2023-Spring
Advanced Computer Programming (2)

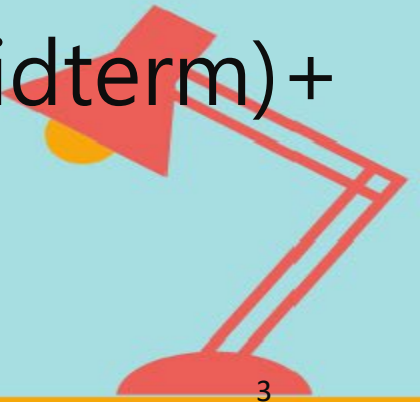
CSIE, Asia Univ.

Outline

- Course regulations
- Course schedule
- Course material
- Course tool

Course regulations

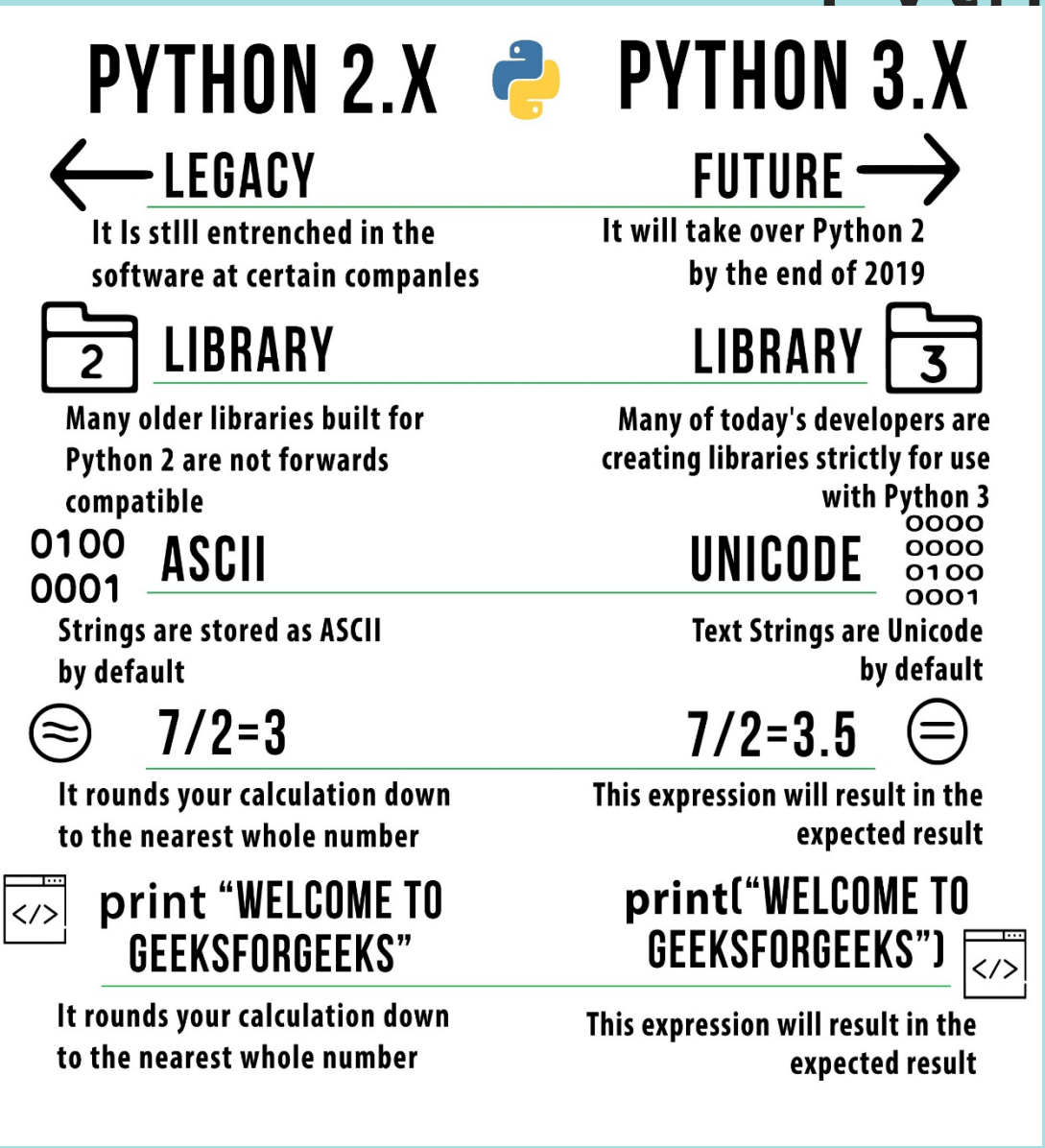
- The midterm is for individual grades, and the final is for group grades.
- Midterm: Web Crawler
- Final: Web App on PythonAnywhere
- Grading: 40% (activities performance) + 30% (midterm)+ 30% (final)



