSaveDialog ui.WindowQuitter
graphics.sphere.intro.ImagePastePane	graphics.sphere.intro.MobilePane graphics.sphere.intro.SpherePane graphics.sphere.intro.EyeKeyListener graphics.sphere.EyeAdjuster ui.LoadOrSaveDialog ui.MyPanel ui.SimpleWindow ui.WindowQuitter ui.FocusTaker
graphics.sphere.intro.SurfacePane	graphics.GUtil graphics.sphere.intro.MobilePane ui.LoadOrSaveDialog ui.MyPanel ui.SimpleWindow ui.WindowQuitter ui.FocusTaker
astron.kepler.KeplerAnim	graphics.GUtil astron.kepler.KeplersEqn ui.MyPanel ui.SimpleWindow ui.WindowQuitter
astron.graphics.intro.SunMotion	astron.graphics.intro.EqEcSphere astron.graphics.intro.BaseSphereMgr graphics.sphere.OutSphere graphics.sphere.EyeKeyListener graphics.sphere.EyeAdjuster ui.MyPanel ui.SimpleWindow ui.WindowQuitter
astron.graphics.intro.FancySunMotion	graphics.GUtil astron.graphics.intro.FancySphereMgr astron.graphics.intro.EqEcSphere graphics.sphere.OutSphere graphics.sphere.EyeAdjuster graphics.sphere.EyeKeyListener ui.MyPanel ui.SimpleWindow ui.WindowQuitter
astron.graphics.intro.PrecessSphere	graphics.GUtil astron.graphics.intro.BaseSphereMgr

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Class/Program	Requires
	graphics.sphere.OutSphere graphics.sphere.EyeKeyListener graphics.sphere.EyeAdjuster astron.place.Coord astron.time.CalDate astron.time.TimeUtil0 astron.place.PlaceUtil0 ui.MyPanel ui.SimpleWindow ui.WindowQuitter graphics.GUtil
astron.time.EqnOfTime	astron.kepler.KeplersEqn graphics.GUtil
astron.time.EqnOfTimeAnim	graphics.graphing.GraphAnimWindow graphics.graphing.GraphPanel astron.time.EqnOfTime astron.kepler.KeplersEqn graphics.GUtil
astron.jpl.JPLConverter	astron.jpl.JPLData ui.ChoiceDialogRadio ui.LoadOrSaveDialog graphics.GUtil
astron.place.PlaceUtil	astron.jpl.JPLData astron.time.TimeUtil astron.place.PlaceUtil0 astron.place.Coord ui.LineReader ui.LoadOrSaveDialog graphics.GUtil
astron.jpl.anim.SimpleAnim	ui.LoadOrSaveDialog astron.jpl.JPLData graphics.GUtil
astron.jpl.anim.MobileAnim	astron.jpl.JPLData ui.LoadOrSaveDialog graphics.GUtil
astron.stars.StarWindow	astron.stars.StarSphere astron.stars.StarList astron.graphics.sphere.OutSphere astron.graphics.intro.BaseSphereMgr astron.graphics.intro.EqEcSphere graphics.sphere.EyeKeyListener graphics.sphere.EyeAdjuster astron.place.Coord ui.MyPanel ui.SimpleWindow ui.WindowQuitter ui.LoadOrSaveDialog graphics.GUtil
astron.stars.StarAnim	astron.stars.StarSphere astron.stars.StarList astron.graphics.sphere.OutSphere astron.graphics.intro.BaseSphereMgr astron.graphics.intro.EqEcSphere graphics.sphere.EyeKeyListener graphics.sphere.EyeAdjuster astron.place.Coord ui.MyPanel ui.SimpleWindow ui.WindowQuitter ui.LoadOrSaveDialog graphics.GUtil
astron.jpl.anim.JPLSphereAnim	astron.jpl.anim.JPLSphere graphics.sphere.OutSphere astron.graphics.intro.EqEcSphere astron.graphics.intro.BaseSphereMgr graphics.sphere.EyeKeyListener graphics.sphere.EyeAdjuster astron.place.Coord astron.jpl.JPLData ui.MyPanel

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Class/Program	Requires
astron.graphics.cs.CSAnim	ui.SimpleWindow ui.WindowQuitter ui.LoadOrSaveDialog graphics.GUtil astron.graphics.cs.CelestialSphere astron.jpl.anim.JPLSphere astron.stars.StarList astron.stars.StarSphere graphics.sphere.OutSphere astron.graphics.intro.EqEcSphere astron.graphics.intro.BaseSphereMgr graphics.sphere.EyeKeyListener graphics.sphere.EyeAdjuster astron.jpl.JPLData astron.place.Coord ui.MyPanel
astron.graphics.incs.INSIDEStarWindow	ui.SimpleWindow ui.WindowQuitter ui.LoadOrSaveDialog graphics.GUtil astron.graphics.incs.INSIDESphereMgr astron.graphics.incs.INSIDEStarSphere graphics.sphere.InSphere graphics.sphere.INSIDEEyeAdjuster graphics.sphere.INSIDEKeyListener graphics.sphere.EyeAdjuster astron.stars.StarList astron.place.Coord ui.MyPanel
astron.graphics.incs.CEARTHAnim	ui.SimpleWindow ui.WindowQuitter ui.LoadOrSaveDialog graphics.GUtil astron.graphics.incs.CEARTHPane graphics.sphere.InSphere astron.graphics.incs.INSIDEStarSphere astron.graphics.incs.INSIDEJPLSphere astron.graphics.incs.INSIDESphereMgr graphics.sphere.INSIDEEyeAdjuster graphics.sphere.INSIDEKeyListener astron.jpl.JPLData astron.stars.StarList astron.place.Coord ui.MyPanel
astron.graphics.surface.SurfaceMain	ui.LoadOrSaveDialog ui.WindowQuitter graphics.GUtil astron.graphics.surface.SurfacePane graphics.sphere.InSphere astron.graphics.incs.INSIDESphereMgr graphics.sphere.INSIDEEyeAdjuster graphics.sphere.EyeAdjuster graphics.sphere.INSIDEKeyListener astron.stars.StarList astron.jpl.JPLData astron.place.Coord astron.place.PlaceUtil astron.time.TimeUtil ui.MyPanel
	ui.LoadOrSaveDialog ui.WindowQuitter ui.TextInputDialog graphics.GUtil