

**Quiz Answers**  
CS-330 Unix and Network Programming

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## Quiz 6: Awk

- Which function in awk is used to divide a string into pieces separated by the field separator and store the pieces in an array ?
  - split
- What is the meaning of the \$0 variable in awk ?
  - it holds the entire record
- awk reads input lines automatically
  - true
- Variables in awk are initialized how ?
  - to 0 or "" depending on context when first used
- Every awk program must use the BEGIN and END patterns.
  - false
- Which command line option allows to specify an awk program in a file ?
  - -f
- awk allows strings as array index.
  - true
- awk can use which character as field separator ?
  - any character
- In awk, strings printed with the "%20s" printf directive will always be left justified.
  - false
- What is the string concatenation operator in awk ?
  - the space character

## Quiz 7: Sed

- In sed, the "i" command adds lines before the address
  - True
- In sed, when using a range address, the lines specified need not be consecutive.
  - False
- In sed, the dollar sign (\$) can be used as a single line address. What is its meaning?
  - the last line of input
- If the exclamation mark "!" is used after an sed address, then it will only search for obsolete lines.
  - False
- Which character is used to delimit the search and replacement components of the sed "s" command?
  - any, as long as all 3 are the same
- If sed is invoked as "sed -n" then it sorts its input numerically.
  - False
- The sed editor can be called from a shell script
  - True
- Which of the following utilities can be used to systematically process files?
  - all of the above
- Which of the following is NOT a valid address type for sed?
  - sublet address
- If no address is specified for the sed command then the command is applied to every input line.
  - true

## Quiz 9: Systems Programming

- The C library function perror translate an error code into an understandable error message.
  - True
- In C++, C strings are handled the same way as instances of the standard string class.
  - False
- C++ can call functions from the standard C library.
  - true
- In C++ what is the correct include to use the strlen or strcpy library functions ?
  - include <cstring>
- The C regular expression library uses 2 functions: regcomp and regexexec. Which statement is true about these functions?
  - regexexec runs the search that was prepared by regcomp
- For the strcpy C library function, the size of the destination array must be long enough to contain the source string including the terminating null character.
  - true
- A C++ program cannot access environment variables.
  - false
- C library function exit terminates a process and allows to set the return status. A status of 0 indicates failure.
  - false
- The C structure dirent does not contain the file name.
  - false
- Which C library functions enable directory I/O ?
  - opendir, readdir

When it lands on the spring it has the same energy as above  $\frac{1}{2}mv_i^2 = 79J$ . That will all go into spring potential energy

$$79J = \frac{1}{2}kl^2$$
$$\implies x = 0.4m.$$

## Quiz 10

- A system call is linked to an executable and becomes logically part of the executable.
  - False
- C++ uses which of the following to identify a file in low-level IO using system calls ?
  - File descriptor number
- The read and write system calls use C++ strings to handle its data.
  - False
- open, close, create, read and write are system calls to achieve low-level I/O.
  - False
- Which of the following is not a valid flag to for the open system call ?
  - O\_READ
- Which of to following is a system call that can be used to create a file ?
  - Open
- A system call uses a special C++ syntax for invocation.
  - False
- Which system call is used to remove a file ?
  - unlink
- The dup system call is used to claim standard I/O from inside a program.
  - True
- System calls typically set the errno variable and return -1 if they encounter and error.
  - True

## Quiz 11

1. Match the following exec functions to their description:
  - execl, execlp – specify arguments as list. **Answer: Option 1**
  - execv, execvp – specify arguments as array of strings. **Answer: Option 2**
  - execlp, execvp – look for new executable via PATH. **Answer: Option 0**
2. Unix processes can communicate via Unix pipes.
  - True
3. Which of the following is not a potential return value from the fork system call?
  - 1, to indicate that 1 child process was created. **Answer: This is not a potential return value**
4. The pipe system call creates a bidirectional data channel.
  - False
5. A process is a program in execution.
  - True
6. Which system call creates a new process?
  - fork
7. How long does the wait system call wait?
  - until a child process terminates
8. System calls pipe, dup, and fork are used together to implement the "|" pipe character used by the command interpreter on the command line.
  - True
9. The fork system call duplicates the current process. The 2 processes (old and newly created) are exactly the same.
  - False
10. A Unix pipe is represented in C++ as an array of \_\_\_\_\_ file descriptors.
  - 2

