Getting and Cleaning Data Course Project codebook

1. Data preparation process:

In a very schematic way, upon downloaded the zip file and unzipping it into the working directory, the code performs the following workflow:

- Train data frame creation, merging the subject id, activity performed and the 561 variable values for each observation (7352 records). This data frame takes as column names the vector created vector with the 561 variables names in the features file plus the elements "id" and "activity" as column names for the subject and activity attributes.
- Test data frame creation, in the same way.
- Merging both data frames on a rbind transformation.
- Subsetting the data frame, getting a new one comprising the required variables (mean and sd-type) only.
- Transforming activity codes into activity description through a merge function, merging the data frame with an activity description look up data frame created previously.
- Transforming the data frame column names into more descriptive, as much meaningful as possible, variable names, creating a names vector.

2. Variable Names:

As explained above, a variable names transformation is performed by the code. The rules followed in that transformation are:

- Names as descriptive as possible
- One string only, letters only, no numbers and no underscores.
- All lower cases.

(Please be aware that being a course assignment the and not having an expertise on the topic, the chosen names may not be as descriptive or straightforward for an incumbent analyst as they should be).

The list of variables and their names in the original data set:

subject	No name in original. Each value represents a different individual. Ranges between 1-30. Contained in X_train and X_test files
Activity	No name in original. Each value represents a different activity. Factor variable with possible values: (from activity_labels.txt) ▪ WALKING ▪ WALKING UPSTAIRS ▪ WALKING DOWNSTAIRS ▪ SITTING ▪ STANDING ▪ LAYING The value for each record has been obtained merging the data frame with the activity_labels

	data frame acting as a look up table (merging by the activity code)
timebodyaccelerometerXaxismean	tBodyAcc-mean()-X in original. Represents body acceleration mean in the X axis. Numeric.
timebodyaccelerometerYaxismean	tBodyAcc-mean()-Y in original. Represents body acceleration mean in the Y axis. Numeric.
timebodyaccelerometerZaxismean	tBodyAcc-mean()-Z in original. Represents body acceleration mean in the z axis. Numeric.
timebodyaccelerometerXaxissd	tBodyAcc-std()-X in original. Represents body acceleration standard deviation in the X axis. Numeric.
timebodyaccelerometerYaxissd	tBodyAcc-std()-Y in original. Represents body acceleration standard deviation in the Y axis. Numeric.
timebodyaccelerometerZaxissd	tBodyAcc-std()-Z in original. Represents body acceleration standard deviation in the Z axis. Numeric.
timegravityaccelerometerXaxismean	tGravityAcc-mean()-X in original. Represents gravity acceleration mean in the X axis. Numeric.
timegravityaccelerometerYaxismean	tGravityAcc-mean()-Y in original. Represents gravity acceleration mean in the Y axis. Numeric.
timegravityaccelerometerZaxismean	tGravityAcc-mean()-Z in original. Represents gravity acceleration mean in the Z axis. Numeric.
timegravityaccelerometerXsd	tGravityAcc-std()-X in original. Represents gravity acceleration standard deviation in the X axis. Numeric.
timegravityaccelerometerYsd	tGravityAcc-std()-Y in original. Represents gravity acceleration standard deviation in the Y axis. Numeric.
timegravityaccelerometerZsd	tGravityAcc-std()-Z in original. Represents gravity acceleration standard deviation in the Z axis. Numeric.
timebodyaccelerometerjerkXaxismean	tBodyAccJerk-mean()-X in original. Represents Jerk body acceleration mean in the X axis. Numeric.
timebodyaccelerometerjerkYaxismean	tBodyAccJerk-mean()-Y in original. Represents Jerk body acceleration mean in the Y axis. Numeric.
timebodyaccelerometerjerkZaxismean	tBodyAccJerk-mean()-Z in original. Represents Jerk body acceleration mean in the Z axis. Numeric.
timebodyaccelerometerjerkXaxissd	tBodyAccJerk-sd()-X in original. Represents Jerk body acceleration standard deviation in the X axis. Numeric.
timebodyaccelerometerjerkYaxissd	tBodyAccJerk-sd()-Y in original. Represents Jerk body acceleration standard

