# CodeBook

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**Course: Getting and Cleaning Data Course Project**

One of the most exciting areas in all of data science right now is wearable computing - see for example this article . Companies like Fitbit, Nike, and Jawbone Up are racing to develop the most advanced algorithms to attract new users. The data linked to from the course website represent data collected from the accelerometers from the Samsung Galaxy S smartphone. A full description is available at the site where the data was obtained: Recognition Using Smartphones

Here are the data for the project: Project zip file

We must create one R script called run_analysis.R that does the following.

1. Merges the training and the test sets to create one data set.
2. Extracts only the measurements on the mean and standard deviation for each measurement.
3. Uses descriptive activity names to name the activities in the data set
4. Appropriately labels the data set with descriptive variable names.
5. 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.

## Library

```
# Install and load required packages
if (!require('dplyr'))      {install.packages('dplyr')}
```

```
## Loading required package: dplyr
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
if (!require('data.table')) {install.packages('data.table')}
```

```
## Loading required package: data.table
```

```
##
## Attaching package: 'data.table'
```

```
## The following objects are masked from 'package:dplyr':
##
##     between, first, last
```

```
library(dplyr)
library(data.table)
```

### Download the dataset

```
# name for zip file
file.zip <- 'GCD_Final.zip'

# Cheking if zip file exists
if (!file.exists(file.zip)){
 file.URL <- 'https://d396qusza40orc.cloudfront.net/getdata%2Fprojectfiles...
 %2FUCI%20HAR%20Dataset.zip'
 download.file(file.URL, file.zip, method = 'curl')}

# Checking if study folder exists
if (!file.exists("UCI HAR Dataset")) {unzip(file.zip)}
```

## Reading the internal files

```
# In the folder UCI HAR Dataset
act.lab   <- read.table("UCI HAR Dataset/activity_labels.txt", col.names = c("code", "activity"))
features  <- read.table("UCI HAR Dataset/features.txt",        col.names = c("n","functions"))

# In the sub-folder test of UCI HAR Dataset
subj.test <- read.table("UCI HAR Dataset/test/subject_test.txt", col.names = "subject")
x.test    <- read.table("UCI HAR Dataset/test/X_test.txt",       col.names = features$functions)
y.test    <- read.table("UCI HAR Dataset/test/y_test.txt",       col.names = "code")

# In the sub-folder train of UCI HAR Dataset
subj.train <- read.table("UCI HAR Dataset/train/subject_train.txt", col.names = "subject")
x.train    <- read.table("UCI HAR Dataset/train/X_train.txt",       col.names = features$functions)
y.train    <- read.table("UCI HAR Dataset/train/y_train.txt",       col.names = "code")
```

### 1. Merges the training and the test sets to create one data set.

```
# We use the functions rbind & cbind

subj.data <- rbind(subj.train, subj.test)
x.data    <- rbind(x.train, x.test)
y.data    <- rbind(y.train, y.test)
merge.data<- cbind(subj.data, x.data, y.data)

#str(merge.data)
#head(merge.data)
```

## 2. Extracts only the measurements on the mean and standard deviation for each measurement.

```
# We use select function and save the data like TidyData
# Also select the code of each subject (we use for the next part).

TidyData <- merge.data %>% select(subject, code, contains('mean'), contains('std'))
#head(TidyData)
```

## 3. Uses descriptive activity names to name the activities in the data set

```
# The code of each subject is a number, we change for the activities who represent the number.
TidyData$code[1:50] # example
```

[1] 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 4 4 4 4 4 4 4 4 4 4 4 [39] 4 4 4 4 4 4 4 4 4 4 4 4

```
print(act.lab[,2])
```

[1] WALKING WALKING_UPSTAIRS WALKING_DOWNSTAIRS SITTING
[5] STANDING LAYING
6 Levels: LAYING SITTING STANDING WALKING ... WALKING_UPSTAIRS

```
TidyData$code <- act.lab[TidyData$code, 2]
```

## 4. Appropriately labels the data set with descriptive variable names.

For this part we need to read the variables of our TidyData and change for a descriptive name

Names of Feteatures will labelled using descriptive variable names. - Acc is replaced by Accelerometer - BodyBody is replaced by Body - Gyro is replaced by Gyroscope - Mag is replaced by Magnitude - gravity is replaced by Gravity - angle is replaced by Angle - prefix t is replaced by Time - prefix f is replaced by Frequency - tBody is replaced by TimeBody - -mean() is replaced by Mean - -std() is replaced by STD - -freq() is replaced by Frecuency

```
names(TidyData)
```

