

## EECS 1015: LAB #2 – Manipulating Strings

Assigned: Sep 27, 2021 (Monday)

Due date: Oct 4, 2021 (one week) [Monday by 11.59 pm]

### #Important reminder for your second lab

- 1) You must submit your lab via web-submit.
- 2) Please make sure you correctly submit your file(s) with the correct lab name and requested information.
- 3) Read the lab carefully to understand everything you need to do, this lab has multiple parts.

### 1. GOALS/OUTCOMES FOR LAB

- To continue practice with variables and input
- To practice string processing
- To practice formatted output
- To get you more familiar with your PyCharm IDE
- To write your own Python code

### 2. LAB 2 – TASK/INSTRUCTIONS

Find start code here: <https://trinket.io/python/1328708ab4>

You can cut-and-paste the code in the trinket.io URL above to start your Lab2.

**Task 0: [This will be the same for all labs]:** Start your code with comments that include this lab's ID, your full name, email address, student id, and course section as follows:

```
# Lab 2
# Author: Michael S. Brown
# Email: msb99898@aol.com
# Student ID: 10233030
# Section X ← replace X with your section (A or B)
```

This lab has four tasks. Please read each carefully. You can also watch the accompanying video linked here:

[https://www.eecs.yorku.ca/~mbrown/EECS1015\\_Lab2.mp4](https://www.eecs.yorku.ca/~mbrown/EECS1015_Lab2.mp4)

See next page for Tasks 1-4

## Task 1 [BMI Calculator]

Task 1 is code to compute a person's Body Mass Index (BMI) which is used by doctors to gauge one's health.

Your program should do the following:

1. Prompt the user to input their name

- The user may enter white spaces before and after their name that you should remove

2. Prompt the user to input their weight in kilograms (kg)

3. Prompt the user to input their height in centimeters (cm)

4. Compute BMI with this formula

$\text{height\_in\_meters} = \text{height\_in\_centimeters} / 100$  # convert centimeters to meters

$\text{BMI} = \text{weight\_in\_kilograms} / (\text{height\_in\_meters})^2$  # compute BMI

5. Print out information as follows

Name: \_\_\_\_\_ Weight: \_\_\_\_\_ Height: \_\_\_\_\_ BMI: \_\_\_\_\_

**Name** should be all lowercase, but the first letters of each name is capital.

**Weight**: format to have 2 decimal places

**Height**: format to have 2 decimal places

**BMI**: format to have 2 decimal places

Example outputs (input from user shown in red):

----Task 1---- BMI Calculator

Name: **AbDEL ZHANG**

Weight (kg): **80**

Height (cm): **182.1**

Name: Abdel Zhang Weight: 80.00 Height [meters]: 1.82 BMI: 24.13

----Task 1---- BMI Calculator

Name: **Luxi Pakenzhad**

Weight (kg): **65.00**

Height (cm): **150.25**

Name: Luxi Pakenzhad Weight: 65.00 Height [meters]: 1.50 BMI: 28.79

----Task 1---- BMI Calculator

Name: **Vlad KOLTEN**

Weight (kg): **86.186**

Height (cm): **185.42**

Name: Vlad Kolten Weight: 86.19 Height [meters]: 1.85 BMI: 25.07

## Task 2 [Leetspeak converter]

Leetspeak is a term used to refer to text on the internet where standard letters are replaced with similar symbols. Your task is to write a simple leetspeak converter that converts letters in a string as follows:

Input Character	Replace With
T	+ (plus sign)
A	@ (at symbol)
E	3 (number 3)
I	(vertical bar)
B	8 (number 8)
O	0 (number 0)
C	[ (open bracket)
S	5 (number 5)

### Your program should do the following:

1. Prompt the user to input a long string
2. Convert the string to all upper case letters and remove any leading or after spaces.
3. Replaces the characters according to the table above
4. Print out the new string in "leetspeak."

Example outputs (input from user shown in red):

```
----Task 2---- Leetspeak Converter
```

```
Type a long string: This is an example string for Task2.
```

```
+H|5 |5 @N 3X@MPL3 5+R|NG F0R +@5K2.
```

```
----Task 2---- Leetspeak Converter
```

```
Type a long string: We have had enough of covid-19.
```

```
W3 H@V3 H@D 3N0UGH 0F [0V|D-19.
```

```
----Task 2---- Leetspeak Converter
```

```
Type a long string: The quick brown fox jumps over the lazy dog
```

```
+H3 QU|[K 8R0WN F0X JUMP5 0V3R +H3 L@ZY D0G
```

### Task 3 [Flipping a string]

This task is to find the middle character in a string. After find the middle position, flip the string starting at the middle, so all characters from middle to the end are at the beginning and all characters from the beginning up to the middle are at the end.

#### Your program should do the following:

1. Prompt the user to input a long string
2. Find the middle characters of the string (how? integer divide the string length by 2)
3. Print out the length of the string and which is the middle character
4. Convert the string to all uppercase and create a new string that has moved all characters starting at the middle to the end to the beginning of the string. Place a vertical bar between the two strings. (see below)
5. Print out the flipped string.

