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ICS 314 Spring 2013

April 29, 2013

Sundial Project: Design Decisions and Overall Functionality

The Sundial project is composed of several different modules that handle parts of the program independently. The program uses a graphical interface, implemented in a Java Applet, to allow users to input the longitude, latitude, and the current date. In addition to interaction with the user, methods to parse input and check for errors are also present in this class. By implementing input checking at this level, feedback can be quickly given to the user if incorrect inputs are used. The GUI then calls the Math Module class to calculate the hour angles on the sundial. The Math Module computes hour angles for hours 7-11am and 12-6pm; each angle including the correction of longitude as well as using the equation of time. Next the DrawDial class takes as arguments the angles of the twelve different hour lines calculated from the Math Module in order to draw the hour lines on the sundial. Finally DrawGnomon class takes as input the latitude angle in order to calculate and draw the height of the Gnomon triangle to create a finished sundial. When the final sundial and associated Gnomon have finished drawing, each of the items is outputted to the user in separate windows to allow the user to print the respective parts.

Each module was worked on by a different group member, with the Math Module and accompanying calculations being developed by Christopher Rickett while the drawing classes were implemented by John Rasay. Overall GUI design was finished by Lawton Takaesu, with collaboration by all parties to provide printing functionality.