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-------------------------------------------------
** Makefiles & Complining **
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target: dependencies
    action

When a program is compiled source files ( main.c )
are compiled into object files ( main.o )
which are then further compiled into executables ( output ).

When using multiple source files, each individual
source file is compiled into individiual object files
( main.o , partb.o, partc.o ) these are then linked
together with any C libraries used and combined
together into one executable.


    ---------------------------------------------
    [Makefile 1]
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    hellomake: hellomake.c hellofunc.c
        gcc -o hellomake hellomake.c hellofunc.c -I.

    //This makefile is dependant on hellomake.c and hellofunc.c

    - gcc                   || GCC C Compiler
    - o hellomake           || Output to hellomake executable
    - hellomake.c hellofunc.c || C files for compiler
    - I.                    || Include local directory


    ---------------------------------------------
    [Makefile 2]
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    CC=gcc
    CFLAGS=-I.

    hellomake: hellomake.o hellofunc.o
         $(CC) -o hellomake hellomake.o hellofunc.o -I.

    //This makefile is now dependant on hellomake.o and hellofunc.o
    //Make knows it must first compile the c files for that dependancy

    - CC=gcc                || C Compiler to use = gcc
    - CFLAGS = -I.          || Include local directory
    - o hellomake           || Output to hellomake executable
    - hellomake.o hellofunc.o || Object files for compiler
    - I.                    || Include local directory


    ---------------------------------------------
    [Makefile 3]
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    CC=gcc
    CFLAGS=-I.
    DEPS = hellomake.h

    %.o: %.c $(DEPS)
        $(CC) -c -o $@ $< $(CFLAGS)

    hellomake: hellomake.o hellofunc.o
        gcc -o hellomake hellomake.o hellofunc.o -I.

    //DEPS is the set of .h files upon which the .c files depend on

    //%.o: All files which end in .o
    //This says that all .o files depend on the .c of that same file
    //and also the dependancies listed in DEPS

    - DEPS = hellomake.h    || Dependencies
    - %.o                   || All files ending in .o
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- %.c                    || All files ending in .c
- $(CC) -c               || Generate object file
- -o $@                  || Output to executable named after x.o
- $<                     || First item in depencencies list
- $(CFLAGS)              || -I.


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[Makefile 4]
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CC=gcc
CFLAGS=-I.
DEPS = hellomake.h
OBJ = hellomake.o hellofunc.o

%.o: %.c $(DEPS)
    $(CC) -c -o $@ $< $(CFLAGS)

hellomake: $(OBJ)
    gcc -o $@ $^ $(CFLAGS)

//OBJS is the set of .o files (object files)

- OBJ = hellomake.o hellofunc.o  || Object files
- $@                             || Left side of :
- $<                             || First item in depencencies list
- $^                             || Right side of :


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[Makefile 5]
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IDIR =../include
CC=gcc
CFLAGS=-I$(IDIR)

ODIR=obj
LDIR =../lib

LIBS=-lm

_DEPS = hellomake.h
DEPS = $(patsubst %,$(IDIR)/%,$(_DEPS))

_OBJ = hellomake.o hellofunc.o
OBJ = $(patsubst %,$(ODIR)/%,$(_OBJ))


$(ODIR)/%.o: %.c $(DEPS)
    $(CC) -c -o $@ $< $(CFLAGS)

hellomake: $(OBJ)
    gcc -o $@ $^ $(CFLAGS) $(LIBS)

.PHONY: clean

clean:
    rm -f $(ODIR)/*.o *~ core $(INCDIR)/*~

//This Makefile introduces make clean & directories*/

- IDIR =../include   || includeDirectory
- CFLAGS=-I$(IDIR)   || Include includeDirectory
- ODIR = obj         || objects directory
- LDIR = ../lib      || library directory
- LIBS = -lm         || Math library
-
```