DATA DICTIONARY – Getting and Cleaning Data Project

The data used is obtained from:
http://archive.ics.uci.edu/ml/datasets/Human+Activity+Recognition+Using+Smartphones

https://d396qusza40orc.cloudfront.net/getdata%2Fprojectfiles%2FUCI%20HAR%20Dataset.zip

From the official README of the data:
"The experiments have been carried out with a group of 30 volunteers within an age bracket of 19-48 years. Each person performed six activities (WALKING, WALKING_UPSTAIRS, WALKING_DOWNSTAIRS, SITTING, STANDING, LAYING) wearing a smartphone (Samsung Galaxy S II) on the waist. Using its embedded accelerometer and gyroscope, we captured 3-axial linear acceleration and 3-axial angular velocity at a constant rate of 50Hz. The experiments have been video-recorded to label the data manually. The obtained dataset has been randomly partitioned into two sets, where 70% of the volunteers was selected for generating the training data and 30% the test data.

The sensor signals (accelerometer and gyroscope) were pre-processed by applying noise filters and then sampled in fixed-width sliding windows of 2.56 sec and 50% overlap (128 readings/window). The sensor acceleration signal, which has gravitational and body motion components, was separated using a Butterworth low-pass filter into body acceleration and gravity. The gravitational force is assumed to have only low frequency components, therefore a filter with 0.3 Hz cutoff frequency was used. From each window, a vector of features was obtained by calculating variables from the time and frequency domain.

Units: These time domain signals (prefix 't' to denote time) were captured at a constant rate of 50 Hz. Then they were filtered using a median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz to remove noise. Similarly, the acceleration signal was then separated into body and gravity acceleration signals (tBodyAcc-XYZ and tGravityAcc-XYZ) using another low pass Butterworth filter with a corner frequency of 0.3 Hz"

The filtered columns for mean() and std() in this data set appear in the following order:

"Activity_Name"

Name of the activity that is being performed. Activities include:

1. WALKING
2. WALKING_UPSTAIRS
3. WALKING_DOWNSTAIRS
4. SITTING
5. STANDING
6. LAYING

"Subject"

Subject performing the activity. Subjects are numbered 1-30

Data that measures mean():

"tBodyAcc-mean()-X"
"tBodyAcc-mean()-Y"
"tBodyAcc-mean()-Z"
"tGravityAcc-mean()-X"
"tGravityAcc-mean()-Y"
"tGravityAcc-mean()-Z"
"tBodyAccJerk-mean()-X"

"tBodyAccJerk-mean()-Y"
"tBodyAccJerk-mean()-Z"
"tBodyGyro-mean()-X"
"tBodyGyro-mean()-Y"
"tBodyGyro-mean()-Z"
"tBodyGyroJerk-mean()-X"
"tBodyGyroJerk-mean()-Y"
"tBodyGyroJerk-mean()-Z"
"tBodyAccMag-mean()"
"tGravityAccMag-mean()"
"tBodyAccJerkMag-mean()"
"tBodyGyroMag-mean()"
"tBodyGyroJerkMag-mean()"
"fBodyAcc-mean()-X"
"fBodyAcc-mean()-Y"
"fBodyAcc-mean()-Z"
"fBodyAccJerk-mean()-X"
"fBodyAccJerk-mean()-Y"
"fBodyAccJerk-mean()-Z"
"fBodyGyro-mean()-X"
"fBodyGyro-mean()-Y"
"fBodyGyro-mean()-Z"
"fBodyAccMag-mean()"
"fBodyBodyAccJerkMag-mean()"
"fBodyBodyGyroMag-mean()"
"fBodyBodyGyroJerkMag-mean()"

Data that measures standard deviation:

"tBodyAcc-std()-X"
"tBodyAcc-std()-Y"
"tBodyAcc-std()-Z"
"tGravityAcc-std()-X"
"tGravityAcc-std()-Y"
"tGravityAcc-std()-Z"
"tBodyAccJerk-std()-X"
"tBodyAccJerk-std()-Y"
"tBodyAccJerk-std()-Z"
"tBodyGyro-std()-X"
"tBodyGyro-std()-Y"
"tBodyGyro-std()-Z"
"tBodyGyroJerk-std()-X"
"tBodyGyroJerk-std()-Y"
"tBodyGyroJerk-std()-Z"
"tBodyAccMag-std()"
"tGravityAccMag-std()"
"tBodyAccJerkMag-std()"
"tBodyGyroMag-std()"

"tBodyGyroJerkMag-std()"
"fBodyAcc-std()-X"
"fBodyAcc-std()-Y"
"fBodyAcc-std()-Z"
"fBodyAccJerk-std()-X"
"fBodyAccJerk-std()-Y"
"fBodyAccJerk-std()-Z"
"fBodyGyro-std()-X"
"fBodyGyro-std()-Y"
"fBodyGyro-std()-Z"
"fBodyAccMag-std()"
"fBodyBodyAccJerkMag-std()"
"fBodyBodyGyroMag-std()"
"fBodyBodyGyroJerkMag-std()"