Homework 001

SAY HELLO TO THE SYSTEM~

2020/4/27 WED. 23:59 DUE

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Goal of hw1

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- Learn to write a console program
  - int main(int argc, char *argv[])
- Learn to use system API
  - open(), read(), write(), close(), exit() …
  - fork(), exec*()
- Use Makefile to provide several service
  - compile, clean & test tasks

- Execute a program (**master.out**) to **fork()** a child program(**mmv.out**) and add one new line on the head of input file …

Task 1 – Makefile

- Generate at least **two c codes** and a **Makefile**
- <mark>Put the "blake.txt" into the same folder</mark>
  - Name of the folder "s123456_OShw1"

```
iMBox-Plus:109hw1 Garrett$ cat blake.txt
To see a World in a Grain of Sand
And a Heaven in a Wild Flower,
Hold Infinity in the palm of your hand
And Eternity in an hour.
iMBox-Plus:109hw1 Garrett$ 
```

Task 1 – Makefile

▶ Generate at least **two c codes** and a **Makefile**

▶ Put the "blake.txt" into the same folder

  ▶ Name of the folder "s123456_OShw1"

▶ Then, write a Makefile to provide several services

  ▶ compile, clean & test tasks

```
[iMBox-Plus:109hw1 Garrett$ ls -al
total 32
drwxr-xr-x  6 Garrett  staff  192  4 13 04:19 .
drwxr-xr-x  8 Garrett  staff  256  4 13 04:05 ..
-rw-r--r--  1 Garrett  staff  258  4 13 04:18 Makefile
-rwx------  1 Garrett  staff  130  4 13 02:49 blake.txt
-rw-r--r--@ 1 Garrett  staff  904  4 13 04:15 master.c
-rw-r--r--@ 1 Garrett  staff  723  4 13 02:53 mmv.c
iMBox-Plus:109hw1 Garrett$ clear
```

Task 1 – Makefile

- make all   --- compile all c code

```
iMBox-Plus:109hw1 Garrett$ make all
gcc master.c -o master.out
gcc mmv.c -o mmv.out
iMBox-Plus:109hw1 Garrett$ ./master.out
Successful (#49066)!
[iMBox-Plus:109hw1 Garrett$ ls
Makefile         happy.tmp        master.out        mmv.out
blake.txt        master.c         mmv.c
[iMBox-Plus:109hw1 Garrett$ make clean
rm -rf master.out mmv.out happy.tmp happy2.tmp
[iMBox-Plus:109hw1 Garrett$ ls
Makefile         blake.txt        master.c          mmv.c
iMBox-Plus:109hw1 Garrett$
```

Task 1 – Makefile

▶ Make clean   --- clean outputs/exec files

▶ Delete all **.out** and **.tmp** files

```
[iMBox-Plus:109hw1 Garrett$ make all
gcc master.c -o master.out
gcc mmv.c -o mmv.out
[iMBox-Plus:109hw1 Garrett$ ./master.out
Successful (#49066)!
[iMBox-Plus:109hw1 Garrett$ ls
Makefile          happy.tmp          master.out          mmv.out

[iMBox-Plus:109hw1 Garrett$ make clean
rm -rf master.out mmv.out happy.tmp happy2.tmp
[iMBox-Plus:109hw1 Garrett$ ls
Makefile          blake.txt          master.c          mmv.c
iMBox-Plus:109hw1 Garrett$
```

Execute a test

- ▶ ./master.out --- execute a test
  - ▶ Generate a file "happy.tmp"

```
[iMBox-Plus:109hw1 Garrett$ make all
gcc master.c -o master.out
gcc mmv.c -o mmv.out

iMBox-Plus:109hw1 Garrett$ ./master.out
Successful (#49066)!
iMBox-Plus:109hw1 Garrett$ ls
Makefile        happy.tmp        master.out      mmv.out
blake.txt       master.c         mmv.c
iMBox-Plus:109hw1 Garrett$ make clean
rm -rf master.out mmv.out happy.tmp happy2.tmp
[iMBox-Plus:109hw1 Garrett$ ls
Makefile        blake.txt        master.c        mmv.c
iMBox-Plus:109hw1 Garrett$
```

