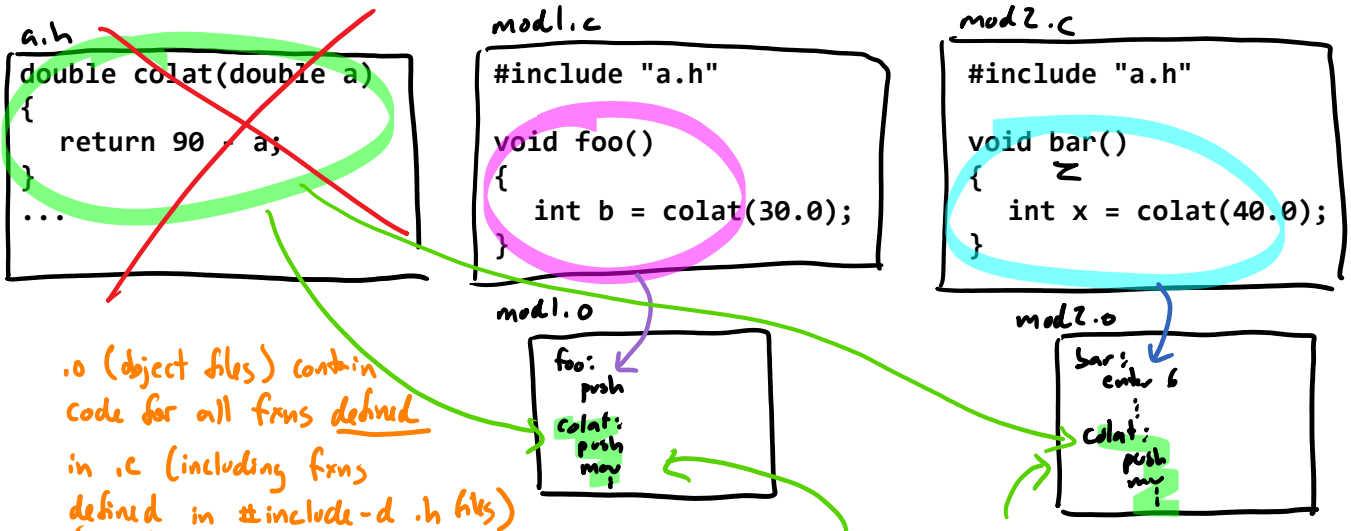
Header Files




.o (object files) contain code for all fxns defined in .c (including fxns defined in #include-d .h files)

```
gcc -o Program mod1.o mod2.o
```

linker fails with multiple definition error

SO DON'T PUT FXN DEFINITIONS in .h (and don't #include .c files)
(only put FXN declarations in .h)

a.h
```
int foo();
...
```

b.h
```
#include "a.h"
int bar();
...
```

prog.c
```
#include "a.h"
#include "b.h"

int main() {
 foo();
}
```

what the compiler sees for gcc -c prog.c

```
#define __GUARD__
int foo();
...
int foo();
...
int bar();
```

with the guard, __GUARD__ is not not defined the 2nd time a.h is #included, and so inside of #ifndef is not re-#included

a.h
```
int foo();
#include "b.h"
...
```

b.h
```
#include "a.h"
...
```

prog.c
```
#include "a.h"

int main() {
...
}
```

header file guards fix infinite #include recursion too

a.h
```
#ifndef __A__H__
#define __A__H__
int foo();
#include "b.h"
...
#endif
```

b.h
```
#ifndef __B_H__
#define __B_H__
#include "a.h"
...
#endif
```

prog.c
```
#include "a.h"
#include "b.h"

int main() {
...
}
```


#include "b.h"
...
#endif
...
#endif
int main() {
...
}

makefile

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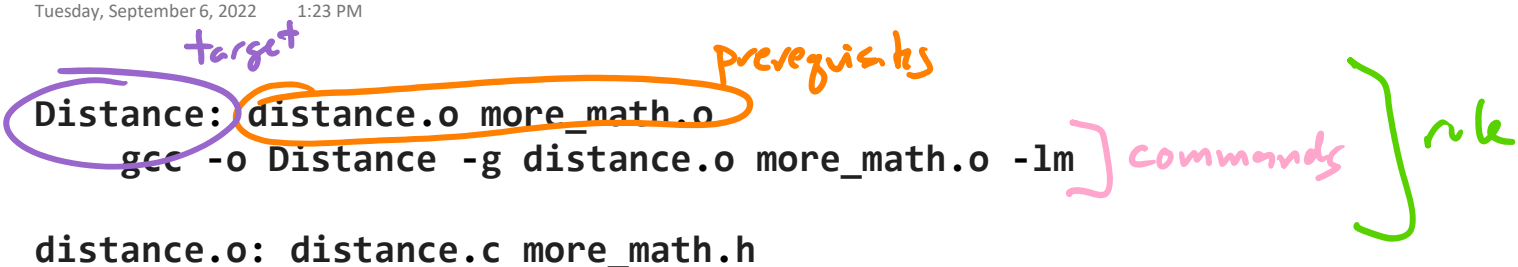


```
Distance: distance.o more_math.o
    gcc -o Distance -g distance.o more_math.o -lm

distance.o: distance.c more_math.h
    gcc -c -Wall -std=c99 -pedantic -g distance.c

more_math.o: more_math.c more_math.h
    gcc -c -Wall -std=c99 -pedantic -g more_math.c
```