



广东以色列理工学院

Guangdong Technion-Israel Institute of Technology

234128 – Introduction To Computing With Python

Winter Semester 2020-2021

HW1

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Due date : Sunday, 2020-12-06 23:59

Mission 1 : (hw1q1.py)

Write a program that gets as input a positive int number n ($n \geq 1$). Can assume that input is legal. The program displays a drawing built out of '*' as appears in the examples attached.

As can see from examples, the size of the drawing is set according to n .

Do not use lists, nor matrices.

Run your program using input/output redirection and verify that the output of your program is both correct and IDENTICAL to the output of examples concerning the format, which means – appearing of space characters, new lines etc. You can use the program cmp_files.py (attached) for this.

Your program should be written in a file called hw1q1.py. Please verify that the name of the file is correct.

Mission 2 : (hw1q2.py)

A positive int number n ($n \geq 1$) is said to be symmetric if when reading it from left to right or from right to left we get the same number.

Examples : 7 727 54745 286808682 324423

Given a positive int number n ($n \geq 1$), we say that n_1 is the even sub number of n if n_1 is a positive int number such that it is built of all even digits that appear in n according to the same order. The odd sub number of n is defined in equivalent manner for the odd digits of n .

Example : $n=375638614356$ The even sub number is 68646 The odd number is 3753135



Write a program that gets as input a positive int number n ($n \geq 1$). Can assume that input is legal. The program checks if both the even sub number of n and the odd sub number of n are symmetric. The program displays a relevant output, according to the given examples.

If no even digits in n then the even sub number is count as symmetric. Also for the odd sub number. 0 is an even digit.

Examples :

2472

Even sub number is 242 Odd sub number is 7 both are symmetric.

Output is – both are symmetric.

52472

Even sub number is 242 Odd sub number is 57 Only even sub number is symmetric

Output is – only even is symmetric.

72474

Even sub number is 244 Odd sub number is 77 Only odd sub number is symmetric

Output is – only odd is symmetric.

72454

Even sub number is 244 Odd sub number is 75 No sub number is symmetric

Output is – no sub number is symmetric.

Requirements : In this mission you must NOT use strings. Use ONLY int number.

Run your program using input/output redirection and verify that the output of your program is both correct and IDENTICAL to the output of examples concerning the format, which means – appearing of space characters, new lines etc. You can use the program `cmp_files.py` (attached) for this.

Your program should be written in a file called `hw1q2.py`. Verify that the name of the file is correct.



Mission 3 : (hw1q3.py)

Write a program that gets as input 4 positive numbers, n t d b , all are bigger than 0. All 4 numbers are given in 1 input line, whereas between every 2 subsequent numbers (one after other) there appears 1 space (or more). Spaces can also appear in the beginning or in the end of the input line. Can assume that input is legal.

The program builds a quadratic matrix of size $n \times n$ such that all elements on the main diagonal are d , all elements above main diagonal are t , all elements below main diagonal are b .

Then the program just displays the matrix (as a list of lists).

Examples :

$n==5$, $t==4$, $d==3$, $b==2$

Then we get :

```
[[3, 4, 4, 4, 4], [2, 3, 4, 4, 4], [2, 2, 3, 4, 4], [2, 2, 2, 3, 4], [2, 2, 2, 2, 3]]
```

$n==2$, $t==4$, $d==3$, $b==2$

Then we get :

```
[[3, 4], [2, 3]]
```

$n==1$, $t==4$, $d==3$, $b==2$

Then we get :

```
[[3]]
```

Requirements : The matrix should be built using LIST COMPREHENSIONS. Specifically must NOT use append / extend / insert.

Run your program using input/output redirection and verify that the output of your program is both correct and IDENTICAL to the output of examples concerning the format, which means –



appearing of space characters, new lines etc. You can use the program cmp_files.py (attached) for this.

Your program should be written in a file called hw1q3.py. Verify that the name of the file is correct.

Mission 4 : (hw1q4.py)

Write a program that gets as input a series of positive int numbers. Each number is bigger than 0. All numbers are given one after other in the same line, whereas between them there are one or more spaces (can also appear in the beginning or end of the line). assume that the input is legal and exists at least one number.

After this, the program gets (in another line) another positive int number x. (Only one number). Also here assume legal input.

The program checks if x can be obtained when summing 1 or more subsequent numbers (one after other) from the input series. An appropriate message is displayed. If the answer is yes, then the message includes the first location in the series from which we can find numbers whose sum is x. (locations in the series start with 0, as in a list).

Examples :

Series 20 40 30 30

X 60

Output – can be found starting in location 0

Series 20 40 30 30

X 50

Output – can NOT be found

Series 20 30 5 4 2 1 3 40 15 8 7 19

X 15



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Output – can be found starting in location 2

Requirements :

Try to write an EFFICIENT code, in which NO NEED to do too many operations again and again.

Run your program using input/output redirection and verify that the output of your program is both correct and IDENTICAL to the output of examples concerning the format, which means – appearing of space characters, new lines etc. You can use the program cmp_files.py (attached) for this.

Your program should be written in a file called hw1q4.py. Verify that the name of the file is correct.

Submission :

Make a zip file whose name is <id>.zip whereas <id> is your id (9 digits exactly).

Example – 999003645.zip

Please verify – ONLY zip file. NOT rar file or any other format.

The zip file should contain the following files :

hw1q1.py hw1q2.py hw1q3.py hw1q4.py student.txt

NOTHING ELSE should be included in the zip file. NO any sub folder should appear in the zip file.

student.txt should contain your personal details – ENGLISH ONLY. Fill in the file that is given.

DO NOT CHANGE WHAT IS ALREADY WRITTEN. DO NOT CHANGE THE NAME OF THE FILE. Just complete the missing details.

Submit the zip file in Moodle.

Good Luck !