	deviation in the Y axis. Numeric.
timebodyaccelerometerjerkZaxissd	tBodyAccJerk-sd()-Z in original. Represents Jerk body acceleration standard deviation in the Z axis. Numeric.
timebodygyroscopeXmean	tBodyGyro-mean()-X in original. Represents angular velocity mean in the X axis. Numeric.
timebodygyroscopeYmean	tBodyGyro-mean()-Y in original. Represents angular velocity mean in the Y axis. Numeric.
timebodygyroscopeZmean	tBodyGyro-mean()-Z in original. Represents angular velocity mean in the Z axis. Numeric.
timebodygyroscopeXsd	tBodyGyro-sd()-X in original. Represents angular velocity standard deviation in the X axis. Numeric.
timebodygyroscopeYsd	tBodyGyro-sd()-Y in original. Represents angular velocity standard deviation in the Y axis. Numeric.
timebodygyroscopeZsd	tBodyGyro-sd()-Z in original. Represents angular velocity standard deviation in the Z axis. Numeric.
timebodygyroscopejerkXmean	tBodyGyroJerk-mean()-X in original. Represents Jerk angular velocity mean in the X axis. Numeric.
timebodygyroscopejerkYmean	tBodyGyroJerk-mean ()-Y in original. Represents Jerk angular velocity mean in the Y axis. Numeric.
timebodygyroscopejerkZmean	tBodyGyroJerk-mean()-Z in original. Represents Jerk angular velocity mean in the Z axis. Numeric.
timebodygyroscopejerkXsd	tBodyGyroJerk-sd()-X in original. Represents Jerk angular velocity standard deviation in the X axis. Numeric.
timebodygyroscopejerkYsd	tBodyGyroJerk-sd()-Y in original. Represents Jerk angular velocity standard deviation in the Y axis. Numeric.
timebodygyroscopejerkZsd	tBodyGyroJerk-sd()-Z in original. Represents Jerk angular velocity standard deviation in the Z axis. Numeric.
timebodyaccelerometermagmean	tBodyAccMag-mean() in original Represents Euclidean calculation of linear acceleration (mean). Numeric.
timebodyaccelerometermagsd	tBodyAccMag-sd ()in original Represents Euclidean calculation of body linear acceleration (standard deviation). Numeric.
timegravityaccelerometermagmean	tBodyAccMag-mean() in original Represents Euclidean calculation of gravity linear acceleration (mean). Numeric.
timegravityaccelerometermagsd	tGravityAccMag-sd () in original Represents Euclidean calculation of gravity linear acceleration (standard deviation).

