NAME:_____

COLLABORATOR(S):_____

1. What are three guiding principles of the Unix design philosophy?

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2. Explain how the following pipeline meets those principles:

   cat sample-db.csv | grep NJ | wc -l

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3. What are the primary functions for standard input, output, and error for different programs?

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4. Consider the following command line with redirects

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   grep NJ < sample-db.csv 2> oops > sample-db.NJ.csv

   a) What is the input file?

   b) What is the output file?

   C) What is the error file?

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5. Why is it necessary to have both standard error and standard out, with respect to the Unix design philosophy?

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6. For the following command, where does the final output of the head command get written? That is, to what output file does the first 20 lines get written? Explain.

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   cat datafile | head -20 2> out1| cat > out2 | cat > out3

8. Consider a situation where you want to include error output on a pipeline. You can do that using a redirect **>**, fill in the redirect below such that standard error is piped to **cat**'s standard input to produce the output below.

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#>head -3 BAD_FILENAME [   ] | cat BeatArmy.txt – GoNavy.txt

Go Navy!
head: BAD_FILENAME: No such file or directory
Beat Army!

*(Hint: Note that **2>** redirects the file descriptor **2**, which is standard error, to a file, but **>** can also redirect to a file descriptor number by placing an **&** in front of the descriptor number.)*

7. What does the following commands write to the output file **file**?

 a) **cat < /dev/null > file**

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 b) **mv file /dev/null**

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 c) **head –c 20 /dev/zero > file**

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8. Run ic221-up and navigate to the hws/02/prob8 directory. Describe the output of the following **ls** commands and how the glob affects what is listed:

a) **ls   chapter.***

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b) **ls chapter.?**

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c) **ls chapter.*b**

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d) **ls chapter.?[ab]**

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9. Produce a **ls** command with a glob that will only list the following files: **chapter.ab chapter.ac chatper.ad chapter.ae chapter.bb chapter.bc chapter.bd** and **chapter.be.**

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10. Consider **find** and the **–name** option, can you come up with a pipeline with command line tool that we covered in this class that can produce the same functionality? Suppose you want to just find files with name "ic221" in the path. Fill in the pipeline below.

find path/to/find | [   ]

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11. Suppose you are in the root directory of a standard Unix file system and you wanted to list all the binary executable directories. Produce a **find** command that can do that:

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12. Navigate to the hws/02/prob12 directory. Write a **find** command for the following requirements:

 a) All files and directories that end in **a**

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 b) All directories that end in **a** or **b**

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 c) All files that end in **a** or **b** in directories that start with **sub**

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 d) All files that end in **b** and are in directories that start with **dir**. (use **–maxdepth** and **–mindepth**)

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13. Read the **man** page for the **find** command: What expression can you use to find all files/directories that are *newer* or have been modified more recently than some example file.

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