

# CS 535: Assignment #4

Due on 11:59pm February 27, 2018

*Alexander C. Nwala 16:20*

**David Sinclair**

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# 1 Problem 1

## 1.1 Question 1

The "friendship paradox" ([http://en.wikipedia.org/wiki/Friendship\\_paradox](http://en.wikipedia.org/wiki/Friendship_paradox)) says that your friends have more friends than you do.

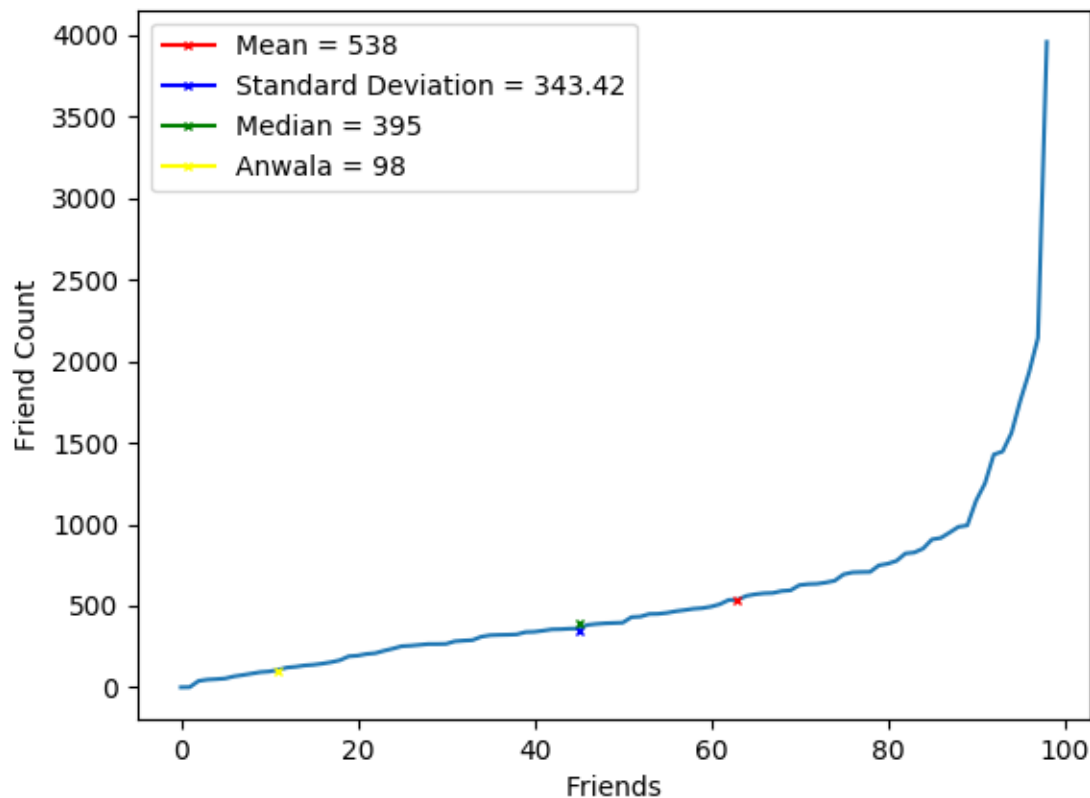
1. Determine if the friendship paradox holds for my Facebook account. Compute the mean, standard deviation, and median of the number of friends that my friends have. Create a graph of the number of friends (y-axis) and the friends themselves, sorted by number of friends (y-axis). (The friends don't need to be labeled on the x-axis: just  $f_1, f_2, f_3, \dots, f_n$ .) Do include me in the graph and label me accordingly.

This used to be more interesting when you could more easily download your friend's friends data from Facebook. Facebook now requires each friend to approve this operation, effectively making it impossible.

I will upload a csv file of my 2014 friends list on the #assignment4 slack channel

## 1.2 Answer 1

From the graph below you can tell that the friendship paradox holds for the facebook friends.



## 2 Problem 2

### 2.1 Question 2

2. Determine if the friendship paradox holds for your Twitter account. Since Twitter is a directed graph, use "followers" as value you measure (i.e., "do your followers have more followers than you?").

Generate the same graph as in question #1, and calculate the same mean, standard deviation, and median values.