[1] “subject”
[2] “code”
[3] “tBodyAcc.mean. . . X”
[4] “tBodyAcc.mean. . . Y”
[5] “tBodyAcc.mean. . . Z”
[6] “tGravityAcc.mean. . . X”
[7] “tGravityAcc.mean. . . Y”
[8] “tGravityAcc.mean. . . Z”
[9] “tBodyAccJerk.mean. . . X”
[10] “tBodyAccJerk.mean. . . Y”
[11] “tBodyAccJerk.mean. . . Z”
[12] “tBodyGyro.mean. . . X”
[13] “tBodyGyro.mean. . . Y”
[14] “tBodyGyro.mean. . . Z”
[15] “tBodyGyroJerk.mean. . . X”
[16] “tBodyGyroJerk.mean. . . Y”
[17] “tBodyGyroJerk.mean. . . Z”
[18] “tBodyAccMag.mean..”
[19] “tGravityAccMag.mean..”
[20] “tBodyAccJerkMag.mean..”
[21] “tBodyGyroMag.mean..”
[22] “tBodyGyroJerkMag.mean..”
[23] “fBodyAcc.mean. . . X”
[24] “fBodyAcc.mean. . . Y”
[25] “fBodyAcc.mean. . . Z”
[26] “fBodyAcc.meanFreq. . . X”
[27] “fBodyAcc.meanFreq. . . Y”
[28] “fBodyAcc.meanFreq. . . Z”
[29] “fBodyAccJerk.mean. . . X”
[30] “fBodyAccJerk.mean. . . Y”
[31] “fBodyAccJerk.mean. . . Z”
[32] “fBodyAccJerk.meanFreq. . . X”
[33] “fBodyAccJerk.meanFreq. . . Y”
[34] “fBodyAccJerk.meanFreq. . . Z”
[35] “fBodyGyro.mean. . . X”
[36] “fBodyGyro.mean. . . Y”
[37] “fBodyGyro.mean. . . Z”
[38] “fBodyGyro.meanFreq. . . X”
[39] “fBodyGyro.meanFreq. . . Y”
[40] “fBodyGyro.meanFreq. . . Z”
[41] “fBodyAccMag.mean..”
[42] “fBodyAccMag.meanFreq..”
[43] “fBodyBodyAccJerkMag.mean..”
[44] “fBodyBodyAccJerkMag.meanFreq..”
[45] “fBodyBodyGyroMag.mean..”
[46] “fBodyBodyGyroMag.meanFreq..”
[47] “fBodyBodyGyroJerkMag.mean..”
[48] “fBodyBodyGyroJerkMag.meanFreq..”
[49] “angle.tBodyAccMean.gravity.”
[50] “angle.tBodyAccJerkMean..gravityMean.” [51] “angle.tBodyGyroMean.gravityMean.”
[52] “angle.tBodyGyroJerkMean.gravityMean.” [53] “angle.X.gravityMean.”
[54] “angle.Y.gravityMean.”
[55] “angle.Z.gravityMean.”
[56] “tBodyAcc.std. . . X”

[57] “tBodyAcc.std. . . Y”
[58] “tBodyAcc.std. . . Z”
[59] “tGravityAcc.std. . . X”
[60] “tGravityAcc.std. . . Y”
[61] “tGravityAcc.std. . . Z”
[62] “tBodyAccJerk.std. . . X”
[63] “tBodyAccJerk.std. . . Y”
[64] “tBodyAccJerk.std. . . Z”
[65] “tBodyGyro.std. . . X”
[66] “tBodyGyro.std. . . Y”
[67] “tBodyGyro.std. . . Z”
[68] “tBodyGyroJerk.std. . . X”
[69] “tBodyGyroJerk.std. . . Y”
[70] “tBodyGyroJerk.std. . . Z”
[71] “tBodyAccMag.std..”
[72] “tGravityAccMag.std..”
[73] “tBodyAccJerkMag.std..”
[74] “tBodyGyroMag.std..”
[75] “tBodyGyroJerkMag.std..”
[76] “fBodyAcc.std. . . X”
[77] “fBodyAcc.std. . . Y”
[78] “fBodyAcc.std. . . Z”
[79] “fBodyAccJerk.std. . . X”
[80] “fBodyAccJerk.std. . . Y”
[81] “fBodyAccJerk.std. . . Z”
[82] “fBodyGyro.std. . . X”
[83] “fBodyGyro.std. . . Y”
[84] “fBodyGyro.std. . . Z”
[85] “fBodyAccMag.std..”
[86] “fBodyBodyAccJerkMag.std..”
[87] “fBodyBodyGyroMag.std..”
[88] “fBodyBodyGyroJerkMag.std..”

```
names(TidyData)[2] = 'Activity'

names(TidyData) <- gsub("Acc", "Accelerometer", names(TidyData))
names(TidyData) <- gsub("BodyBody", "Body",     names(TidyData))
names(TidyData) <- gsub("Gyro", "Gyroscope",    names(TidyData))
names(TidyData) <- gsub("Mag", "Magnitude",     names(TidyData))
names(TidyData) <- gsub("gravity", "Gravity",   names(TidyData))
names(TidyData) <- gsub("angle", "Angle",       names(TidyData))
names(TidyData) <- gsub("^t", "Time",           names(TidyData))
names(TidyData) <- gsub("^f", "Frequency",      names(TidyData))
names(TidyData) <- gsub("tBody", "TimeBody",    names(TidyData))
names(TidyData) <- gsub("-mean()", "Mean",      names(TidyData), ignore.case = TRUE)
names(TidyData) <- gsub("-std()", "STD",        names(TidyData), ignore.case = TRUE)
names(TidyData) <- gsub("-freq()", "Frequency", names(TidyData), ignore.case = TRUE)

#head(TidyData)
names(TidyData)
```

