HOMEWORK 2

Welcome to your first homework, The following are the following are the **rules** of submitting homework. Read them carefully before doing your first homework:

> You have to submit the code/report in pdf, compiled from markdown. Any report written in word document or so will be discarded and score 0.
>
> You have to submit your homework via Email.
>
> Your Email subject shall be *Course Z6110X0002 Linux Programming+Homework #+{Your Name}+{Your ID}*.
>
> The deadline of your homework will be *Apr 29th, 11:59PM*.

Q1 (Happy Go Lucky): In this question, you are invited to write your first Go program. Before that, you need to do something to prepare for go program:

1. Install a Golang programming environment
2. Provide a program to calculate **the area and the perimeter** of a circle and a rectangle, such as:

```
Input: {3 4} //two numbers = this is a rectangle
Output: 14, 12
Input: {5}
Input 78.53981633974483
Output 31.41592653589793
```

Extra Credits: Code a proper interface to make above program as a web service in your own host. Note that, your host is 127.0.0.1 or localhost.

Q2 (Bash, and Bash Hard): You have tried some scripting and I know you like it. Now you need to bash the homework, very hard. You are asked to implement one script, called **diskusage.sh** works as follows:

```
$ ./diskusage.sh
usage: diskusage.sh [-a -n N] directory...
```

The **-a** flag means that the script should list both files and directories, and the **-n** flag indicates that only the top **N** entries should be printed (if N is not specified, then it should default to 10). Here are some example of using diskusage.sh

```
# Run on /etc
$ ./diskusage.sh /etc
15M     /etc/
6.5M    /etc/udev
2.0M    /etc/ssl
1.9M    /etc/ssl/certs
1.8M    /etc/ca-certificates/extracted
1.8M    /etc/ca-certificates
1.1M    /etc/pacman.d/gnupg
1.1M    /etc/pacman.d
780K    /etc/ca-certificates/extracted/cadir
340K    /etc/ssh

# Run on /etc (limit output to top 5)
$ ./diskusage.sh -n 5 /etc
15M     /etc
6.5M    /etc/udev
2.0M    /etc/ssl
1.9M    /etc/ssl/certs
1.8M    /etc/ca-certificates/extracted

# Run on /etc (include files)
$ ./diskusage.sh -a /etc
15M     /etc
6.5M    /etc/udev/hwdb.bin
6.5M    /etc/udev
2.0M    /etc/ssl
```

```
1.9M    /etc/ssl/certs
1.8M    /etc/ca-certificates/extracted
1.8M    /etc/ca-certificates
1.1M    /etc/pacman.d/gnupg
1.1M    /etc/pacman.d
780K    /etc/ca-certificates/extracted/cadir

# Run on /etc (include files, limit output to top 5)
$ ./diskusage.sh -a -n 5 /etc
15M     /etc
6.5M    /etc/udev/hwdb.bin
6.5M    /etc/udev
2.0M    /etc/ssl
1.9M    /etc/ssl/certs

# Run on /etc and /var (limit output to top 2 per directory argument)
$ ./diskusage.sh -n 2 /etc /var
15M     /etc
6.5M    /etc/udev
7.8G    /var
4.1G    /var/log/journal/4e5d9581840047019e266fb2123b1c90
```

Good luck and enjoy!