Lab 3 Report

ECPE 170 – Computer Systems and Networks – Spring 2017

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Lab Topic: C programming (Lab #: 3)

(1) Copy and paste in your functional Makefile-1

```
all:
	gcc main.c output.c factorial.c -o factorial_program
```

(2) Copy and paste in your functional Makefile-2

```
all: factorial_program

factorial_program: main.o factorial.o output.o
	gcc main.o factorial.o output.o -o factorial_program

main.o: main.c
	gcc -c main.c

factorial.o: factorial.c
	gcc -c factorial.c

output.o: output.c
	gcc -c output.c

clean:
	rm -rf *.o factorial_program
```

(3) Describe - in detail - what happens when the command "make -f Makefile-2" is entered. How does make step through your Makefile to eventually produce the final result?

The Makeifle-2.c is a text file with specific instructions on how to compile and recompile the program. The make command is the utility that reads the Makefile and checks for changes as well as determines which parts of the code to recompile.

(4) Copy and paste in your functional Makefile-3

```
all: $(EXECUTABLE)

$(EXECUTABLE): main.o factorial.o output.o
	$(CC) main.o factorial.o output.o -o $(EXECUTABLE)

main.o: main.c
	$(CC) $(CFLAGS) main.c

factorial.o: factorial.c
	$(CC) $(CFLAGS) factorial.c

output.o: output.c
```

```
	$(CC) $(CFLAGS) output.c

clean:
	rm -rf *.o $(EXECUTABLE)
```

(5) Copy and paste in your functional Makefile-4

```
all: $(EXECUTABLE)

$(EXECUTABLE): $(OBJECTS)
	$(CC) $(OBJECTS) -o $(EXECUTABLE)

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

clean:
	rm -rf *.o $(EXECUTABLE)
```

(6) Describe - in detail - what happens when the command "make -f Makefile-4" is entered. How does make step through your Makefile to eventually produce the final result?

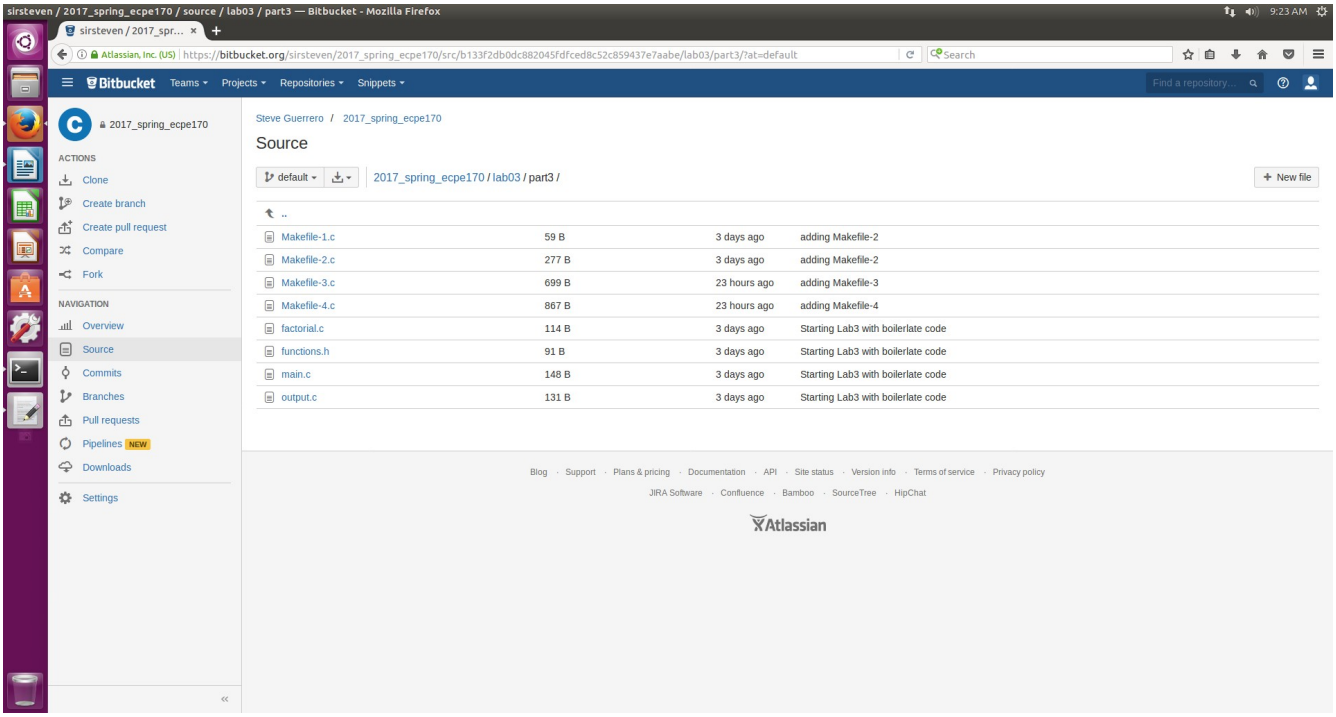
The Makeifle-4.c is a text file with specific instructions on how to compile and recompile the program. The make command is the utility that reads the Makefile and checks for changes as well as determines which parts of the code to recompile as well as a couple compiler options. The make command is the utility that reads the Makefile. To view the output of the program you would enter the designated output file: ./factorial_program

(7) To use this Makefile in a future programming project (such as Lab 4...), what specific lines would you need to change?
Using makefile-4 as an example:

Change Line 19: EXECUTABLE=factorial_program, because you would have a different name for your program.

Change line 16: OBJECTS=main.o factorial.o output.o, because the name of the functions used will probably be different.

(8) Take one screen capture of the Bitbucket.org website, clearly showing the "Part 3" source folder that contains all of your Makefiles added to version control, along with the original boilerplate code.


sirsteven / 2017_spring_ecpe170 / source / lab03 / part3 — Bitbucket - Mozilla Firefox
9:23 AM
sirsteven / 2017_spr...
https://bitbucket.org/sirsteven/2017_spring_ecpe170/src/b133f2db0dc882045fdfced8c52c859437e7aabe/lab03/part3/?at=default
Search
Bitbucket
Teams
Projects
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Snippets
Find a repository...
2017_spring_ecpe170
ACTIONS
Clone
Create branch
Create pull request
Compare
Fork
NAVIGATION
Overview
Source
Commits
Branches
Pull requests
Pipelines
NEW
Downloads
Settings
Steve Guerrero / 2017_spring_ecpe170
Source
default
2017_spring_ecpe170 / lab03 / part3 /
+ New file
..
Makefile-1.c 59 B 3 days ago adding Makefile-2
Makefile-2.c 277 B 3 days ago adding Makefile-2
Makefile-3.c 699 B 23 hours ago adding Makefile-3
Makefile-4.c 867 B 23 hours ago adding Makefile-4
factorial.c 114 B 3 days ago Starting Lab3 with boilerlate code
functions.h 91 B 3 days ago Starting Lab3 with boilerlate code
main.c 148 B 3 days ago Starting Lab3 with boilerlate code
output.c 131 B 3 days ago Starting Lab3 with boilerlate code
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