1. I used the abstract data type of a list.
2. I implemented the list ADT with multiple ArrayList data structures.
3. Not sure what to do if filename does not exist (keep prompting or just exit), should unclassified items being entered be integers or doubles (or are both allowed), what to do if the k or M entered is not possible with the amount of lines in the data file
4. Design:

* Ask for inputs
* Try to scan datafile (if exists, if it doesn’t terminate) for specified number of inputs
* From each line, create a dataItem object with the specified category and two values (save them all in an ArrayList of type dataItem)
* Enter while loop prompting for unclassified items
* Create a dataItem with each input with a “temp” value as category
* Calculate distance from each classified item to this unclassified item and save it in classified dataItem’s “distance” value
* Sort the list of classified dataItem’s by distance from least to greatest
* Take k-nearest number of neighbors and count number in category one vs. category two, and whichever has highest count, set unclassified item’s category to the category that occurred most frequently
* Calculate average distance of classified item’s to unclassified item for each category
* Repeat process from highlighted line until 1.0 1.0 is entered

1. Checked to see if datafile exists, checked to see if k and M inputted are possible, checked to make sure types being entered were correct, check for empy datafile
2. Test Cases:

* Empty data file:
  + Good because makes sure that program can handle null input
* Test case posted on the Collab website
  + Good because does a good job of testing a simple program to ensure functionality
* Test case posted on homework description
  + Good because more complex than previous test case, and you can use different values of k and M to ensure it works
  + Also good because what should be printed out is specified and can be compared against what is being printed out

1. 3 hours total