The **run\_analysis.R** is the instruction of data processing

1. **Download the dataset and check its existence**
   * Dataset downloaded and extracted under the folder called UCI HAR Dataset
2. **Assign each data to data frame**
   * features <- features.txt : 561 rows, 2 columns  
     *The features selected for this database come from the accelerometer and gyroscope 3-axial raw signals tAcc-XYZ and tGyro-XYZ.*
   * activities <- activity\_labels.txt : 6 rows, 2 columns  
     *List of activities performed when the corresponding measurements were taken and its codes (labels)*
   * subject\_test <- test/subject\_test.txt : 2947 rows, 1 column  
     *contains test data of 9/30 volunteer test subjects being observed*
   * x\_test <- test/X\_test.txt : 2947 rows, 561 columns  
     *contains recorded features test data*
   * y\_test <- test/y\_test.txt : 2947 rows, 1 columns  
     *contains test data of activities’code labels*
   * subject\_train <- test/subject\_train.txt : 7352 rows, 1 column  
     *contains train data of 21/30 volunteer subjects being observed*
   * x\_train <- test/X\_train.txt : 7352 rows, 561 columns  
     *contains recorded features train data*
   * y\_train <- test/y\_train.txt : 7352 rows, 1 columns  
     *contains train data of activities’code labels*
3. **Merges the training and the test to a new data set**
   * X (10299 rows, 561 columns) is created by merging x\_train and x\_test using **rbind()** function
   * Y (10299 rows, 1 column) is created by merging y\_train and y\_test using **rbind()** function
   * Subject (10299 rows, 1 column) is created by merging subject\_train and subject\_test using **rbind()** function
   * Merged\_Data (10299 rows, 563 column) is created by merging Subject, Y and X using **cbind()** function
4. **Extracts only the measurements on the mean and standard deviation for each measurement**
   * TidyData (10299 rows, 88 columns) is created by subsetting Merged\_Data, selecting only columns: subject, code and the measurements on the mean and *standard deviation* (std) for each measurement
5. **Uses descriptive activity names to name the activities in the data set**
   * Entire numbers in code column of the TidyData replaced with corresponding activity taken from second column of the activities variable
6. **Appropriately labels the data set with descriptive variable names**
   * code column in TidyData renamed into activities
   * All Acc in column’s name replaced by Accelerometer
   * All Gyro in column’s name replaced by Gyroscope
   * All BodyBody in column’s name replaced by Body
   * All Mag in column’s name replaced by Magnitude
   * All start with character f in column’s name replaced by Frequency
   * All start with character t in column’s name replaced by Time
7. **From the data set in step 4, creates a second, independent tidy data set with the average of each variable for each activity and each subject**
   * FinalData (180 rows, 88 columns) is created by sumarizing TidyData taking the means of each variable for each activity and each subject, after groupped by subject and activity.
   * Export FinalData into FinalData.txt file.