# Activity Monitoring Data Analysis

## Loading and Preprocessing the Data

The dataset was loaded and the date column was converted to Date format.

## What is the mean total number of steps taken per day?

A histogram of the total number of steps per day was created. The mean and median were calculated:

Mean steps: 9354.23

Median steps: 10395.00

## What is the average daily activity pattern?

A time series plot was generated for the 5-minute interval and the average number of steps taken.

The 5-minute interval with the maximum number of steps is: 835

## Imputing Missing Values

Total missing values before imputation: 2304

Missing values were replaced using the mean for the respective 5-minute interval.

Mean steps after imputation: 10766.19

Median steps after imputation: 10766.19

## Are there differences in activity patterns between weekdays and weekends?

A comparison was made between weekday and weekend activity patterns using a time series plot.

## Conclusion

The dataset contained missing values which were imputed using the mean of each 5-minute interval. Activity patterns varied between weekdays and weekends, with different peak times. The new mean and median after imputing missing values changed slightly from the original values.