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. Convert holiday to a factor using factor() function. Then split the data into training set containing 2/3 of the original data (test set containing remaining 1/3 of the original data).

Graphical user interface, text, application, timeline

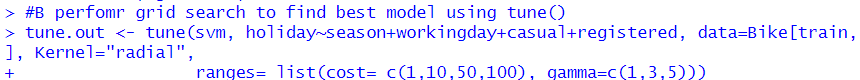
Description automatically generated

1. Build a support vector machine model.
   1. The response is holiday and the predictors are: *season, workingday, casual,*and*registered.* Please use svm() function with radial kernel and gamma=10 and cost = 100.

Text

Description automatically generated with low confidence

* 1. Perform a grid search to find the best model with potential cost: 1, 10, 50, 100 and potential gamma: 1, 3, and 5 and using radial kernel and training dataset.



* 1. Print out the model results. What’s the best model parameters?

Text, table

Description automatically generated

The best parameters for this model are when the cost is set to 50 and the gamma is 1.

* 1. Forecast holiday using the test dataset and the best model found in c).



* 1. Get the true observations of holiday in the test dataset.



* 1. Compute the test error by constructing the confusion matrix. Is it a good model?

Graphical user interface, text

Description automatically generated

This is a good model, it has a very high accuracy of 97.2%.