[1] “subject”
[2] “Activity”
[3] “TimeBodyAccelerometer.mean. . . X”

[4] “TimeBodyAccelerometer.mean. . . Y”
[5] “TimeBodyAccelerometer.mean. . . Z”
[6] “TimeGravityAccelerometer.mean. . . X”
[7] “TimeGravityAccelerometer.mean. . . Y”
[8] “TimeGravityAccelerometer.mean. . . Z”
[9] “TimeBodyAccelerometerJerk.mean. . . X”
[10] “TimeBodyAccelerometerJerk.mean. . . Y”
[11] “TimeBodyAccelerometerJerk.mean. . . Z”
[12] “TimeBodyGyroscope.mean. . . X”
[13] “TimeBodyGyroscope.mean. . . Y”
[14] “TimeBodyGyroscope.mean. . . Z”
[15] “TimeBodyGyroscopeJerk.mean. . . X”
[16] “TimeBodyGyroscopeJerk.mean. . . Y”
[17] “TimeBodyGyroscopeJerk.mean. . . Z”
[18] “TimeBodyAccelerometerMagnitude.mean..”
[19] “TimeGravityAccelerometerMagnitude.mean..”
[20] “TimeBodyAccelerometerJerkMagnitude.mean..”
[21] “TimeBodyGyroscopeMagnitude.mean..”
[22] “TimeBodyGyroscopeJerkMagnitude.mean..”
[23] “FrequencyBodyAccelerometer.mean. . . X”
[24] “FrequencyBodyAccelerometer.mean. . . Y”
[25] “FrequencyBodyAccelerometer.mean. . . Z”
[26] “FrequencyBodyAccelerometer.meanFreq. . . X”
[27] “FrequencyBodyAccelerometer.meanFreq. . . Y”
[28] “FrequencyBodyAccelerometer.meanFreq. . . Z”
[29] “FrequencyBodyAccelerometerJerk.mean. . . X”
[30] “FrequencyBodyAccelerometerJerk.mean. . . Y”
[31] “FrequencyBodyAccelerometerJerk.mean. . . Z”
[32] “FrequencyBodyAccelerometerJerk.meanFreq. . . X”
[33] “FrequencyBodyAccelerometerJerk.meanFreq. . . Y”
[34] “FrequencyBodyAccelerometerJerk.meanFreq. . . Z”
[35] “FrequencyBodyGyroscope.mean. . . X”
[36] “FrequencyBodyGyroscope.mean. . . Y”
[37] “FrequencyBodyGyroscope.mean. . . Z”
[38] “FrequencyBodyGyroscope.meanFreq. . . X”
[39] “FrequencyBodyGyroscope.meanFreq. . . Y”
[40] “FrequencyBodyGyroscope.meanFreq. . . Z”
[41] “FrequencyBodyAccelerometerMagnitude.mean..”
[42] “FrequencyBodyAccelerometerMagnitude.meanFreq..”
[43] “FrequencyBodyAccelerometerJerkMagnitude.mean..”
[44] “FrequencyBodyAccelerometerJerkMagnitude.meanFreq..” [45] “FrequencyBodyGyroscopeMagnitude.mean..”
[46] “FrequencyBodyGyroscopeMagnitude.meanFreq..”
[47] “FrequencyBodyGyroscopeJerkMagnitude.mean..”
[48] “FrequencyBodyGyroscopeJerkMagnitude.meanFreq..”
[49] “Angle.TimeBodyAccelerometerMean.Gravity.”
[50] “Angle.TimeBodyAccelerometerJerkMean..GravityMean.” [51] “Angle.TimeBodyGyroscopeMean.GravityMean.”
[52] “Angle.TimeBodyGyroscopeJerkMean.GravityMean.”
[53] “Angle.X.GravityMean.”
[54] “Angle.Y.GravityMean.”
[55] “Angle.Z.GravityMean.”
[56] “TimeBodyAccelerometer.std. . . X”
[57] “TimeBodyAccelerometer.std. . . Y”
[58] “TimeBodyAccelerometer.std. . . Z”

