Codebook

Variables

subject
        1..30, Identifier of subject

activity
        Factor of 6, Label of the activity

tBodyAccMeanX
        Numeric, Mean of the time for Body Accelerometer Signal on X axis

tBodyAccMeanY
        Numeric, Mean of the time for Body Accelerometer Signal on Y axis

tBodyAccMeanZ
        Numeric, Mean of the time for Body Accelerometer Signal on Z axis

tBodyAccStdX
        Numeric, Standard Deviation of the time for
        Body Accelerometer Signal on X axis

tBodyAccStdY
        Numeric, Standard Deviation of the time for
        Body Accelerometer Signal on Y axis

tBodyAccStdZ
        Numeric, Standard Deviation of the time for
        Body Accelerometer Signal on Z axis

tGravityAccMeanX
        Numeric, Mean of the time for Gravity Accelerometer Signal on X axis

tGravityAccMeanY
        Numeric, Mean of the time for Gravity Accelerometer Signal on Y axis

tGravityAccMeanZ
        Numeric, Mean of the time for Gravity Accelerometer Signal on Z axis

tGravityAccStdX
        Numeric, Standard Deviation of the time for
        Gravity Accelerometer Signal on X axis

tGravityAccStdY
        Numeric, Standard Deviation of the time for
        Gravity Accelerometer Signal on Y axis

tGravityAccStdZ
        Numeric, Standard Deviation of the time for
        Gravity Accelerometer Signal on Z axis

tBodyAccJerkMeanX
	Numeric, Mean of the time for Body Accelerometer Signal
	Jerk Rate on X axis

tBodyAccJerkMeanY
	Numeric, Mean of the time for Body Accelerometer Signal
	Jerk Rate on Y axis

tBodyAccJerkMeanZ
	Numeric, Mean of the time for Body Accelerometer Signal
	Jerk Rate on Z axis

tBodyAccJerkStdX
	Numeric, Standard Deviation of the time for Body Accelerometer Signal
	Jerk Rate on X axis

tBodyAccJerkStdY
	Numeric, Standard Deviation of the time for Body Accelerometer Signal
	Jerk Rate on Y axis

tBodyAccJerkStdZ
	Numeric, Standard Deviation of the time for Body Accelerometer Signal
	Jerk Rate on Z axis

tBodyGyroMeanX
	Numeric, Mean of the time for Body Gyroscope Signal on X axis

tBodyGyroMeanY
	Numeric, Mean of the time for Body Gyroscope Signal on Y axis

tBodyGyroMeanZ
	Numeric, Mean of the time for Body Gyroscope Signal on Z axis

tBodyGyroStdX
	Numeric, Standard Deviation of the time for
	Body Gyroscope Signal on X axis

tBodyGyroStdY
	Numeric, Standard Deviation of the time for
	Body Gyroscope Signal on Y axis

tBodyGyroStdZ
	Numeric, Standard Deviation of the time for
	Body Gyroscope Signal on Z axis

tBodyGyroJerkMeanX
	Numeric, Mean of the time for Body Gyroscope Signal
	Jerk Rate on X axis

tBodyGyroJerkMeanY
	Numeric, Mean of the time for Body Gyroscope Signal
	Jerk Rate on Y axis

tBodyGyroJerkMeanZ
	Numeric, Mean of the time for Body Gyroscope Signal
	Jerk Rate on Z axis

tBodyGyroJerkStdX
	Numeric, Standard Deviation of the time for Body Gyroscope Signal
	Jerk Rate on X axis

tBodyGyroJerkStdY
	Numeric, Standard Deviation of the time for Body Gyroscope Signal
	Jerk Rate on Y axis

tBodyGyroJerkStdZ
	Numeric, Standard Deviation of the time for Body Gyroscope Signal
	Jerk Rate on Z axis

tBodyAccMagMean
	Numeric, Mean of the time for Body Accelerometer Signal's Magnitude

tBodyAccMagStd
	Numeric, Standard Deviation of the time for
	Body Accelerometer Signal's Magnitude

tGravityAccMagMean
	Numeric, Mean of the time for Gravity Accelerometer Signal's Magnitude

tGravityAccMagStd
	Numeric, Standard Deviation of the time for
	Gravity Accelerometer Signal's Magnitude

tBodyAccJerkMagMean
	Numeric, Mean of the time for Body Accelerometer
	Signal's Jerk Rate Magnitude

tBodyAccJerkMagStd
	Numeric, Standard Deviation of the time for Body Accelerometer
	Signal's Jerk Rate Magnitude

tBodyGyroMagMean
	Numeric, Mean of the time for Body Gyroscope Signal's Magnitude

tBodyGyroMagStd
	Numeric, Standard Deviation of the time for
	Body Gyroscope Signal's Magnitude

tBodyGyroJerkMagMean
	Numeric, Mean of the time for Body Gyroscope
	Signal's Jerk Rate Magnitude

tBodyGyroJerkMagStd
	Numeric, Standard Deviation of the time for Body Gyroscope
	Signal's Jerk Rate Magnitude

fBodyAccMeanX
	Numeric, Mean of the frequency domain for
	Body Accelerometer Signal on X axis

fBodyAccMeanY
	Numeric, Mean of the frequency domain for
	Body Accelerometer Signal on Y axis

fBodyAccMeanZ
	Numeric, Mean of the frequency domain for
	Body Accelerometer Signal on Z axis

fBodyAccStdX
	Numeric, Standard Deviation of the frequency domain for
	Body Accelerometer Signal on X axis

