

## shellPing.go: Specifications

Authors: Steve Huang, Asher Kang, Maria Ringes

### Description:

**shellPing.go** pings user-inputted websites in parallel and returns a plot of GOMAXPROCS value settings mapped to total program runtime.

### Input:

The user inputs the names of websites they would like to ping, with a white space in between each of them. They press ENTER to begin the ping analysis on these websites.

### Output:

A map of GOMAXPROCS values to program runtime is created and used to make a HTML graph of the same variables. A table is also printed in the terminal displaying each user-inputted website as along with statistics related to network latency: the minimum, maximum, average, and standard deviation ping times in nanoseconds, as well as the total number of ICMP packets sent and the percentage success rate of receiving packets back.

### Expected Behavior and Implementation:

The program requests the user input for the names of websites to ping, with each website separated by a single white space. Upon entering the websites and pressing ENTER, the program delegates the pinging of each website to separate **Go-routines**, which utilize the shell “ping” command to send an ICMP ECHO\_REQUEST to network hosts. This delegated pinging through Go-routines is repeated in a loop over iterative values of GOMAXPROCS, starting with 1 CPU Thread and ending with the maximum number of CPU Threads available on the user’s CPU. During each ping, the network latency speed for each ping is also collected as a string splice and sent to an output **Go-channel** called **results**, from which it is later collected, spliced, converted into floats, and used to calculate general latency statistics for each website that is pinged. At the end, the program returns an HTML file of a graph that plots the values of GOMAXPROCS (number of CPU Threads) on the X-axis and the program runtime in nanoseconds on the Y-axis. Additionally, the program prints a table that lists the various statistics regarding the latency of individual websites, including the minimum, maximum, average, and standard deviation ping times in nanoseconds, as well as the total number of ICMP packets sent and the percentage success rate of receiving packets back.