Technische Hochschule Ingolstadt, WI
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Software Development (Winter 25/26)

Assignment 02

Bonus points can be claimed until October 27th, 09:25 AM

Exercise 1 *(Triangles, 1 Points)*

Write a program that prints a triangle on the command line from a character of your choice with a height entered by the user.

Example: For user input 3, the program should produce an output similar to this:
#
##
###
##
#

Exercise 2 *(List operations, 2 Points)*

Calculate the length of several entered words ("strings"). To do this, write a program that first asks the user to enter a number of words, say k. It then asks k times for a next word using `input()` and appends each word to a list. Then use the `for`-loop to calculate the total length (in characters) of all the words entered.

Example: For $k = 2$ and inputs "THI" (3 characters) and "EGM" (3 characters), the result should be 6.

Exercise 3 *(List comprehensions, 2 Points)*

Use only the "list comprehension" notation for the following tasks!

a) Specify the maximum number of times a character you select should be repeated. Then use list comprehension to generate a list with an ascending number of repetitions of this character.

   Example: With the character "#" selected and a maximum of 3 repetitions, your list should look like this: ['#', '##', '###']

b) Multiply a number in sequence by factors stored in a list. Store all results in a list using list comprehension.

   Example: Number 3 and factors [1, 2, 3] should result in the list [3, 6, 9].

c) Start with a list that contains integers. Create two lists from it with the help of list comprehension. One of the lists should contain all even numbers of the input list, the other all odd numbers. Then output both lists on the command line.

   Example: From the list [1, 2, 3] the lists [2] and [1, 3] are to be created.