Course schedule

- W1-Introduction
- W2-Python libraries
- W3-BeautifulSoup(1)
- W4-BeautifulSoup(2)
- W5-Scrapy(1)
- W6-Scrapy(2)
- W7-Storing Data
- W8-Project development(1)
- W9-Midterm presentation
- W10-Web & HTTP
- W11-Flask
- W12-Flask Routes
- W13-Jinja template
- W14-Flask-form
- W15-Flask-mail
- W16-REST API
- W17-Project development(2)
- W18-Final presentation

Python Versions



Python new features:

- Python 3.10: Structural Pattern Matching
- Python 3.6 : f-Strings
- Python 3.3 : Virtual Environments
- Python 3.2: Argparse

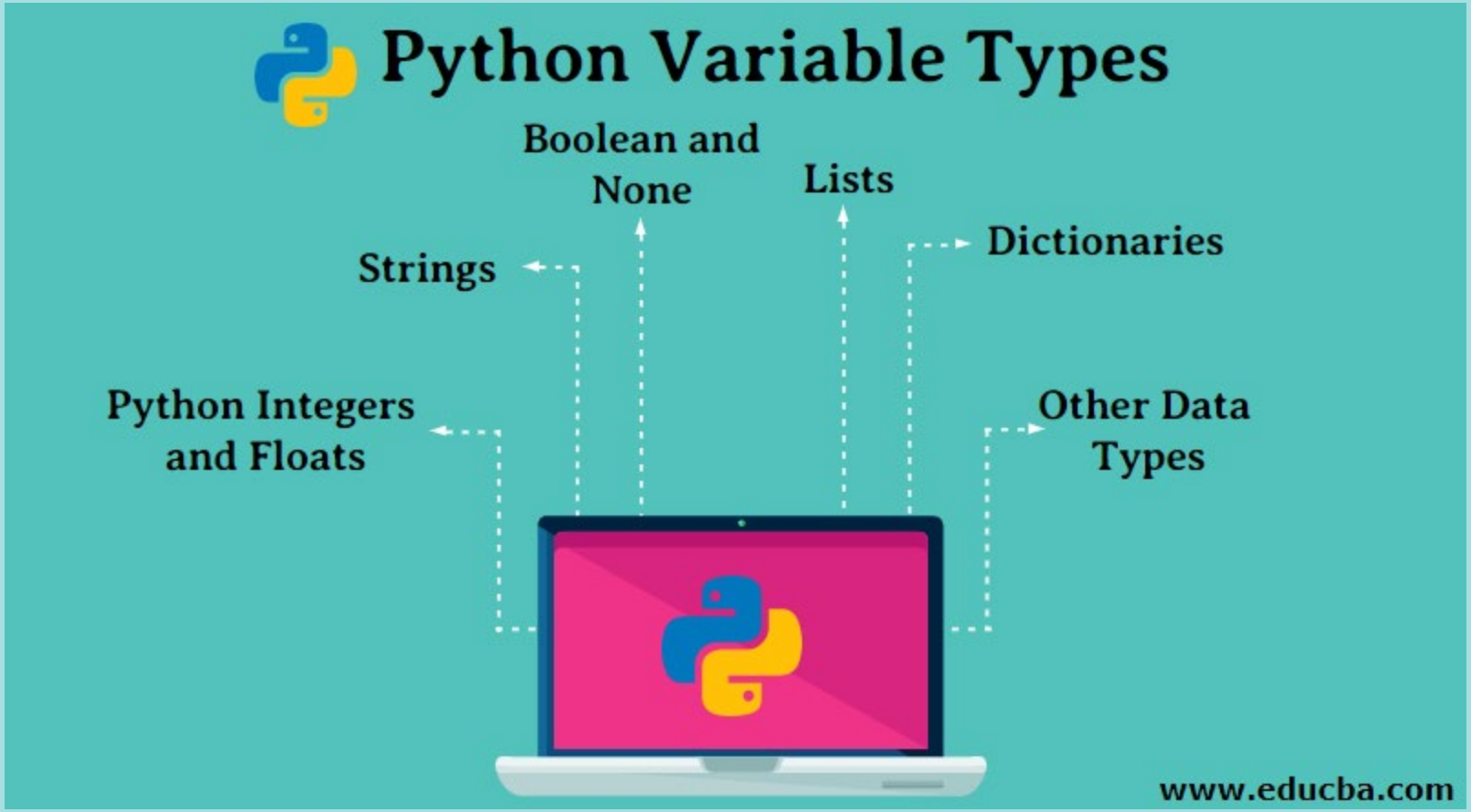
Python powerful features:

