Data Structures

This project utilizes three different types of data structures: lists, association, and interpolating functions. Lists allow for storage of data and can be quickly accessed. Import has an option that allows for the data to be imported in the form of a list. The connect function was applied to this to form the list of lists used to form the interpolating functions. Interpolating functions are a compilation of functions (in our case linear) that are meshed together in such a way that values may be returned based on an input value just like any other function. This allows for us to functionalize the data that was provided. Lastly, associations are used so that we can associate a key to a particular set of data. This makes for easy access of lists of data (which are the elements of the associations) because we do not need to go back to the list to find the index of the data list that is desired. In the initialize function, data is the list of lists that is imported from the text file in Table format. Each element list is as long as the number of data points while the number of list elements is the number of properties expressed by the data. The initialize function returns an association with keys corresponding to lists which is then saved as the variable data within the stellarEvolutionSimulator function. The parameters of connect in the stellarEvolutionSimulator function are both lists because the keys are being referenced. The output of connect is a list of coordinates with the x-value corresponding to age. These lists of coordinates are used to produce the various interpolating functions in the stellarEvolutionSimulator, which are global variables for ease of access. Fortunately, only one set of interpolating functions is ever stored at any one time.