

Closed Book, Open Notes (two handwritten pages), 75 minutes. Please answer concisely.

1. [7 points] Give the Unix commands to
 - a. Delete a file
 - b. Create a shortcut/link to a file
 - c. View a large file, one screenful at a time
 - d. Give permission to everyone to edit one of your files
 - e. Find all the lines in a file that contain some specific word
 - f. Sort the lines in a file
 - g. Copy a file

2. [14] Explain or define
 - a. The notion of “pipe” in Unix

 - b. Direct manipulation

 - c. WIMP interface

 - d. Affordance

 - e. Response time

 - f. Statistical significance

 - g. Prototype

3. [2] What are metaphors good for?

4. [1] Give a metaphorical expression commonly used when talking about computer processes.

- 12.[3] Identify 3 things wrong with the following error message: “*You have entered an invalid string character in Field 123A.*”
- 13.[2] Most usability studies use the “think aloud” method. When is it better to *not* have the user think aloud?
- 14.[4] Some textbooks on usability engineering include “survey” as a usability method. For example, you could simply mail a list of questions about some software to a population of users. This has various advantages, but also some disadvantages. List two kinds of information about an interface which typically cannot be obtained by a survey, and for each, explain what other usability method would be able to obtain that information.
- 15.[7] Suppose that you have been hired to give your expert opinion of a direct manipulation interface designed to help network managers. The supported actions include determining which nodes are suffering from network delays, blocking transmission of packets from nodes which are out of control, and determining which nodes have been most recently rebooted.
- a. [5] List 5 items from a heuristic evaluation checklist that you would consider when evaluating this interface.
 - b. [2] What sorts of potential usability problems would a heuristic evaluation be unable to detect?

- 16.[2] Which of the following is fastest? Slowest?
- Time for a user's eyeball to move from focusing on one word to the next word.
 - Time to tap a key.
 - Time to decide which key to tap.
- 17.[3] Teleoperation, also known as remote control, has many applications, from flying unmanned military aircraft to performing surgery remotely. How is teleoperation similar to direct manipulation? How is it different?
- 18.[4] Give 2 examples where direct manipulation would not be the most appropriate interface style. Be as specific as possible.
- 19.[10] Consider a telephone operator whose job is to handle calls from magazine subscribers needing to change their address. The operator must interact with the customer and enter the new address somehow so that it can be updated in the backend database. There are many ways to build an interface to support such an operator. For each of the 5 main interaction styles, give one comment on why it would or would not be suitable for this task.