

Assignment 2 - More on Input, Output, Data Operations, Branching

- The problems of this assignment must be solved in Python.
- The TAs are grading solutions to the problems according to the following criteria:
<https://grader.eecs.jacobs-university.de/courses/350111/2017.2is/Grading-Criteria-Python.pdf>

Problem 2.1 *Reading from the keyboard*

(1 point)

Presence assignment, due by 12:30 h today

Write a program which does the following:

1. reads two floating point values from the keyboard,
2. prints the sum of these two floats,
3. prints the difference between second and the first one (second minus first),
4. prints the square of the second float,
5. reads two integer values from the keyboard,
6. computes and prints the sum and product of the two integers,
7. computes and prints the integer division and real number division of the first integer by the second one,
8. computes and prints the remainder of the division of the two integers (first by second),
9. computes and prints the result of the first integer to the power of the second integer.

You can assume that the input will be valid.

Problem 2.2 *Decimal, octal and hexadecimal numbers*

(1 point)

Presence assignment, due by 12:30 h today

Write a program which does the following:

1. reads an integer value from the keyboard
2. and prints the integer in decimal, octal and hexadecimal notation.

You can assume that the input will be valid.

Problem 2.3 *Time calculation I*

(1 point)

Write a program where you can enter from the keyboard two integer values one for hours and another one for minutes. Your program should compute and print on the screen the resulting total number of minutes.

You can assume that the input will be valid.

Problem 2.4 *Fahrenheit and Celsius*

(1 point)

Write a program that converts Celsius degrees to Fahrenheit degrees. You should be able to enter a floating point number from the keyboard, then the result of the conversion should be printed on the screen. The conversion formula from Celsius to Fahrenheit is the following:

$$F = \frac{9}{5} \cdot C + 32$$

Print corresponding messages if the temperature is below 32 F (cold) or above 104 F (hot).
You can assume that the input will be valid.

Problem 2.5 *Time calculation II* (1 point)

Write a program where you can enter one integer value representing minutes from the keyboard. Your program should transform and print the corresponding values in hours and minutes. Please make sure that the entered value will be transformed only if it is a positive value. In the case of a negative value print on the screen a corresponding message. Then no computation should happen.

You can assume that the input will be an integer value.

Problem 2.6 *Unexpected operations* (1 point)

Write a program that deliberately makes the following "mistakes":

- Reads a string and an integer value and multiplies them. Print the result.
- Reads a string and a floating point value and multiplies them. Print the result.
- Reads two integer values without converting them to `int`. Add these numbers (which are then actually strings). Print the result.

Explain in comments the behavior (in case of error also the reason of the error) for each of these three actions. In case of errors comment the corresponding lines such that the program can be correctly interpreted.

Problem 2.7 *Using print for different formatting* (1 point)

Write a program which:

1. initializes a variable `int_nr` with 428, and prints the value of `int_nr` over 8 places,
2. initializes a variable `float_nr1` with `-98.6598894`, and prints the value of `float_nr1` over 10 places and with a floating point precision of 4,
3. initializes a variable `character` with '\$', and prints the character on the screen,
4. initializes a variable `float_nr2` with `56.486953`, and prints the value of `float_nr2` with a floating point precision of 2.

Problem 2.8 *Divisible by 11?* (1 point)

Write a program where you can enter from the keyboard an integer value. Determine whether the number is divisible by 11 or not. Then either print "The number is divisible by 11" or "The number is not divisible by 11".

You can assume that the input will be valid.

How to submit your solutions

Name the programs `a2_px.py`.

Each program **must** include a comment on the top like the following:

```
# JTSK-350111
# a2_p1.py
# Firstname Lastname
# myemail@jacobs-university.de
```

You have to submit your solutions via *Grader* at
<https://grader.eecs.jacobs-university.de>.

If there are problems (but only then) you can submit the programs by sending mail to `k.lipskoch@jacobs-university.de` **with a subject line that starts with JTSK-350111**.

Please note, that after the deadline it will not be possible to submit solutions. It is useless to send solutions then by mail, because they will not be accepted.

Your code must run without any errors or warnings under python3.x.

This assignment is due by Saturday, January 20th, 10:00 h