

## Exercise (H2.1)

Given a string A of digits, write a program that prints the maximum digit (d), deletes all occurrences of d from A, and continues to do so with the remaining string until no digit is left in A.

E.g., given “5998355”, the program prints:

max = 9 in “5998355”

max = 8 in “58355”

max = 5 in “5355”

max = 3 in “3”

## Exercise (H2.2)

Given a string showing student marks, write a program that prints the students with the best and worst marks. The string is formed as a sequence of “s:X m:Y;”, where X is the student ID and Y is the mark.

E.g., given A = “s:213 m:28;s:78 m:16;s:765 m:19;” the program prints:

Best student -> ID: 213 Mark: 28

Worst student -> ID: 78 Mark: 16

## Exercise (H2.3)

Given a string  $A$ , write an interactive program that iteratively asks the user a character ( $c$ ), deletes  $c$  from  $A$ , and prints the new string, until no character is left in  $A$ .

## Exercise (H2.4)

Given an integer number, write a function that returns the number of digits in the number.

E.g., given the number 1234 , the function returns 4.

## Exercise (H2.5)

Given a string, write a function that rearranges the string characters in a way that the lowercase letters come before the upper case letters, and all the other characters are ignored.

E.g., given the string “Hello World!”, the function call returns “elloorldHW”.

## Exercise (H2.6)

Given an integer number  $N \geq 2$ , write a function that prints a tree with  $N$  layers. E.g., given  $N = 4$ , the function returns:

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## Exercise (H2.7)

Given a string A of digits, write a function that prints the histogram of the digits 0 to 9 in A.

E.g., given the digits “32563241”, the function prints:

0:            5: \*

1: \*           6: \*

2: \*\*          7:

3: \*\*          8:

4: \*           9:

## Exercise (H2.8)

Given two non-negative numbers  $A$  and  $B$ , write a function that returns  $A^B$  using only summation operation.

E.g., given  $A = 2$ ,  $B = 5$ , the function returns 32.



## Exercise (H2.9)

Write an interactive program which asks the user iteratively to choose an operation (op) between 0, 1, 2, and 3.

- With  $op = 0$ , the program ends; otherwise the program asks the user to provide a string  $S$  and rearranges the characters in  $S$  in three different ways.
- With  $op = 1$ , swaps the  $(2*i)$ th and  $(2*i+1)$ th elements of  $S$  for each possible  $i$  starting from 0.
- With  $op = 2$ , forms all possible strings by shifting  $S$  one position to the left.
- With  $op = 3$ , reverses each word in  $S$ .

## Exercise (H2.9)

E.g., given the string “Come on”, the program prints:

- with `op = 1`, “oCemo n”
- with `op = 2`, “Come on”, “ome onC”, “me onCo”, “e onCom”, “ onCome”, “onCome ”, “nCome o”
- with `op = 2`, “emoC no”

Write two versions of the program, one with the use of functions, the other without functions.