## 📗 `CodeBook.md`

```markdown

# CodeBook

This codebook describes the variables, data, and transformations used in the tidy dataset `secTidySet.txt`.

## Source Data

Original dataset:

- [UCI HAR Dataset](https://archive.ics.uci.edu/ml/datasets/Human+Activity+Recognition+Using+Smartphones)

## Data Transformations

The following operations were performed in `run\_analysis.R`:

1. \*\*Downloaded and unzipped\*\* the original dataset.

2. \*\*Merged\*\* training and test sets to form a single data frame.

3. \*\*Extracted\*\* only columns containing the mean (`mean()`) and standard deviation (`std()`) measurements.

4. \*\*Merged\*\* with activity labels to add descriptive activity names.

5. \*\*Renamed variables\*\* to be more descriptive and readable:

- `t` → `Time`

- `f` → `Frequency`

- `Acc` → `Accelerometer`

- `Gyro` → `Gyroscope`

- `Mag` → `Magnitude`

- Removed special characters like `()`, `-`, etc.

6. \*\*Created tidy dataset\*\* by taking the average of each variable grouped by `subjectId` and `activityId`.

## Variables in `secTidySet.txt`

Each row in `secTidySet.txt` is a unique combination of `subjectId` and `activityId`.

| Variable | Description |

|----------|-------------|

| subjectId | Identifier for the volunteer subject (1 to 30) |

| activityId | Identifier for the activity performed (1 to 6) |

| TimeBodyAccelerometerMeanX | Mean time-domain body acceleration in X direction |

| TimeBodyAccelerometerMeanY | Mean time-domain body acceleration in Y direction |

| ... | (similar variables for each mean and std measurement) |

> Note: All variables from the original dataset that include `mean()` or `std()` were retained, and the average was calculated per subject and activity.

## Activities

| activityId | Activity Name |

|------------|----------------|

| 1 | WALKING |

| 2 | WALKING\_UPSTAIRS |

| 3 | WALKING\_DOWNSTAIRS |

| 4 | SITTING |

| 5 | STANDING |

| 6 | LAYING |

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For a full list of all variables in the tidy dataset, please refer to the column names in `secTidySet.txt`.