fBodyAccStdY
	Numeric, Standard Deviation of the frequency domain for
	Body Accelerometer Signal on Y axis

fBodyAccStdZ
	Numeric, Standard Deviation of the frequency domain for
	Body Accelerometer Signal on Z axis

fBodyAccMeanFreqX
	Numeric, Mean of the frequency reading for
	the frequency domain for body Accelerometer Signal on X axis

fBodyAccMeanFreqY
	Numeric, Mean of the frequency reading for
	the frequency domain for body Accelerometer Signal on Y axis

fBodyAccMeanFreqZ
	Numeric, Mean of the frequency reading for
	the frequency domain for body Accelerometer Signal on Z axis

fBodyAccJerkMeanX
	Numeric, Mean of the frequency domain for Body Accelerometer Signal
	Jerk Rate on X axis

fBodyAccJerkMeanY
	Numeric, Mean of the frequency domain for Body Accelerometer Signal
	Jerk Rate on Y axis

fBodyAccJerkMeanZ
	Numeric, Mean of the frequency domain for Body Accelerometer Signal
	Jerk Rate on Z axis

fBodyAccJerkStdX
	Numeric, Standard Deviation of the frequency domain for
	Body Accelerometer Signal Jerk Rate on X axis

fBodyAccJerkStdY
	Numeric, Standard Deviation of the frequency domain for
	Body Accelerometer Signal Jerk Rate on Y axis

fBodyAccJerkStdZ
	Numeric, Standard Deviation of the frequency domain for
	Body Accelerometer Signal Jerk Rate on Z axis

fBodyAccJerkMeanFreqX
	Numeric, Mean of the frequency reading for
	the frequency domain for Body Accelerometer Signal
	Jerk Rate on X axis

fBodyAccJerkMeanFreqY
	Numeric, Mean of the frequency reading for
	the frequency domain for Body Accelerometer Signal
	Jerk Rate on Y axis

fBodyAccJerkMeanFreqZ
	Numeric, Mean of the frequency reading for
	the frequency domain for Body Accelerometer Signal
	Jerk Rate on Z axis

fBodyGyroMeanX
	Numeric, Mean of the frequency domain for
	Body Gyroscope Signal on X axis

fBodyGyroMeanY
	Numeric, Mean of the frequency domain for
	Body Gyroscope Signal on Y axis

fBodyGyroMeanZ
	Numeric, Mean of the frequency domain for
	Body Gyroscope Signal on Z axis

fBodyGyroStdX
	Numeric, Standard Deviation of the frequency domain for
	Body Gyroscope Signal on X axis

fBodyGyroStdY
	Numeric, Standard Deviation of the frequency domain for
	Body Gyroscope Signal on Y axis

fBodyGyroStdZ
	Numeric, Standard Deviation of the frequency domain for
	Body Gyroscope Signal on Z axis

fBodyGyroMeanFreqX
	Numeric, Mean of the frequency reading for
	the frequency domain for Body Gyroscope Signal on X axis
fBodyGyroMeanFreqY
	Numeric, Mean of the frequency reading for
	the frequency domain for Body Gyroscope Signal on Y axis

fBodyGyroMeanFreqZ
	Numeric, Mean of the frequency reading for
	the frequency domain for Body Gyroscope Signal on X axis

fBodyAccMagMean
	Numeric, Mean of the frequency domain for
	Body Accelerometer Signal's Magnitude

fBodyAccMagStd
	Numeric, Standard Deviation of the frequency domain for
	Body Accelerometer Signal's Magnitude

fBodyAccMagMeanFreq
	Numeric, Mean of the frequency reading for
	the frequency domain for Body Accelerometer Signal's Magnitude

fBodyBodyAccJerkMagMean
	Numeric, Mean of the frequency domain for Body Accelerometer
	Signal's Jerk Rate Magnitude

fBodyBodyAccJerkMagStd
	Numeric, Standard Deviation of the frequency domain
	for Body Accelerometer Signal's Jerk Rate Magnitude

fBodyBodyAccJerkMagMeanFreq
	Numeric, Mean of the frequency reading for
	the frequency domain for Body Accelerometer
	Signal's Jerk Rate Magnitude

fBodyBodyGyroMagMean
	Numeric, Mean of the frequency domain for
	Body Gyroscope Signal's Magnitude

fBodyBodyGyroMagStd
	Numeric, Standard Deviation of the frequency domain for
	Body Gyroscope Signal's Magnitude

fBodyBodyGyroMagMeanFreq
	Numeric, Mean of the frequency reading for
	the frequency domain for Body Gyroscope Signal's Magnitude

```
fBodyBodyGyroJerkMagMean
        Numeric, Mean of the frequency domain for Body Gyroscope
        Signal's Jerk Rate Magnitude

fBodyBodyGyroJerkMagStd
        Numeric, Standard Deviation of the frequency domain
        for Body Gyroscope Signal's Jerk Rate Magnitude

fBodyBodyGyroJerkMagMeanFreq
        Numeric, Mean of the frequency reading for
        the frequency domain for Body Gyroscope
        Signal's Jerk Rate Magnitude
```

Data Preparation Process

1. Download zip file from UCI website and extract its contents
2. Merge the train and test datasets into one large dataset
3. Extract a list of features that is required (Mean and Standard Deviation features)
4. Filter out the unneeded columns (features) from the merged data frame
5. Give the activity labels column their descriptive names (from the provided activity list)
6. Label the column names with tidy names
7. Group the data frame by the Subject and Activity columns in a new data frame
8. Get the mean for each column according to the newly assigned groups