- Iterators
- Generators
- Decorators
- Context Managers

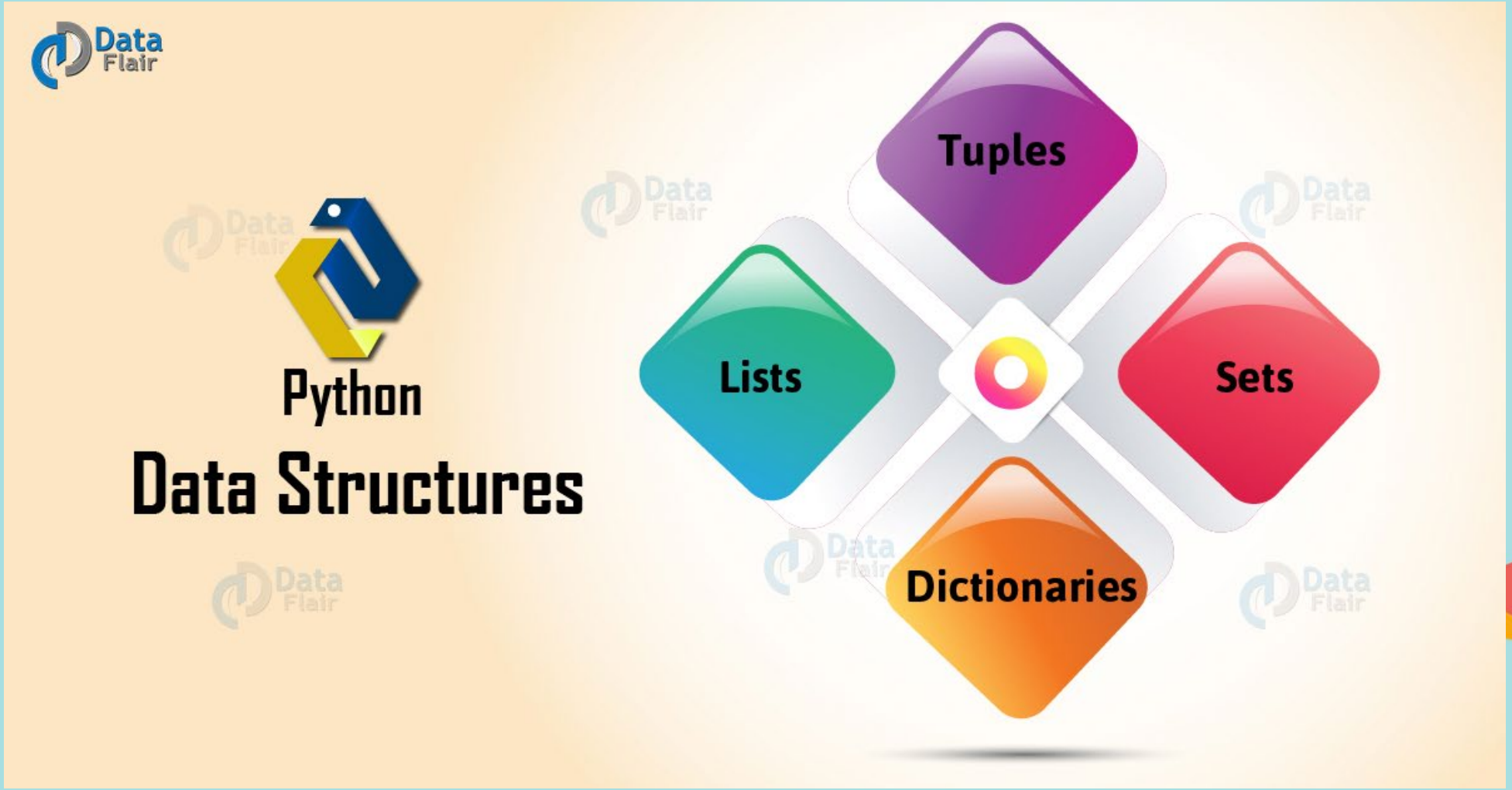
Zen of Python

1. Beautiful is better than ugly.
2. Explicit is better than implicit.
3. Simple is better than complex.
4. Complex is better than complicated.
5. Flat is better than nested.
6. Sparse is better than dense.
7. Readability counts.
8. Special cases aren't special enough to break the rules.
9. Although practicality beats purity.
10. Errors should never pass silently.
11. Unless explicitly silenced.
12. In the face of ambiguity, refuse the temptation to guess.
