IC221 System Programming
Spring 2016 NAME:_____
HW1

COLLABORATOR(S):_____

1. Read *Origins and History of Unix:* Who were the inventors of Unix? What was the motivation between the projects when considering batch computing?

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2. What are the three components of a Unix system? Provide an example of the interaction from a user perspective down to the hardware and back up.

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3. In the Unix File System hierarchy, match the location of the item to its directory path

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_____ Essential Command Binaries

_____ The Kernel

_____ System Binaries generally run by the super user or administrator

5/3/2/0

_____ Standard Unix System Resources

_____ Library files for Binaries

4. What are the four primary tasks of the Unix Operating System

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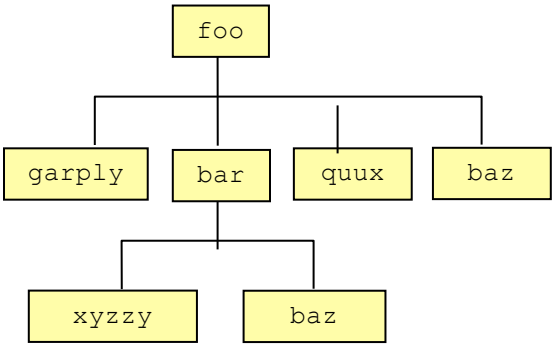
5. Consider the following file system hierarchy and the path: /foo/bar/../quux/../baz/../bar/./baz 15/10/5/0



(a) Circle the item that the path refers to.

(b) Draw arrows indicating the items that are being referenced.

6. Assume you are in your home directory, and you want to create a directory structure and files that looks like this: 25/20/10/0

```
~/
 |--> myDir/
 |    |___,-> baz.txt
 |    |___,-> bar/
 |              |___,-> foo.txt
 |
 |-->beatarmy/
      |___,-> gonavy.txt
```

Write the sequence of command line instructions to generate that file structure, assuming the present working directory is your home directory. **DO NOT USE cd. Instead use complete paths.**

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7. Assume the following file system structure for your home directory with shell's current working directory being your home directory. (hint: note some files are hidden files, e.g., start with preceding .)

```
~/
 |--> classNotes/
 |    |___,-> lec0.txt
 |    |___,-> demo
 |              |___,-> ls-demo.txt
 |-->CynicalMidsGifs/                  (note: empty directory)
 |-->gonavy.txt
 |-->.emacs
 |-->.ssh/
      |___,->known_host
      |___,->authorized_keys
      |___,->id_rsa.pub
      |___,->id_rsa
```

What files/directories are listed when running the following commands from the current working directory (the home directory):

(a) ls

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(b) ls -a

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(c) ls -a .ssh/

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(d) ls .emacs

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8. Consider the following **ls -l** output, label the output appropriately.

```
drwxr-xr-x  2 aviv  scs 4096 2013-12-22 10:57 demo/
-rw-r--r--  1 aviv  scs 13454 2013-12-22 10:56 text.dat
```

7/5/0

9. For the following commands, determine in which bin directory they live using the **which** command.

ls	_____	cat	_____
which	_____	touch	_____
head	_____	tail	_____
tac	_____	mv	_____
rmdir	_____	grep	_____
cut	_____	chmod	_____

13/8/4/0

10. For all of the commands above that was not covered in lecture or lab, use the **man** command to read the description in the Unix manual and describe its function and one of its options:

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