Lab sheet 1 - Shell programming

1. The length and breadth of a rectangle and radius of a circle are input through the keyboard. Write a shell script that will calculate the area and perimeter of the rectangle and the area and circumference of the circle.
   Hint:- Area of Rectangle = L*B
   Perimeter of Rectangle = 2(L+B)
   Area of Circle = $\pi.r^2$
   Circumference of circle = 2. π.r

2. Write a shell script (small calculator) that adds, subtracts, multiplies and divides the two given numbers. There are two division options: one returns the quotient and the other remainder. The script requires three arguments: the operation to be used and the two integers. The operation are specified by options:
   Add -a Subtract-s Multiply -m Quotient -c Remainder -r Use the if and case structures.
   a. Interactive version
   b. Command Line arguments version
3. Write a shell script to generate a multiplication table.
   a. Interactively.
   b. By command line arguments.
   c. Redirection version: The value of n must be taken from a file using input redirection.
4. Write a shell script to print the first n Fibonacci numbers.
   a. Interactively.
   b. Using Command line arguments
5. Write a shell script to determine whether a given number is a prime number or not.
   a. Interactive version: The program should accept an integer n given by the user and should print the multiplication table of that n.
   b. Command line arguments version: The program should take the value of n from the arguments followed by the command.
6. Write a shell script to print all the primes below a given number.
   a. Interactively.
   b. By command line arguments.
7. Write a shell script to find the gcd of two given numbers.
   a. Interactively.
   b. By command line arguments.
8. Write a shell script to find transpose of a matrix.
   a. Interactively.
   b. By command line arguments.
9. Write a shell script to find the scalar product of two vectors.
   a. Interactively.
   b. By command line arguments.
10. Write a shell script that copies multiple files to directory.
    a. Interactive version

    b. Command line arguments version
11. Write a shell script which counts the number of lines and number of words present in a given file.
    a. Interactive version
    b. Command Line arguments version
12. Write a shell script which displays the list of all files in a given directory.
    a. Interactive version
    b. Command Line arguments version
13. Find the lines containing a specific string in a file.
    a. Interactively
    b. Command line arguments
14. Write a shell program to concatenate the contents of 2 files.
15. Write a shell script to list the files in the descending order of their size.
16. Write shell script to show various system configuration like:
    a. Currently logged user and his long name
    b. Current shell
    c. Home directory
    d. Operating system type
    e. Current path setting
    f. Current working directory
    g. All available shells
17. Write a shell script that would wait 5 seconds and then display the time.
18. Write shell scripts that will count the number of parameters on the command line
    a. using while statement
    b. using for statement
    c. using until statement
19. Write shell script to convert file names from UPPERCASE to lowercase file names or vice versa
20. Write shell script to count the number of blanks in a text file.
    a. Interactively
    b. Command line arguments
    c. Using input redirections

****