Programming Fundamentals
Assignment # 5
BSCS & BSSE
Assignment deadline Tuesday, 13 December 2022, 11:55 PM

Task-1

Write a Function that prints the day number of the year, given the date in the form month-day-year. For example, if the input is 1-1-2006, the day number is 1; if the input is 12-25-2006, the day number is 359. The program should check for a leap year. A year is a leap year if it is divisible by 4, but not divisible by 100. For example, 1992 and 2008 are divisible by 4, but not by 100. A year that is divisible by 100 is a leap year if it is also divisible by 400. For example, 1600 and 2000 are divisible by 400. However, 1800 is not a leap year because 1800 is not divisible by 400.

Task-2

Write a function that displays at the left margin of the screen a solid square of asterisks whose side is specified in integer parameter side. For example, if side is 4, the function displays the following:

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****
****
****
****
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Task-3

Calculate power of a number x using a function "*PowerCalc*". Input integer x and the power p from user. Pass x and p to PowerCalc function. Calculate and display first p powers of x on console in the PowerCalc function.

Example:
PowerCalc(5, 4) will give the following output:
5
25
125
625

Task-4

An integer is said to be a perfect number if the sum of its divisors, including1 (but not the number itself), is equal to the number. For example, 6 is a perfect number, because 6=1 +2+ 3. Write a function is Perfect that determines whether parameter number is a perfect number. Use this function in a program that determines and prints all the perfect numbers between 1and 1000. Print the divisors of each perfect number to confirm that the number is indeed perfect.

a) Write a function that takes an integer value and returns the number with its digits reversed. For example, given the number7631, the function should return 1367.

b) Write a function multiple that determines for a pair of integers whether the second is a multiple of the first. The function should take two integer arguments and return true if the second is a multiple of the first, false otherwise. Use this function in a program that inputs a series of pairs of integers. (Hint: Call this function within do-while loop).

c) Write a program that has a function that takes 3 alphabet characters and find their preceding alphabets. For example if user entered a, m, y it will show b, n, z. Take input in main, pass values to function and show the output in main.

d) Write a program that has a function "Upper_to_lower". It will take 4 alphabets as parameters in uppercase and will change them to lowercase. Display the changed values in main.

Task-5

Write a program that takes a upper_bound integer valaue from the user and passes it to a function named as sumOfNumbers. Sum the odd and even numbers, respectively, from 1 to a given upper_bound. Also, compute the absolute difference between both of them and return it to the main function.

Task-6

Write the definition of a function named as karatosDestruction that takes as input the three numbers. The function returns true if the first number to the power of the second number equals the third number; otherwise, it returns false. Assume that the three numbers are of type double. If false is returned, prompt the user to again provide new values otherwise terminate the program.