



These are the types of questions that you will find on the final exam. I have not included all possible topics, but I have included all possible types of questions. These questions have the same level of difficulty as you will find on the actual final exam.

1. A _____ is an operator that sends the standard output of one command to the standard input of another command.
2. The _____ is the part of the operating system that controls the hardware and software.
3. State four *independent* properties that a good password should have.
4. What is the difference between a relative and an absolute pathname?
5. Name four top-level directories that are always present in ANY UNIX system and describe their purpose in a few words:
6. From the following set of directory tables, it is possible to construct the tree and fill in the missing entries. Fill in the entries that are missing.

288	.
	..
402	foo
290	bar
100	stuff

	.
288	..
387	dir1
389	dir2

389	.
	..
100	data
402	c

387	.
	..
402	x

7. Convert the following octal modes to permission strings.
 - a. 0654 _____
 - b. 0753 _____
8. Convert the following binary to decimal:
10110110011 _____
9. Convert the following decimal to binary:
753 _____



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10. (2%) A_____ is a precise and unambiguous procedure for solving a problem in a finite number of steps.
11. (4%) If my umask is 022, what will be the permissions on the file created when I type the command `echo "hello" > newfile`.
12. (4%) What is displayed by the following command, given that `thefile` has the following contents:
- ```
120 30 2030
7530
30 200 12
10
10 2.3005
3
$ cat thefile | grep '[^0-9]30'
```
13. (4%) Write a regular (not extended) `grep` pattern that will find all input lines that end in a string of at least 8 alphanumeric characters.
14. (4%) Write a `grep` pattern that will match any decimal number less than 100.
15. (4%) What is output by the following Perl program?
- ```
my $s = 0;
my $i = 1;
while ( $i <= 8 ) {
    $s = $s + $i;
    $i = $i + 1;
}
print "$s\n";
```
16. (4%) What is printed by the following code fragment:
- ```
my $var = 10;
my $ref = \ $var;
my $newref = $ref;
my $x = $$ref + 1;
$var = $$newref - 2;
print "\ $ref = $ref and \ $newref = $newref";
```
17. Write a function that returns its second argument concatenated to the end of its first argument.
18. Write the Perl instructions that reads words from standard input and create a hash named `wordlengths` that contains the words as keys and their lengths as values.
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