

COL100 Lab

Do the following exercises on a Linux machine. You may edit your programs using gedit or any other editor of your choice. Compile using gcc and run the program to verify that it gives correct results.

Q1. Write a C program that takes two integers (length and width) as input and prints a solid rectangle using * on the standard output.

For example if the input is 10 3, then your program should print 10 stars on each of 3 lines as shown below.

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*****  
*****  
*****
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Q2. Write a C program that takes four integers (x, y, length and width) as input and prints a hollow rectangle using * and spaces on the standard output, centred at the input x, y, where y corresponds to the line number and x corresponds to the position within a line. Note that * character should only be at the boundary of the rectangle. Assume that your screen size is 80 characters (width) by 24 characters (number of lines). If the parameters are such that the rectangle will not fit on the screen, then print an error message and take the parameters again.

Q3. Write a C program that takes three integers (x, y, radius) as input and prints a hollow circle using * and spaces on the standard output, centred at the input x, y. Note that * character should only be at the boundary of the circle. Assume that your screen size is 80 characters (width) by 24 characters (number of lines). If the parameters are such that the circle will not fit on the screen, then print an error message and take the parameters again.

Q4. Write a program to compute the sum of first N Fibonacci numbers. Take N as an input and print the result on standard output. You may use Internet to find out what Fibonacci numbers are.

Q5. Strong number is a special number whose sum of factorial of digits is equal to the original number. For example: 145 is strong number. Since, $1! + 4! + 5! = 145$. Write a C program to print first N strong numbers where N > 0 is taken as input.

Q6. A row in Pascal's triangle is obtained from the previous row as shown in the figure below. Write a C program to take N < 100 as its input and print the nth row of the Pascal's triangle. You may use arrays for this, but not the formula.