13. There should be one– and preferably only one –obvious way to do it.[a]
14. Although that way may not be obvious at first unless you're Dutch.
15. Now is better than never.
16. Although never is often better than *right* now.
17. If the implementation is hard to explain, it's a bad idea.
18. If the implementation is easy to explain, it may be a good idea.
19. Namespaces are one honking great idea – let's do more of those!

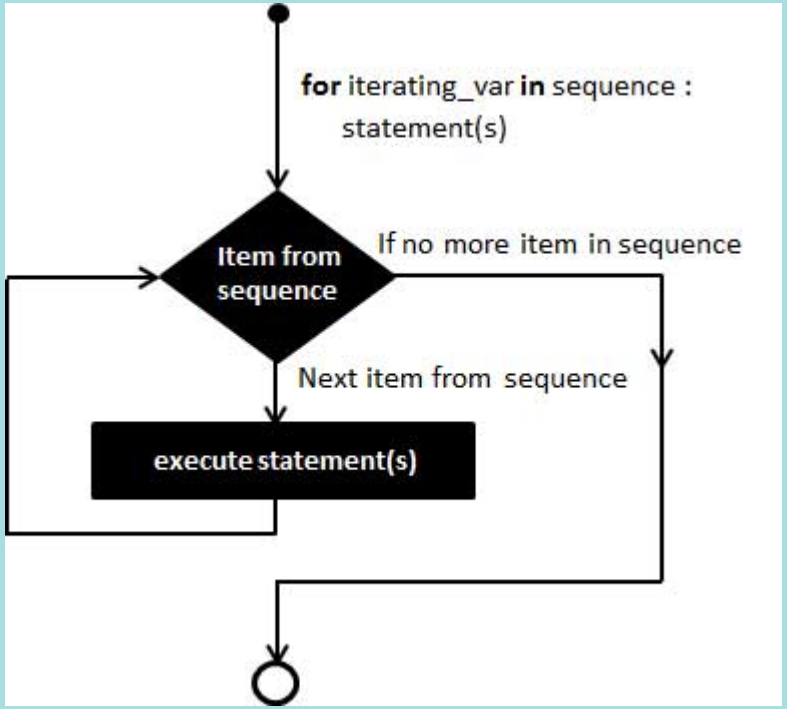
Variables

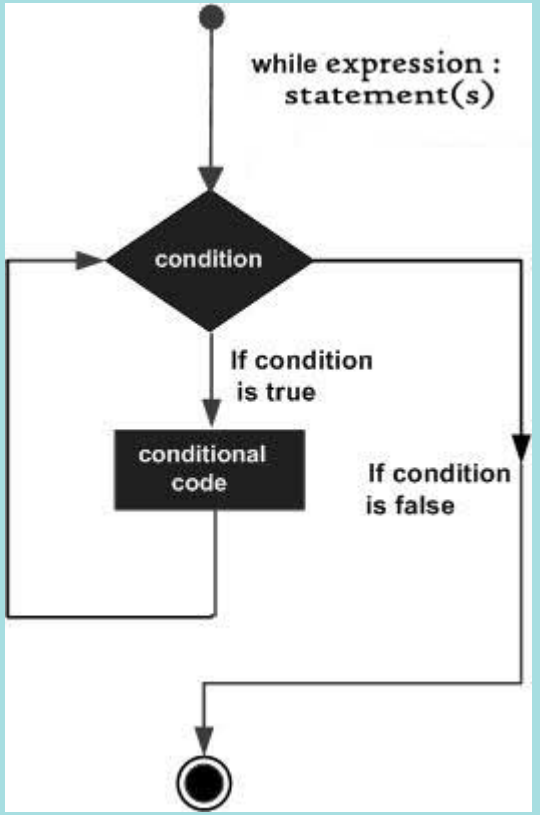

Python Variable Types
Boolean and None
Lists
Strings
Dictionaries
Python Integers and Floats
Other Data Types
www.educba.com

