



GNU make and makefile



- ◆ What is GNU(GNU's not unix) Make?
 - ➤ GNU is a extensive collection of free software which can be used as an operating system or can be used in parts with other operating systems.
 - ➤ GNU Make is a tool which controls the generation of executables and other non-source files of a program from the program's source files.
 - ➤ Make gets its knowledge of how to build your program from a file called the *makefile*, which lists each of the non-source files and how to compute it from other files.
 - ➤ The make utility automatically determines which pieces of a large program need to be recompiled, and issues commands to recompile them.



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How to write a makefile



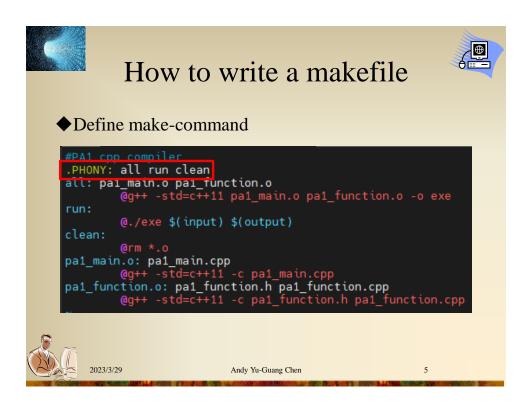
♦ How a makefile looks like?

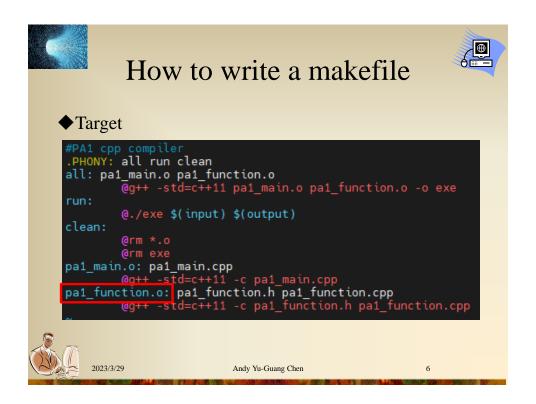


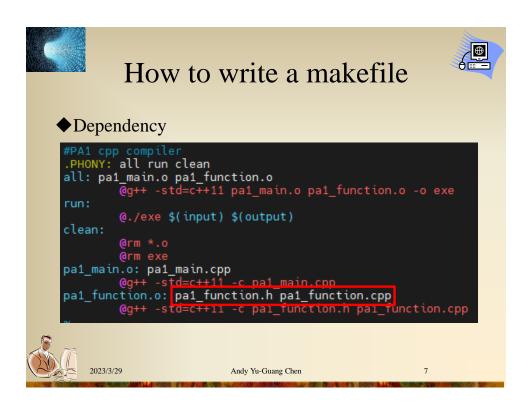
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◆ An example of using make to compile and execute your program

```
[ta110521028@eda359_forclass ~/PA1]$ ls
c17.v Makefile PAI main.cpp
[ta110521028@eda359_forclass ~/PA1]$ make all
[ta110521028@eda359_forclass ~/PA1]$ ls
c17.v exe Makefile PAI_main.cpp PAI_main.o
[ta110521028@eda359_forclass ~/PA1]$ make run input=c17.v output=c17.bench
----- Verilog Parser -----
Input file: c17.v
Output file: c17.bench
[ta110521028@eda359_forclass ~/PA1]$ ls
c17.bench c17.v exe Makefile PAI_main.cpp PA1_main.o
[ta110521028@eda359_forclass ~/PA1]$ make clean
[ta110521028@eda359_forclass ~/PA1]$ make clean
[ta110521028@eda359_forclass ~/PA1]$ ls
c17.bench c17.v Makefile PA1_main.cpp
```



PA2 Requirement

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- ◆ Your makefile should at least contain these 3 commands, which is (1) make all, (2) make run, and (3) make clean.
- ◆ make all: This command will automatically compile your source codes and generate the corresponding objects and executable file.
- ◆ make run: This command will execute your executable file and run your program.
- → make clean: This command will automatically remove all
 the objects and executable file generated by make all.



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PA2 Requirement



◆The run time of your program is limited to at most 2 hours per testcase.



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Reference



- ♦ https://mropengate.blogspot.com/2018/01/makefile.html
- ♦ https://michaelchen.tech/gnu-make/
- ♦ https://blog.jaycetyle.com/2015/01/linux-gcc-makefile/
- ◆ https://www.cc.ntut.edu.tw/~yccheng/oop2005f/GNUMakeManual.pdf
- ♦ https://www.youtube.com/watch?v=O5mG8H36V44



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