Shell Programming Questions
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Q1. Write a program called exec_mode to change the mode of any file to executable.
Reference: Chapter 3 of the book 'Unix programming Environment' B. W. Kernighan etc.

Q2. Enter a single line command in the terminal to print the output as "The date today is ****" where **** should be replaced with the current date and time. You should use echo for this.

Q3. Write a shell script to print the current working directory, change the directory to root directory and print it. Finally, restore the previous working directory and print again.
Reference: Page 88 of the book 'Unix programming Environment' B. W. Kernighan etc.

Q4. Write a one line command in terminal to print names of all files present in the current directory. You should use **for** loop for this.

Q5. Write a shell script to enter the username and password as user input. Password should not be visible on screen while typing. Also, the question prompt and user input should be in the same line. Finally, print the username and password on screen.
Reference: https://ryanstutorials.net/bash-scripting-tutorial/bash-input.php

Q6. Write a shell script that prints the number of command line arguments passed to it.
Reference: https://tecadmin.net/pass-command-line-arguments-in-shell-script/

Q7. Write a shell program that:

• contains a multi-line comment. At the beginning of your shell program, you will enter your name, roll no., semester, shell program name which will remain commented using multi-line comment but entered in each separate line.
• print a message on terminal **This is the first shell program. Please enter the username.**
• read username from the terminal e.g. **David Beckham**. The output should be displayed as "Username:: **David Beckham**"
• write "End of the Program" in shell script using single line comments.

Q8. Write a shell script using if-elif-else statements to check and print whether an user input integer is positive, negative or zero. (consider zero as neither positive nor negative number)

Q9. Create a new file "**testfile.sh**" using touch command. Obviously, this new file has read and write permission but no execute permission. Write a shell script to check whether a file with name "testfile.sh" exists. If yes, then check whether it has read permission, write permission and execute permission. Use separate if-else condition for each check. Output should be of the form:

enter filename: testfile.sh
file exists
file has read permission

file has write permission
file doesnot have execute permission
Reference: https://www.tutorialspoint.com/unix/unix-file-operators.htm

Q10. Write a shell script to find the average of 5 numbers given as user input. Use array to enter the user input.
Reference: https://www.geeksforgeeks.org/average-given-numbers-bash/

Q11. Write a shell script to evaluate 20.5 to the power of 5 correct to 4 decimal places.
Output should be 3620506.2812
Hint: Check: man bc

Q12. Write a shell script to check if a single character input entered by the user is a lowercase alphabet (a to z), uppercase alphabet (A to Z), digit (0 to 9) or special character (everything else). You have to use case...esac for checking conditions. If multiple characters are entered in the input then this case should print **"unknown input"**.
Hints:
a. If your program does not differentiate between lowercase and uppercase input, then set LANG=C in terminal before you run the script.
b. Single character and multiple characters input can be denoted by ? and * repectively in the pattern for the corresponding case.
c. Use regular expression as patterns in each case.

Q13. Write a shell script to perform operations like a calculator (addition, subtraction,division, multiplication) for the two input numbers. It should ask for the numbers and operator from the user. You have to use case...esac for checking conditions.

Q14. Write a shell script to find the Greatest Common Divisor (GCD) of two given numbers A and B.
Reference: https://www.geeksforgeeks.org/shell-program-find-gcd-linux/

Q15. Write a shell script using **while** loop that takes any string as user input and prints the user input as output until the user enters "**Bye**" as input.

Q16. Write a shell script using **for** loop to execute the set of commands **(ls pwd date)** twice.
Hint: Use nested for loop
Reference: https://www.cyberciti.biz/faq/bash-for-loop/

Q17. Write a shell script to find out string is palindrome or not. If we read a string from end to beginning, it is same as begin to end. Display the result with the length of the string
e.g.Input: ABCDCBA
Output: Yes
Length of String: 7
Reference for some string operations:
https://www.learnshell.org/en/Basic_String_Operations

Reference for the solution: https://stackoverflow.com/questions/26743049/checking-if-a-string-is-a-palindrome

Q18. Write a shell script to accept two filenames and check if both exists.

Q19. Write a shell script using select and case such that the user is provided with options of various drinks: tea cofee water juice appe all none; out of which, if the user selects:
a) tea, coffee, water or all, the script should print "Go to canteen"
b) juice or apple, the script should print "Available at home"
c) none, the script should break out of the loop
d) otherwise, the script should print "Invalid selection"
Reference: https://www.tutorialspoint.com/unix/select-loop.htm

Q20. Write a shell script which counts the number of lines, words and characters in a file. The filename should be provided as user input. You have to use a function to compute the number of lines, words and characters.

Q21. Write a shell script to add two 3X3 matrices. You will have to use nested **for** loops for the matrix addition. Set debugger only for the inner **for** loop in matrix addition.
Reference: https://www.tutorialsandyou.com/bash-shell-scripting/add-two-matrices-29.html