# Statistics Library Documentation

## Overview

This documentation describes a simple statistics library written in C, which provides functions to calculate the mean, median, and standard deviation of a dataset. The library consists of three files: stats.c, stats.h, and helpers.c.

## Files

### stats.c

This file contains the implementation of the statistics functions.

#### Functions

##### double mean(double \*data, int size)

Calculates the mean of a dataset.

##### double median(double \*data, int size)

Calculates the median of a dataset.

##### double std\_dev(double \*data, int size, double mean)

Calculates the standard deviation of a dataset.

### stats.h

This file contains the function declarations for the statistics functions.

#### Function Declarations

##### double mean(double \*data, int size);

Declares the mean function.

##### double median(double \*data, int size);

Declares the median function.

##### double std\_dev(double \*data, int size, double mean);

Declares the std\_dev function.

### helpers.h

This file contains the function declaration for the sort function.

#### Function Declaration

##### void sort(double \*data, int size);

Declares the sort function.

### helpers.c

This file contains the implementation of the sort function.

#### Functions

##### void sort(double \*data, int size)

Sorts an array of double values in ascending order using the insertion sort algorithm.

### main.c

This file contains an example program that uses the statistics library to calculate the mean, median, and standard deviation of a dataset.

## Example Usage

The following example shows how to use the statistics library to calculate the mean, median, and standard deviation of a dataset:  
c  
int main() {  
 double data[] = {12.0, 15.5, 18.7, 11.3, 14.2};  
 int size = sizeof(data) / sizeof(data[0]);  
 double m = mean(data, size);  
 double md = median(data, size);  
 double sd = std\_dev(data, size, m);  
 printf("Mean: %.2f\n", m);  
 printf("Median: %.2f\n", md);  
 printf("Standard Deviation: %.2f\n", sd);  
 return 0;  
}  
  
This program calculates the mean, median, and standard deviation of the dataset and prints the results to the console.