## Quiz 12: Networking

- OSI in the OSI reference model stands for:
  - Open systems interconnection
- OSI in the OSI reference model stands for:
  - dns
- getaddrinfo is a Unix system call ?
  - False
- Both IPv4 and IPv6 addresses are 32 bit long.
  - False
- Which of the following is not a technology used in the physical layer of the OSI model ?
  - Tcp
- Match the port number to the service that is usually provided on it.
  - 22: SSH
  - 25: SMTP
  - 80: HTTP
  - 53: DNS
- In the OSI reference model complexities of communication are organized into successive layers of protocols: lower-level layers are more specific to medium, higher-level layers are more specific to application. Match the layer name to its functionality:
  - Transport layer: Provides functions to guarantee reliable network link
  - Network link: Establishes, maintains, and terminates network connections
  - Data link: Ensures the reliability of link
  - Physical layer: Controls transmission of the raw bit stream over the medium
- A protocol describes the syntax, semantics, and synchronization of communication
  - true
- Which layer in the OSI model provides addressing via an IP address ?
  - Network layer
- A  
*describesthesyntax,semantics,andsynchronizationofcommunication*
  - Protocol



## Quiz 13: UDP and TCP

- A socket is end-point of a communication link, it is identified by
  - ip address
  - port number
- The TCP protocol uses a datagram as message.
  - False
- Which of the following protocols is not part of the OSI model transport layer ?
  - HTTP
- The socket programming concept was first introduced as part of Windows 2000.
  - False
- The socket programming concept was first introduced as part of Windows 2000.
  - SYN
  - SYN,ACK(SYN)
  - ACK(SYN)
- Match the system calls to their functionality.
  - **Socket**: Create a new communication endpoint
  - **bind**: attach a local address to a socket
  - **sendto**: send (write) some data over the connection
  - **recvfrom**: receive (read) some data over the connection
- TCP is the transmission control protocol that is connection oriented and guarantees delivery.
  - True
- The listen system call allows to specify the length of the incoming queue.
  - True
- What is the purpose of the htons library function ?
  - convert a host integer into a network 2 byte integer
- The accept system call is used in UDP server programming.
  - False

## Quiz 14: TCP Server and Job control

- A program can be running in the foreground and background at the same time.
  - false
- The dup system call can be used in a forking TCP server to simplify sending responses to the client.
  - true
- Upon success, the opendir function returns a file descriptor for the directory.
  - false
- Which command shows the jobs for a user:
  - jobs
- Which number represents the strongest signal that can be sent to a process ?
  - 9
- A typical TCP server uses what to reduce client waiting time
  - fork to create a child process for the client request
- What is the command to send a signal to a process ?
  - kill
- The readdir function returns a structure which contains the name of the directory entry.
  - true
- Only the superuser can create periodically running jobs via crontab.
  - false
- For the read system call, what can we program to allow an unlimited amount of data being read ?
  - use a loop to read fixed chunks of data

## Quiz 15: Sys admin

- The only way to create a new user on Ubuntu is to use the GUI dialog "Settings".
  - false
- Only users or groups that are listed in `/etc/sudoers` can execute commands as super user.
  - true
- Which of the following is not a usual way to install new software on Linux ?
  - update-manager
- What does this command do: `mount /dev/sdb1 /mnt/extra`
  - it makes the first partition on disk sdb available as logical directory `/mnt/extra`
- Which of the following files is not involved in storing user information ?
  - `/etc/root`
- Which of the following is not a file format used to package Linux software ?
  - mp4
- In Unix there is one logical file system that is constructed from one or more physical file systems.
  - true
- Which UNIX command is used to change the login password ?
  - passwd
- a user can belong to only one group.
  - false
- What is the command to create a file system on a physical device ?
  - mkfs