[59] “TimeGravityAccelerometer.std...X”
[60] “TimeGravityAccelerometer.std...Y”
[61] “TimeGravityAccelerometer.std...Z”
[62] “TimeBodyAccelerometerJerk.std...X”
[63] “TimeBodyAccelerometerJerk.std...Y”
[64] “TimeBodyAccelerometerJerk.std...Z”
[65] “TimeBodyGyroscope.std...X”
[66] “TimeBodyGyroscope.std...Y”
[67] “TimeBodyGyroscope.std...Z”
[68] “TimeBodyGyroscopeJerk.std...X”
[69] “TimeBodyGyroscopeJerk.std...Y”
[70] “TimeBodyGyroscopeJerk.std...Z”
[71] “TimeBodyAccelerometerMagnitude.std..”
[72] “TimeGravityAccelerometerMagnitude.std..”
[73] “TimeBodyAccelerometerJerkMagnitude.std..”
[74] “TimeBodyGyroscopeMagnitude.std..”
[75] “TimeBodyGyroscopeJerkMagnitude.std..”
[76] “FrequencyBodyAccelerometer.std...X”
[77] “FrequencyBodyAccelerometer.std...Y”
[78] “FrequencyBodyAccelerometer.std...Z”
[79] “FrequencyBodyAccelerometerJerk.std...X”
[80] “FrequencyBodyAccelerometerJerk.std...Y”
[81] “FrequencyBodyAccelerometerJerk.std...Z”
[82] “FrequencyBodyGyroscope.std...X”
[83] “FrequencyBodyGyroscope.std...Y”
[84] “FrequencyBodyGyroscope.std...Z”
[85] “FrequencyBodyAccelerometerMagnitude.std..”
[86] “FrequencyBodyAccelerometerJerkMagnitude.std..”
[87] “FrequencyBodyGyroscopeMagnitude.std..”
[88] “FrequencyBodyGyroscopeJerkMagnitude.std..”
## 5. 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.

```
Final.TidyData <- TidyData %>%
    group_by(subject, Activity) %>%
    summarise_all(funs(mean))
```

```
## Warning: `funs()` is deprecated as of dplyr 0.8.0.
## Please use a list of either functions or lambdas:
##
##   # Simple named list:
##   list(mean = mean, median = median)
##
##   # Auto named with `tibble::lst()`:
##   tibble::lst(mean, median)
##
##   # Using lambdas
##   list(~ mean(., trim = .2), ~ median(., na.rm = TRUE))
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_warnings()` to see where this warning was generated.
```

```
# Export the final data
write.table(Final.TidyData, "Final.TidyData.txt", row.name = FALSE)
```

```
# Cheking the data

str(Final.TidyData)
```

