1. Load the dataset [bike.csv](https://maryville.instructure.com/courses/71038/files/16328342/download?wrap=1)[Download bike.csv](https://maryville.instructure.com/courses/71038/files/16328342/download?download_frd=1)into memory. Then split the data into a training set containing 2/3 of the original data (test set containing remaining 1/3 of the original data).

Graphical user interface, text, application

Description automatically generated

1. Build a tree model using function tree().
   1. The response is count and the predictors are season*, holiday, workingday, temp, atemp, humidity,* windspeed*, casual,*and*registered*.

Text

Description automatically generated

* 1. Perform cross-validation to choose the best tree by calling cv.tree().



* 1. Plot the model results of b) and determine the best size of the optimal tree.



Chart, scatter chart

Description automatically generated

We choose 8 as the best size because the graph levels out at that point.

* 1. Prune the tree by calling prune.tree() function with the best size found in c).



* 1. Plot the best tree model.

A picture containing text

Description automatically generated

Text, letter, timeline

Description automatically generated with medium confidence

* 1. Compute the test error using the test data set.

Text

Description automatically generated

1. Build a random forest model using function randomForest()
   1. The response is count and the predictors are *season, holiday, workingday, temp, atemp, humidity, windspeed, casual,*and*registered*.

Graphical user interface, text

Description automatically generated

* 1. Compute the test error using the test data set.

Text

Description automatically generated with medium confidence

* 1. Extract variable importance measure using importance() function.

Text

Description automatically generated

* 1. Plot the variable importance using function varImpPlot(). Which are the top 2 important predictors in this model?



Chart, table

Description automatically generated with medium confidence

The top 2 important predictors are registered and casual.