Note: #49066 is the pid of children process

Task 2 – manipulate file

▶ The file "happy.tmp" has been add a sentence on the head of the file

    ▶ \\----Say Hello to s1234567!----\\

```
iMBox-Plus:109hw1 Garrett$ cat blake.txt
To see a World in a Grain of Sand
And a Heaven in a Wild Flower,
Hold Infinity in the palm of your hand
And Eternity in an hour.
iMBox-Plus:109hw1 Garrett$ cat happy.tmp
\\----Say Hello to s1234567!----\\
To see a World in a Grain of Sand
And a Heaven in a Wild Flower,
Hold Infinity in the palm of your hand
And Eternity in an hour.
iMBox-Plus:109hw1 Garrett$
```

Task 3 – run a test

► Make test   --- run a test scripts

```
test:
    cat blake.txt
    ls
    ./master.out
    cat happy.tmp
    ls
    ./master.out blake.txt happy2.tmp
    cat happy2.tmp
```

► ./master.out

  = ./master.out blake.txt happy.tmp

► ./master.out A.txt B.tmp

  ► It means we copy all sentences from file A.txt to B.tmp and add a new line

```
[iMBox-Plus:109hw1 Garrett$ make all
gcc master.c -o master.out
gcc mmv.c -o mmv.out
[iMBox-Plus:109hw1 Garrett$ make test
cat blake.txt
To see a World in a Grain of Sand
And a Heaven in a Wild Flower,
Hold Infinity in the palm of your hand
And Eternity in an hour.
ls
Makefile          master.c          mmv.c
blake.txt         master.out        mmv.out
./master.out
Successful (#49207)!
cat happy.tmp
\\----Say Hello to s1234567!----\\
To see a World in a Grain of Sand
And a Heaven in a Wild Flower,
Hold Infinity in the palm of your hand
And Eternity in an hour.
ls
Makefile          happy.tmp         master.out        mmv.out
blake.txt         master.c          mmv.c
./master.out blake.txt happy2.tmp
Successful (#49215)!
cat happy2.tmp
\\----Say Hello to s1234567!----\\
To see a World in a Grain of Sand
And a Heaven in a Wild Flower,
Hold Infinity in the palm of your hand
And Eternity in an hour.
iMBox-Plus:109hw1 Garrett$
```

```
cat blake.txt
ls                       Makefile
./master.out
cat happy.tmp
ls
./master.out blake.txt happy2.tmp
cat happy2.tmp
```

The requirements

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- Allow TAs use "make all" to build your code.
- Allow TAs use "make test" to test your program.
- Allow TAs use "make clean" to delete all stuffs
  - (.out) is executable files.
  - (.tmp) is temporally text files generated by your program

- Functions of your program
  - Copy context of one file to another one (target file)
  - Add a several new sentence in the target file

- 程式需要「可以編譯執行」助教才會批改

The req...

- Allow TAs
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  - (.out) is
  - (.tmp) s

```
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iMBox-Plus:109hw1 Garrett$
```

- Functions of your program
  - Copy context of one file to another one (target file)
  - Add a several new sentence in the target file

- 程式需要「可以編譯執行」助教才會批改

Submit your homework

▶ Please make sure we could use your makefile to build and test the project.

▶ Put all stuff into the folder (s123456_OShw1)

  ▶ replace s1234567 by your own student ID.

  ▶ Please attach a slides(s1234567_hw1.pdf) to explain what works you completed and how you completed them. Please also use this document if you have other things to tell your teaching assistant.

    ▶ * This document(s1234567_hw1.pdf) must be included to demo your homework

  ▶ Pack all the file into a folder named "s1234567_OShw1"

  ▶ Zip it and Upload to Portal

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