

**T.C.
DOKUZ EYLUL UNIVERSTY**

**FACULTY OF
ENGINEERING**

**DEPARTMENT OF
COMPUTER ENGINEERING**

**2022 - 2023
FALL SEMESTER**

**CME 1203
INTRODUCTION TO
COMPUTER ENGINEERING**

**ASSIGNMENT 1
SIMPLE TEXT CALCULATOR**

DUE DATE

EXAMPLE INPUT: 23:55 – 17.11.2022

ASSIGNMENT: 23:55 – 08.12.2022

In this assignment, you are required to create a Python program that will take a text file that contains lines of mathematical and logical operations and output the result to another text file.

The variables that contain the names of input and output files should be in the given format below. You are required to use this naming convention in your assignment.

```
FILE_INPUT = "input.txt"
# This file will be provided by me during your evaluation and it will be in the
same folder as your source code file.
```

```
FILE_OUTPUT = "<student_number>_<student_name>_<student_surname>_output.txt"
# This file will be created by your program to store your output of given input
file. You should use the same name format as your source file. For example:
"2022510123_fatih_dicle_output.txt".
```

Your program should check the text file one by one, if the given operation is valid, the result of this operation should be written to the output file. If the given operation is NOT valid or contains errors, the text "ERROR" should be written to corresponding row. If the given row is empty and does not contain any text (used as a space between operations to increase readability), an empty row should also inserted to output file.

Example inputs, outputs and their explanation are given in table below.

LINE NO	INPUT LINE	OUTPUT LINE	EXPLANATION
1	3 + 4	7	Addition.
2	3+4	7	Addition without spaces. You must separate elements without spaces.
3	1 - 2	-1	Subtraction.
4	1-2	-1	Subtraction without spaces. You must separate elements without spaces.
5	2 * 3	6	Multiplication.
6	2*3	6	Multiplication without spaces. You must separate elements without spaces.
7	5 / 2	2.5	Division
8	5/2	2.5	Division without spaces. You must separate elements without spaces.
9	5 ** 3	125	Power
10	5**3	125	Power without spaces. You must separate elements without spaces.
11	7 // 2	3	Integer Division
12	7//2	3	Integer Division without spaces. You must separate elements without spaces.
13	11 % 3	2	Modulus

14	11%3	2	Modulus without spaces. You must separate elements without spaces.
15	5 < 3	FALSE	Less than.
16	3<5	TRUE	Less than without spaces. You must separate elements without spaces.
17	5 > 3	TRUE	More than.
18	3>5	FALSE	More than without spaces. You must separate elements without spaces.
19	5 <= 3	FALSE	Less than or equal.
20	4<=4	TRUE	Less than or equal without spaces. You must separate elements without spaces.
21	3 >= 5	FALSE	More than or equal.
22	4>=4	TRUE	More than or equal without spaces. You must separate elements without spaces.
23	3 != 5	TRUE	Not equal.
24	4!=4	FALSE	Not equal without spaces. You must separate elements without spaces.
25	3 == 5	FALSE	Equal.
26	4==4	TRUE	Equal without spaces. You must separate elements without spaces.
27			Empty Line
28			A line with only spaces. This is changed to empty line.
29	3 + z	ERROR	Variables or alphabetical characters are not elements of this program.
30	1 +	ERROR	Missing element.

Even though it is not given here, multiple operations in a single line is possible, except for logical comparison operators. They should only be used once in a line but they can be used with other operators.

For multiple operation calculation, you need to consider operator precedence of Python programming language. You can find this information in the following website “<https://docs.python.org/3/reference/expressions.html#operator-precedence>”.

You should only consider the arithmetic and logical operators given in the table above, any other operator or non-digit character should be treated as an “ERROR”.

UPLOAD REQUIREMENTS:

Your first requirement is to upload an example input file that contains, one correct and one incorrect arithmetic statement, and one correct and one incorrect logical statement, 4 statements in total, where incorrect means “ERROR”. These statement should contain at least three different operations, rather than single operation per line that is shown in table above. Your text file upload should be named according to the example given below.

<student_number>_<student_name>_<student_surname>_input.txt

(Examples you have written in a plain text file)

Example = 2022510123_fatih_dicle_input.txt

You are required to only upload a single Python file that contains the requested program above. Please do not upload any text files you have used to test your program or secondary Python file you used to execute your main Python file.

Your assignments will be evaluated by research assistants in their computers. Therefore, please make sure your program executes correctly on alternative Python installations, different computers or IDEs. If your program does not work or does not create a correct output on our computers, it will be considered as zero on execution grading part.

You cannot use any Python library or module for this assignment. You are expected to write your own code for algorithms instead of using an available method. If you use such as a method that makes this assignment trivial to code, you will get a zero on execution.

You should make sure that your assignment does not throw an exception to make it able to execute every line of code, rather than crashing after couple of lines and unable to execute the rest. This will make your code execution grade zero. You are strongly advised to use “try, except, else, finally” for any operation that might generate an exception and crash your program.

For this assignment, you are advised to use list or string data types for processing lines. Any other data type might make your program unnecessarily complex.

You should remove empty spaces before writing to output file, they are not required to be in it. Check if it is better to remove them before line result calculation or leave them in place, which one do you think would be better for this assignment?

Your uploaded Python codes will be checked for cheating and plagiarism. If cheating is detected, your entire assignment will be graded zero. If you or other students copy your code from an online source rather than writing it yourself, it will be considered as cheating as well. This assignment is for every student individually and group work between students will be considered as cheating as well.

Make sure that you upload your correct assignment to correct upload section. If you accidentally upload another assignment or to an incorrect upload, it will be considered as not turned in and it will be graded as zero. Worst of all, you will only realize it after grades are published and it will be too late to fix it.

Make sure that you only use relative addressing for text files in your program (just writing the name of the file) rather than absolute addressing (for example “C:\Users\Fatih\Desktop\input.txt”). Because absolute addressing will not work on other computers but relative addressing will.

The format of the file you are required to upload are given below with an explanation and an example. Please make sure you use lowercase and English only characters to prevent problems with source code file import and execution process of Python language.

<student_number>_<student_name>_<student_surname>.py
(Source code you have written in Python language)
Example = 2022510123_fatih_dicle.py

If you make a late submission, your grade will be lowered according to how long it was overdue, possibly even to zero. You can see the basic grading table of this assignment below.

CRITERIA	GRADE
Correct naming of example input file	10
Writing requested inputs in example input file	10
Correct naming of python file	10
Correct evaluation of empty lines	10
Correct error detection and incorrect input handling	20
Correct evaluation of arithmetic operations	10
Correct evaluation of logical operations	10
Correct evaluation of multiple operations per line	20
TOTAL GRADE	100
CHEATING OR ANY OTHER FORM OF PLAGIARISM	-∞

If you have any questions or problems regarding this lab paper, you can ask about it in our lab sessions. If you wish, you can also ask it in class forums or assignment page comments. If you send an email and if your question is answered, please share this information with other students to prevent asking of the same question again and again.

GOOD LUCK TO YOU ALL!