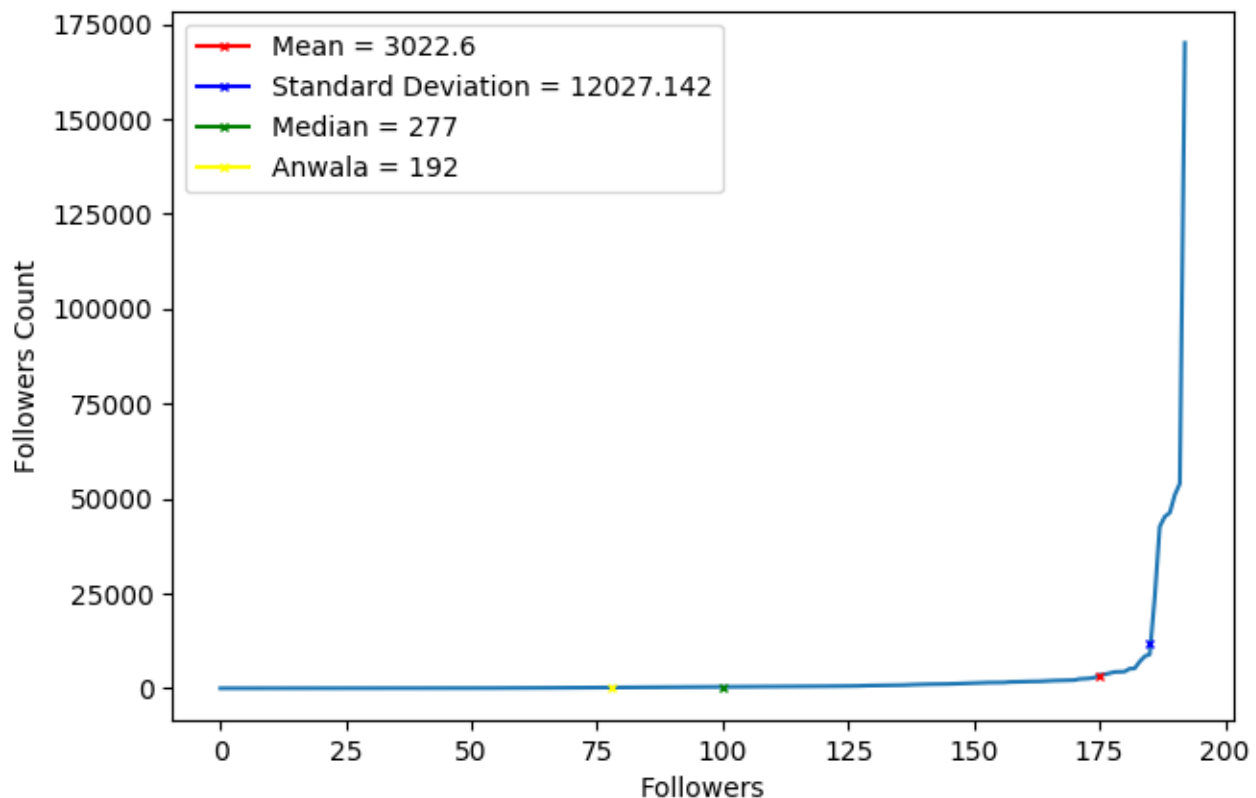
For the Twitter 1.1 API to help gather this data, see:

<https://developer.twitter.com/en/docs/accounts-and-users/follow-search-get-users/api-reference/get-followers-list>

If you do not have followers on Twitter (or don't have more than 50), then use my twitter account "acnwala".

### 2.2 Answer 2

From the graph below you can tell that the friendship paradox holds for the the twitter followers.



### **3 Problem 3**

#### **3.1 Question 3**

Extra credit, 3 points:

3. Repeat question #1, but with your (or a specified) LinkedIn profile.

#### **3.2 Answer 3**

## 4 Problem 4

### 4.1 Question 4

Extra credit, 1 point:

4. Repeat question #2, but change "followers" to "following"? In other words, are the people I am following following more people?

For the Twitter 1.1 API to help gather this data, see:

<https://developer.twitter.com/en/docs/accounts-and-users/follow-search-get-users/api-reference/get-friends-list>

### 4.2 Answer 4

The number of people that you are following are following more people than you.

