==================================================================

R Analyses code for tidying the following dataset : **Human Activity Recognition Using Smartphones** **Dataset**

Version 1.0

RAW DATA SOURCE and CREDITS :

Jorge L. Reyes-Ortiz, Davide Anguita, Alessandro Ghio, Luca Oneto.

Smartlab - Non Linear Complex Systems Laboratory

DITEN - Università degli Studi di Genova.

Via Opera Pia 11A, I-16145, Genoa, Italy.

activityrecognition@smartlab.ws

www.smartlab.ws

==================================================================

As stated by UCI and I quote :

“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. See 'features\_info.txt' for more details.”

For each record it is provided:

======================================

- Mean of Triaxial acceleration from the accelerometer (total acceleration) and the estimated body acceleration.

- Mean of Triaxial Angular velocity from the gyroscope.

- Its activity label explicitly mentioned.

- An identifier of the subject who carried out the experiment.

STUDY DESIGN:

activity

Training

subjects

Test subjects

Y test

Y train

X Train data.txt

X Test data.txt

How the data analyses comes together is as shown below

Activities include :

1 WALKING

2 WALKING\_UPSTAIRS

3 WALKING\_DOWNSTAIRS

4 SITTING

5 STANDING

6 LAYING

New column variables are :

"1" "activity"

"2" "subject"

"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" "tBodyAcc-std()-X"

"19" "tBodyAcc-std()-Y"

"20" "tBodyAcc-std()-Z"

"21" "tGravityAcc-std()-X"

"22" "tGravityAcc-std()-Y"

"23" "tGravityAcc-std()-Z"

"24" "tBodyAccJerk-std()-X"

"25" "tBodyAccJerk-std()-Y"

"26" "tBodyAccJerk-std()-Z"

"27" "tBodyGyro-std()-X"

"28" "tBodyGyro-std()-Y"

"29" "tBodyGyro-std()-Z"

"30" "tBodyGyroJerk-std()-X"

"31" "tBodyGyroJerk-std()-Y"

"32" "tBodyGyroJerk-std()-Z"

**THE MEAN OF each variable has been analyzed for a particular activity performed by a unique participant.**