tibble [180 x 88] (S3: grouped_df/tbl_df/tbl/data.frame) $ subject : int [1:180] 1 1 1 1 1 1 2 2 2 2 ... $ Activity : Factor w/ 6 levels "LAYING","SITTING",..: 1 2 3 4 5 6 1 2 3 4 ... $ TimeBodyAccelerometer.mean...X : num [1:180] 0.222 0.261 0.279 0.277 0.289 ... $ TimeBodyAccelerometer.mean...Y : num [1:180] -0.04051 -0.00131 -0.01614 -0.01738 -0.00992 ... $ TimeBodyAccelerometer.mean...Z : num [1:180] -0.113 -0.105 -0.111 -0.111 -0.108 ... $ TimeGravityAccelerometer.mean...X : num [1:180] -0.249 0.832 0.943 0.935 0.932 ... $ TimeGravityAccelerometer.mean...Y : num [1:180] 0.706 0.204 -0.273 -0.282 -0.267 ... $ TimeGravityAccelerometer.mean...Z : num [1:180] 0.4458 0.332 0.0135 -0.0681 -0.0621 ... $ TimeBodyAccelerometerJerk.mean...X : num [1:180] 0.0811 0.0775 0.0754 0.074 0.0542 ... $ TimeBodyAccelerometerJerk.mean...Y : num [1:180] 0.003838 -0.000619 0.007976 0.028272 0.02965 ... $ TimeBodyAccelerometerJerk.mean...Z : num [1:180] 0.01083 -0.00337 -0.00369 -0.00417 -0.01097 ... $ TimeBodyGyroscope.mean...X : num [1:180] -0.0166 -0.0454 -0.024 -0.0418 -0.0351 ... $ TimeBodyGyroscope.mean...Y : num [1:180] -0.0645 -0.0919 -0.0594 -0.0695 -0.0909 ... $ TimeBodyGyroscope.mean...Z : num [1:180] 0.1487 0.0629 0.0748 0.0849 0.0901 ... $ TimeBodyGyroscopeJerk.mean...X : num [1:180] -0.1073 -0.0937 -0.0996 -0.09 -0.074 ... $ TimeBodyGyroscopeJerk.mean...Y : num [1:180] -0.0415 -0.0402 -0.0441 -0.0398 -0.044 ... $ TimeBodyGyroscopeJerk.mean...Z : num [1:180] -0.0741 -0.0467 -0.049 -0.0461 -0.027 ... $ TimeBodyAccelerometerMagnitude.mean.. : num [1:180] -0.8419 -0.9485 -0.9843 -0.137 0.0272 ... $ TimeGravityAccelerometerMagnitude.mean.. : num [1:180] -0.8419 -0.9485 -0.9843 -0.137 0.0272 ... $ TimeBodyAccelerometerJerkMagnitude.mean.. : num [1:180] -0.9544 -0.9874 -0.9924 -0.1414 -0.0894 ... $ TimeBodyGyroscopeMagnitude.mean.. : num [1:180] -0.8748 -0.9309 -0.9765 -0.161 -0.0757 ... $ TimeBodyGyroscopeJerkMagnitude.mean.. : num [1:180] -0.963 -0.992 -0.995 -0.299 -0.295 ... $ FrequencyBodyAccelerometer.mean...X : num [1:180] -0.9391 -0.9796 -0.9952 -0.2028 0.0382 ... $ FrequencyBodyAccelerometer.mean...Y : num [1:180] -0.86707 -0.94408 -0.97707 0.08971 0.00155 ... $ FrequencyBodyAccelerometer.mean...Z : num [1:180] -0.883 -0.959 -0.985 -0.332 -0.226 ... $ FrequencyBodyAccelerometer.meanFreq...X : num [1:180] -0.1588 -0.0495 0.0865 -0.2075 -0.3074 ... $ FrequencyBodyAccelerometer.meanFreq...Y : num [1:180] 0.0975 0.0759 0.1175 0.1131 0.0632 ... $ FrequencyBodyAccelerometer.meanFreq...Z : num [1:180] 0.0894 0.2388 0.2449 0.0497 0.2943 ... $ FrequencyBodyAccelerometerJerk.mean...X : num [1:180] -0.9571 -0.9866 -0.9946 -0.1705 -0.0277 ... $ FrequencyBodyAccelerometerJerk.mean...Y : num [1:180] -0.9225 -0.9816 -0.9854 -0.0352 -0.1287 ... $ FrequencyBodyAccelerometerJerk.mean...Z : num [1:180] -0.948 -0.986 -0.991 -0.469 -0.288 ... $ FrequencyBodyAccelerometerJerk.meanFreq...X : num [1:180] 0.132 0.257 0.314 -0.209 -0.253 ... $ FrequencyBodyAccelerometerJerk.meanFreq...Y : num [1:180] 0.0245 0.0475 0.0392 -0.3862 -0.3376 ... $ FrequencyBodyAccelerometerJerk.meanFreq...Z : num [1:180] 0.02439 0.09239 0.13858 -0.18553 0.00937 ... $ FrequencyBodyGyroscope.mean...X : num [1:180] -0.85 -0.976 -0.986 -0.339 -0.352 ... $ FrequencyBodyGyroscope.mean...Y : num [1:180] -0.9522 -0.9758 -0.989 -0.1031 -0.0557 ... $ FrequencyBodyGyroscope.mean...Z : num [1:180] -0.9093 -0.9513 -0.9808 -0.2559 -0.0319 ... $ FrequencyBodyGyroscope.meanFreq...X : num [1:180] -0.00355 0.18915 -0.12029 0.01478 -0.10045 ... $ FrequencyBodyGyroscope.meanFreq...Y : num [1:180] -0.0915 0.0631 -0.0447 -0.0658 0.0826 ... $ FrequencyBodyGyroscope.meanFreq...Z : num [1:180] 0.010458 -0.029784 0.100608 0.000773 -0.075676 ... $ FrequencyBodyAccelerometerMagnitude.mean.. : num [1:180] -0.8618 -0.9478 -0.9854 -0.1286 0.0966 ... $ FrequencyBodyAccelerometerMagnitude.meanFreq.. : num [1:180] 0.0864 0.2367 0.2846 0.1906 0.1192 ... $ FrequencyBodyAccelerometerJerkMagnitude.mean.. : num [1:180] -0.9333 -0.9853 -0.9925 -0.0571 0.0262 ... $ FrequencyBodyAccelerometerJerkMagnitude.meanFreq..: num [1:180] 0.2664 0.3519 0.4222 0.0938 0.0765 ... $ FrequencyBodyGyroscopeMagnitude.mean.. : num [1:180] -0.862 -0.958 -0.985 -0.199 -0.186 ... $ FrequencyBodyGyroscopeMagnitude.meanFreq.. : num [1:180] -0.139775 -0.000262 -0.028606 0.268844 0.349614 ... $ FrequencyBodyGyroscopeJerkMagnitude.mean.. : num [1:180] -0.942 -0.99 -0.995 -0.319 -0.282 ... $ FrequencyBodyGyroscopeJerkMagnitude.meanFreq.. : num [1:180] 0.176 0.185 0.334 0.191 0.19 ... $ Angle.TimeBodyAccelerometerMean.Gravity. : num [1:180] 0.021366 0.027442 -0.000222 0.060454 -0.002695 ... $ Angle.TimeBodyAccelerometerJerkMean..GravityMean. : num [1:180] 0.00306 0.02971 0.02196 -0.00793 0.08993 ... $ Angle.TimeBodyGyroscopeMean.GravityMean. : num [1:180] -0.00167 0.0677 -0.03379 0.01306 0.06334 ... $ Angle.TimeBodyGyroscopeJerkMean.GravityMean. : num [1:180] 0.0844 -0.0649 -0.0279