Example outputs (input from user shown in red):

----Task 3---- Flipping String

Input a long string: **This is a long string to flip.**

This string is 30 characters long. The middle character is 's'

Flipped String

STRING TO FLIP.|THIS IS A LONG

---Task 3--- Flipping String

Input a long string: **Peter Piper picked a peck of pickled peppers.**

This string is 45 characters long. The middle character is 'e'

Flipped String

ECK OF PICKLED PEPPERS.|PETER PIPER PICKED A P

----Task 3---- Flipping String

Input a long string: **ABC**

This string is 3 characters long. The middle character is 'B'

Flipped String

BC|A

#### Task 4 [Parsing string for multiply]

In this task, you'll allow a user to input a string with two numbers (integers) to be multiplied together. For example: "Number1 \* Number2"

Your program will extract the two numbers and compute their result after multiplying them together.

**Your program should do the following:**

1. Prompt the user to input a string with an integer the \* character and then another integer
2. Extract the numbers from the string and convert them to integers
3. Multiply the two numbers together
4. Print the result as `num1 * num2 = result` (see below)

----Task 4---- Multiple numbers

Input numbers to multiply: 300 \* 15

Extracted numbers 300 15

300 \* 15 = 4500

----Task 4---- Multiple numbers

Input numbers to multiply: 78 \* 3

Extracted numbers 78 3

78 \* 3 = 234

----Task 4---- Multiple numbers

Input numbers to multiply: 37 \* -1

Extracted numbers 37 -1

37 \* -1 = -37

### 3. GRADING SCHEME (Maximum number of points possible 10)

This lab is slightly more challenging than lab 1, especially if you are new to programming. However, the notes and trinkets examples are all sufficient to help you do this lab. The only task that requires some additional thought is task 4. To get full marks you need to make sure you follow the instructions correctly. The following will be our grading scheme for the Lab components specified in Section 2 of this document.

#### Task 0: (0 points, but deduction if you skip this part)

- File name **must** be "lab2.py" (all lowercase, no spaces)
- The Python comments at the beginning of your program **must** include your name, email, and York student id (this is important for grading)
- *If your file name is incorrect, you or do not put in the required information we will deduct -5 points (Why are we so harsh? Because if you don't put in your name and student id it can be very difficult for the TAs to determine whose submission this is.)*

#### Task 1-4: (2.5 points each)

- Each task should prompt the user correctly and compute the required output correctly.
- Please watch the accompanying video.

-No submission – 0 points

-Any submission 1 week after the due date 50% off the total marks

-Any submission 2 weeks after the due date will not be marked and treated as no submission.

See pages below on how to submit your lab code.

**MAKE SURE TO SELECT Lab2 with websubmit**

#### 4. SUBMISSIONS (EECS web-submit)

You will submit your lab using the EECS web submit.

Click on the follow URL: <https://webapp.eecs.yorku.ca/submit>

### Web Submit Login


To access Web Submit:

- Use your **Passport York** account by [clicking here](#), or,
- Use your EECS account by logging in below:

EECS Username:

EECS Password:

Login



York University  
Department of Electrical Engineering and Computer Science  
Lassonde School of Engineering

**STEP 1** -- If you don't have an EECS account, click here to use Passport York (everyone has a passport York account).

If you do have an EECS account, enter here and go to **STEP 3**.

**Passport YORK**

Passport York authenticates you as a member of the York community and gives you access to a wide range of computing resources and services.

Username:

Password:

Login

☐ Click this box before logging in to change your Passport York password.

**STEP 2** – Enter your passport York username/password.

**Academic Year:** 2021-22 ▾

**Term:** F ▾

**Course:** 1015A ▾

**Assignment:** Lab 2 ▾

**Submit Status:** Submission  
Enabled

**Feedback:** None

Please specify files to submit:  
(You can submit multiple files at once!)

Choose Files	lab2.py
Choose Files	No file chosen
Choose Files	No file chosen
Choose Files	No file chosen
Choose Files	No file chosen
Choose Files	No file chosen
Choose Files	No file chosen
Choose Files	No file chosen
Choose Files	No file chosen
Choose Files	No file chosen
Choose Files	No file chosen

**Submit Files** Logout

**STEP 3** – Select the correct menu option as follows. Term "F", Course "1015", Assignment "Lab2".

**STEP 3 cont'** – Select your file. The location in PyCharm may be complicated. I recommend you save your PyCharm Python file to your desktop and select from there. Remember, name your file **lab2.py**.

**STEP 3 cont'** – once you have entered everything above, click "Submit Files".

webapp.eecs.yorku.ca says

\*\*\*\*\* ATTENTION \*\*\*\*\*

You are submitting files to:

Course:\*\*\*1015  
Assignment:\*\*\*Lab1  
Academic Year:\*\*\*2020-21  
Term:\*\*\*F

Failure to submit your assignment to the proper course

**OK** Cancel

**STEP 4** – Confirm that you have entered everything in correctly. If you make a mistake here and submit to the wrong course, or wrong lab, we won't be able to tell and will mark your lab as not submitted. Please double check before clicking OK.



Feedback: None

Please specify files to submit:  
(You can submit multiple files at once!)

Choose Files

No file chosen

Choose Files

No file chosen

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No file chosen

Choose Files

No file chosen

Submit Files

Logout

Messages:

- lab2.py / submitted

You have submitted these files:

- [lab2.py](#) (6 B) 09/13/2020 21:58:41 

Delete

STEP 5 – After you submit, your webpage will refresh and show that you have submitted the files and the time.

I recommend you logout.

You can resubmit the file if you make changes. However, if the TA has already graded your lab, they will not grade it again, so I recommend you only upload once you have it work.

For more details on websubmit, see EECS department instructions:

<https://wiki.eecs.yorku.ca/dept/tdb/services:submit:websubmit>