	Numeric.
timebodyaccelerometerjerkmagmean	tBodyAccJerkMag-mean() in original. Represents Euclidean calculation of Jerk body linear acceleration (mean). Numeric
timebodyaccelerometerjerkmagsd	tBodyAccJerkMag-sd() in original. Represents Euclidean calculation of Jerk body linear acceleration (standard deviation). Numeric
timebodygyroscopemagmean	tBodyGyroMag-mean() in original Represents Euclidean calculation of angular velocity (mean). Numeric.
timebodygyroscopemagsd	tBodyGyroMag-sd() in original Represents Euclidean calculation of angular velocity (standard deviation). Numeric.
timebodygyroscopejerkmagmean	tBodyGyroJerkMag-mean() in original. Represents Euclidean calculation of Jerk angular velocity (mean). Numeric
timebodygyroscopejerkmagsd	tBodyAccJerkMag-sd() in original. Represents Euclidean calculation of Jerk angular velocity (standard deviation). Numeric
fourierbodyaccelerometerXaxismean	fBodyAcc-mean()-X Fourier transformation of body acceleration (mean) on the X axis. Numeric.
fourierbodyaccelerometerYaxismean	fBodyAcc-mean()-Y Fourier transformation of body acceleration (mean) on the Y axis. Numeric.
fourierbodyaccelerometerZaxismean	fBodyAcc-mean()-Z Fourier transformation of body acceleration (mean) on the Z axis. Numeric.
fourierbodyaccelerometerXaxissd	fBodyAcc-sd()-X Fourier transformation of body acceleration (standard deviation) on the X axis. Numeric.
fourierbodyaccelerometerYaxissd	fBodyAcc-sd()-Y Fourier transformation of body acceleration (standard deviation) on the Y axis. Numeric.
fourierbodyaccelerometerZaxissd	fBodyAcc-sd()-Z Fourier transformation of body acceleration (standard deviation) on the Z axis. Numeric.
fourierbodyaccelerometerjerkXaxismean	fBodyAccJerk-mean()-X Fourier transformation of Jerk body acceleration (mean) on the X axis. Numeric
fourierbodyaccelerometerjerkYaxismean	fBodyAccJerk-mean()-Y Fourier transformation of Jerk body acceleration (mean) on the Y axis. Numeric
fourierbodyaccelerometerjerkZaxismean	fBodyAccJerk-mean()-Z Fourier transformation of Jerk body acceleration (mean) on the Z axis. Numeric
fourierbodyaccelerometerjerkXaxissd	fBodyAccJerk-sd()-X Fourier transformation of Jerk body acceleration (standard deviation) on the X axis. Numeric

fourierbodyaccelerometerjerkYaxissd	fBodyAccJerk-sd()-Y Fourier transformation of Jerk body acceleration (standard deviation) on the Y axis. Numeric
fourierbodyaccelerometerjerkZaxissd	fBodyAccJerk-sd()-Z Fourier transformation of Jerk body acceleration (standard deviation) on the Z axis. Numeric
fourierbodygyroscopeXmean	fBodyGyro-mean()-X Fourier transformation of angular velocity (mean) on the X axis. Numeric.
fourierbodygyroscopeYmean	fBodyGyro-mean()-Y Fourier transformation of angular velocity (mean) on the Z axis. Numeric.
fourierbodygyroscopeZmean	fBodyGyro-mean()-Z Fourier transformation of angular velocity (mean) on the Z axis. Numeric.
fourierbodygyroscopeXsd	fBodyGyro-sd()-X Fourier transformation of angular velocity (standard deviation) on the X axis. Numeric.
fourierbodygyroscopeYsd	fBodyGyro-sd()-Y Fourier transformation of angular velocity (standard deviation) on the Z axis. Numeric.
fourierbodygyroscopejerkZsd	fBodyGyro-sd()-Z Fourier transformation of angular velocity (standard deviation) on the Z axis. Numeric.
fourierbodybodyaccelerometerjerkmagmean	fBodyBodyAccJerkMag-mean() Fourier transformation of Euclidean calculation of Jerk body acceleration (mean). Numeric
fourierbodbodyyaccelerometerjerkmagsd	fBodyBodyAccJerkMag-sd() Fourier transformation of Euclidean calculation of Jerk body acceleration (standard deviation). Numeric
fourierbodybodygyroscopemagmean	fBodyBodyGyroMag-mean() Fourier transformation of Euclidean calculation of angular velocity (mean). Numeric.
fourierbodybodygyroscopemagsd	fBodyBodyGyroMag-sd() Fourier transformation of Euclidean calculation of angular velocity (standard deviation). Numeric.
fourierbodybodygyroscopejerkmagmean	fBodyBodyGyroJerkMag-mean() Fourier Transformation of Euclidean calculation of Jerk body angular velocity (mean). Numeric.
fourierbodybodygyroscopejerkmagsd	fBodyBodyGyroJerkMag-sd() Fourier Transformation of Euclidean calculation of Jerk body angular velocity (standar devation). Numeric

3. Summary Calculations

Once we have a tidy data set comprising the relevant variables for the observations carried out for each subject performing each activity (tidyDataSet), we make a final computation consisting on creating a data frame that calculates the average values by individual and activity of every relevant variable. This final data frame has been stored in the variable tidyAverageDataSet.