-0.0187 -0.04 ... $ Angle.X.GravityMean. : num [1:180] 0.427 -0.591 -0.743 -0.729 -0.744 ... $ Angle.Y.GravityMean. : num [1:180] -0.5203 -0.0605 0.2702 0.277 0.2672 ... $ Angle.Z.GravityMean. : num [1:180] -0.3524 -0.218 0.0123 0.0689 0.065 ... $ TimeBodyAccelerometer.std...X : num [1:180] -0.928 -0.977 -0.996 -0.284 0.03 ... $ TimeBodyAccelerometer.std...Y : num [1:180] -0.8368 -0.9226 -0.9732 0.1145 -0.0319 ... $ TimeBodyAccelerometer.std...Z : num [1:180] -0.826 -0.94 -0.98 -0.26 -0.23 ... $ TimeGravityAccelerometer.std...X : num [1:180] -0.897 -0.968 -0.994 -0.977 -0.951 ... $ TimeGravityAccelerometer.std...Y : num [1:180] -0.908 -0.936 -0.981 -0.971 -0.937 ... $ TimeGravityAccelerometer.std...Z : num [1:180] -0.852 -0.949 -0.976 -0.948 -0.896 ... $ TimeBodyAccelerometerJerk.std...X : num [1:180] -0.9585 -0.9864 -0.9946 -0.1136 -0.0123 ... $ TimeBodyAccelerometerJerk.std...Y : num [1:180] -0.924 -0.981 -0.986 0.067 -0.102 ... $ TimeBodyAccelerometerJerk.std...Z : num [1:180] -0.955 -0.988 -0.992 -0.503 -0.346 ... $ TimeBodyGyroscope.std...X : num [1:180] -0.874 -0.977 -0.987 -0.474 -0.458 ... $ TimeBodyGyroscope.std...Y : num [1:180] -0.9511 -0.9665 -0.9877 -0.0546 -0.1263 ... $ TimeBodyGyroscope.std...Z : num [1:180] -0.908 -0.941 -0.981 -0.344 -0.125 ... $ TimeBodyGyroscopeJerk.std...X : num [1:180] -0.919 -0.992 -0.993 -0.207 -0.487 ... $ TimeBodyGyroscopeJerk.std...Y : num [1:180] -0.968 -0.99 -0.995 -0.304 -0.239 ... $ TimeBodyGyroscopeJerk.std...Z : num [1:180] -0.958 -0.988 -0.992 -0.404 -0.269 ... $ TimeBodyAccelerometerMagnitude.std.. : num [1:180] -0.7951 -0.9271 -0.9819 -0.2197 0.0199 ... $ TimeGravityAccelerometerMagnitude.std.. : num [1:180] -0.7951 -0.9271 -0.9819 -0.2197 0.0199 ... $ TimeBodyAccelerometerJerkMagnitude.std.. : num [1:180] -0.9282 -0.9841 -0.9931 -0.0745 -0.0258 ... $ TimeBodyGyroscopeMagnitude.std.. : num [1:180] -0.819 -0.935 -0.979 -0.187 -0.226 ... $ TimeBodyGyroscopeJerkMagnitude.std.. : num [1:180] -0.936 -0.988 -0.995 -0.325 -0.307 ... $ FrequencyBodyAccelerometer.std...X : num [1:180] -0.9244 -0.9764 -0.996 -0.3191 0.0243 ... $ FrequencyBodyAccelerometer.std...Y : num [1:180] -0.834 -0.917 -0.972 0.056 -0.113 ... $ FrequencyBodyAccelerometer.std...Z : num [1:180] -0.813 -0.934 -0.978 -0.28 -0.298 ... $ FrequencyBodyAccelerometerJerk.std...X : num [1:180] -0.9642 -0.9875 -0.9951 -0.1336 -0.0863 ... $ FrequencyBodyAccelerometerJerk.std...Y : num [1:180] -0.932 -0.983 -0.987 0.107 -0.135 ... $ FrequencyBodyAccelerometerJerk.std...Z : num [1:180] -0.961 -0.988 -0.992 -0.535 -0.402 ... $ FrequencyBodyGyroscope.std...X : num [1:180] -0.882 -0.978 -0.987 -0.517 -0.495 ... $ FrequencyBodyGyroscope.std...Y : num [1:180] -0.9512 -0.9623 -0.9871 -0.0335 -0.1814 ... $ FrequencyBodyGyroscope.std...Z : num [1:180] -0.917 -0.944 -0.982 -0.437 -0.238 ... $ FrequencyBodyAccelerometerMagnitude.std.. : num [1:180] -0.798 -0.928 -0.982 -0.398 -0.187 ... $ FrequencyBodyAccelerometerJerkMagnitude.std.. : num [1:180] -0.922 -0.982 -0.993 -0.103 -0.104 ... $ FrequencyBodyGyroscopeMagnitude.std.. : num [1:180] -0.824 -0.932 -0.978 -0.321 -0.398 ... $ FrequencyBodyGyroscopeJerkMagnitude.std.. : num [1:180] -0.933 -0.987 -0.995 -0.382 -0.392 ... - attr(*, "groups")= tibble [30 x 2] (S3: tbl_df/tbl/data.frame) ..$ subject: int [1:30] 1 2 3 4 5 6 7 8 9 10 ... ..$ .rows : list [1:30] .. ..$ : int [1:6] 1 2 3 4 5 6 .. ..$ : int [1:6] 7 8 9 10 11 12 .. ..$ : int [1:6] 13 14 15 16 17 18 .. ..$ : int [1:6] 19 20 21 22 23 24 .. ..$ : int [1:6] 25 26 27 28 29 30 .. ..$ : int [1:6] 31 32 33 34 35 36 .. ..$ : int [1:6] 37 38 39 40 41 42 .. ..$ : int [1:6] 43 44 45 46 47 48 .. ..$ : int [1:6] 49 50 51 52 53 54 .. ..$ : int [1:6] 55 56 57 58 59 60 .. ..$ : int [1:6] 61 62 63 64 65 66 .. ..$ : int [1:6] 67 68 69 70 71 72 .. ..$ : int [1:6] 73 74 75 76 77 78 .. ..$ : int [1:6] 79 80 81 82 83 84 .. ..$ : int [1:6] 85 86 87 88 89 90 .. ..$ : int [1:6] 91 92 93 94 95 96 .. ..$ : int [1:6] 97 98 99 100 101 102 .. ..$ : int [1:6] 103 104 105 106 107 108 .. ..$ : int [1:6] 109 110 111 112 113 114 .. ..$ : int [1:6] 115 116 117 118 119 120 .. ..$ : int [1:6] 121 122 123 124 125 126 .. ..$ : int [1:6] 127 128 129 130 131 132 .. ..$ : int [1:6] 133 134 135 136 137 138 .. ..$ : int [1:6] 139 140 141 142 143 144 .. ..$ : int [1:6] 145 146 147 148 149 150 .. ..$ : int [1:6] 151 152 153 154 155 156 .. ..$ : int [1:6] 157 158 159 160 161 162 .. ..$ : int [1:6] 163 164 165 166 167 168 .. ..$ : int [1:6] 169 170 171 172 173 174 .. ..$ : int [1:6] 175 176 177 178 179 180 .. ..@ ptype: int(0) ..- attr(*, ".drop")= logi TRUE

```
head(Final.TidyData)
```

## A tibble: 6 x 88

## Groups: subject [1]

subject Activity TimeBodyAcceler~ TimeBodyAcceler~ TimeBodyAcceler~ 1 1 LAYING 0.222 -0.0405 -0.113 2 1 SITTING 0.261 -0.00131 -0.105 3 1 STANDING 0.279 -0.0161 -0.111 4 1 WALKING 0.277 -0.0174 -0.111 5 1 WALKING~ 0.289 -0.00992 -0.108 6 1 WALKING~ 0.255 -0.0240 -0.0973 # ... with 83 more variables: TimeGravityAccelerometer.mean...X , # TimeGravityAccelerometer.mean...Y , # TimeGravityAccelerometer.mean...Z , # TimeBodyAccelerometerJerk.mean...X , # TimeBodyAccelerometerJerk.mean...Y , # TimeBodyAccelerometerJerk.mean...Z , TimeBodyGyroscope.mean...X , # TimeBodyGyroscope.mean...Y , TimeBodyGyroscope.mean...Z , # TimeBodyGyroscopeJerk.mean...X , TimeBodyGyroscopeJerk.mean...Y , # TimeBodyGyroscopeJerk.mean...Z , # TimeBodyAccelerometerMagnitude.mean.. , # TimeGravityAccelerometerMagnitude.mean.. , # TimeBodyAccelerometerJerkMagnitude.mean.. , # TimeBodyGyroscopeMagnitude.mean.. , # TimeBodyGyroscopeJerkMagnitude.mean.. , # FrequencyBodyAccelerometer.mean...X , # FrequencyBodyAccelerometer.mean...Y , # FrequencyBodyAccelerometer.mean...Z , # FrequencyBodyAccelerometer.meanFreq...X , # FrequencyBodyAccelerometer.meanFreq...Y , # FrequencyBodyAccelerometer.meanFreq...Z , # FrequencyBodyAccelerometerJerk.mean...X , # FrequencyBodyAccelerometerJerk.mean...Y , # FrequencyBodyAccelerometerJerk.mean...Z , # FrequencyBodyAccelerometerJerk.meanFreq...X , # FrequencyBodyAccelerometerJerk.meanFreq...Y , # FrequencyBodyAccelerometerJerk.meanFreq...Z , # FrequencyBodyGyroscope.mean...X , # FrequencyBodyGyroscope.mean...Y , # FrequencyBodyGyroscope.mean...Z , # FrequencyBodyGyroscope.meanFreq...X , # FrequencyBodyGyroscope.meanFreq...Y , # FrequencyBodyGyroscope.meanFreq...Z , # FrequencyBodyAccelerometerMagnitude.mean.. , # FrequencyBodyAccelerometerMagnitude.meanFreq.. , # FrequencyBodyAccelerometerJerkMagnitude.mean.. , # FrequencyBodyAccelerometerJerkMagnitude.meanFreq.. , # FrequencyBodyGyroscopeMagnitude.mean.. , # FrequencyBodyGyroscopeMagnitude.meanFreq.. , # FrequencyBodyGyroscopeJerkMagnitude.mean.. , # FrequencyBodyGyroscopeJerkMagnitude.meanFreq.. , # Angle.TimeBodyAccelerometerMean.Gravity. , # Angle.TimeBodyAccelerometerJerkMean..GravityMean. , # Angle.TimeBodyGyroscopeMean.GravityMean. , # Angle.TimeBodyGyroscopeJerkMean.GravityMean. , # Angle.X.GravityMean. , Angle.Y.GravityMean. , # Angle.Z.GravityMean. , TimeBodyAccelerometer.std...X , # TimeBodyAccelerometer.std...Y , TimeBodyAccelerometer.std...Z , # TimeGravityAccelerometer.std...X , # TimeGravityAccelerometer.std...Y , # TimeGravityAccelerometer.std...Z , # TimeBodyAccelerometerJerk.std...X , # TimeBodyAccelerometerJerk.std...Y , # TimeBodyAccelerometerJerk.std...Z , TimeBodyGyroscope.std...X , # TimeBodyGyroscope.std...Y , TimeBodyGyroscope.std...Z , # TimeBodyGyroscopeJerk.std...X , TimeBodyGyroscopeJerk.std...Y , # TimeBodyGyroscopeJerk.std...Z , # TimeBodyAccelerometerMagnitude.std.. , # TimeGravityAccelerometerMagnitude.std.. , # TimeBodyAccelerometerJerkMagnitude.std.. , # TimeBodyGyroscopeMagnitude.std.. , # TimeBodyGyroscopeJerkMagnitude.std.. , # FrequencyBodyAccelerometer.std...X , # FrequencyBodyAccelerometer.std...Y , # FrequencyBodyAccelerometer.std...Z , # FrequencyBodyAccelerometerJerk.std...X , # FrequencyBodyAccelerometerJerk.std...Y , # FrequencyBodyAccelerometerJerk.std...Z , # FrequencyBodyGyroscope.std...X , FrequencyBodyGyroscope.std...Y , # FrequencyBodyGyroscope.std...Z , # FrequencyBodyAccelerometerMagnitude.std.. , # FrequencyBodyAccelerometerJerkMagnitude.std.. , # FrequencyBodyGyroscopeMagnitude.std.. , # FrequencyBodyGyroscopeJerkMagnitude.std..

### Create run_analysis.R

```
# knitr::purl('CodeBook.Rmd')

# By default its create a code whit the same name of CodeBook, in the folder you can change.
```