Variable containers

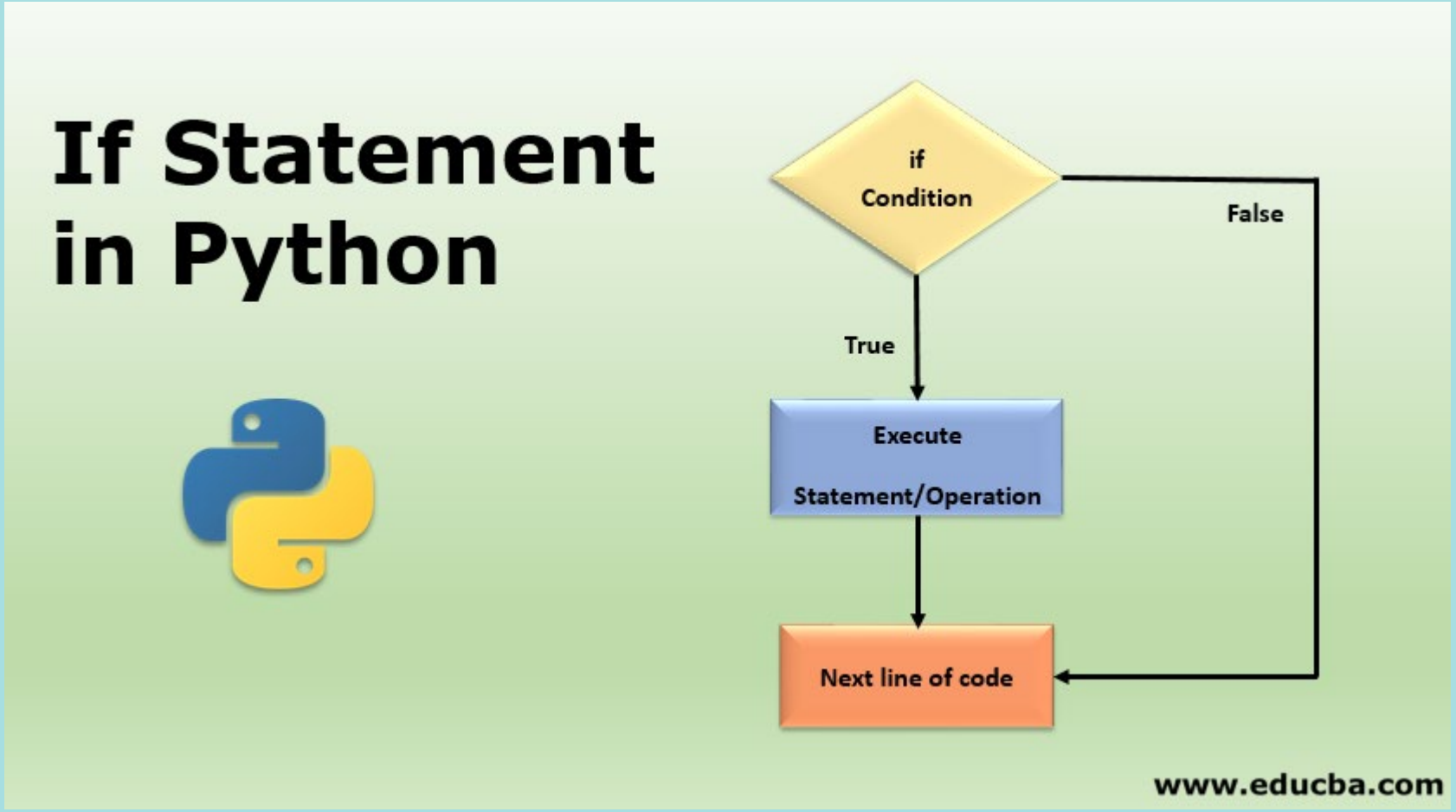


while-loop vs for-loop

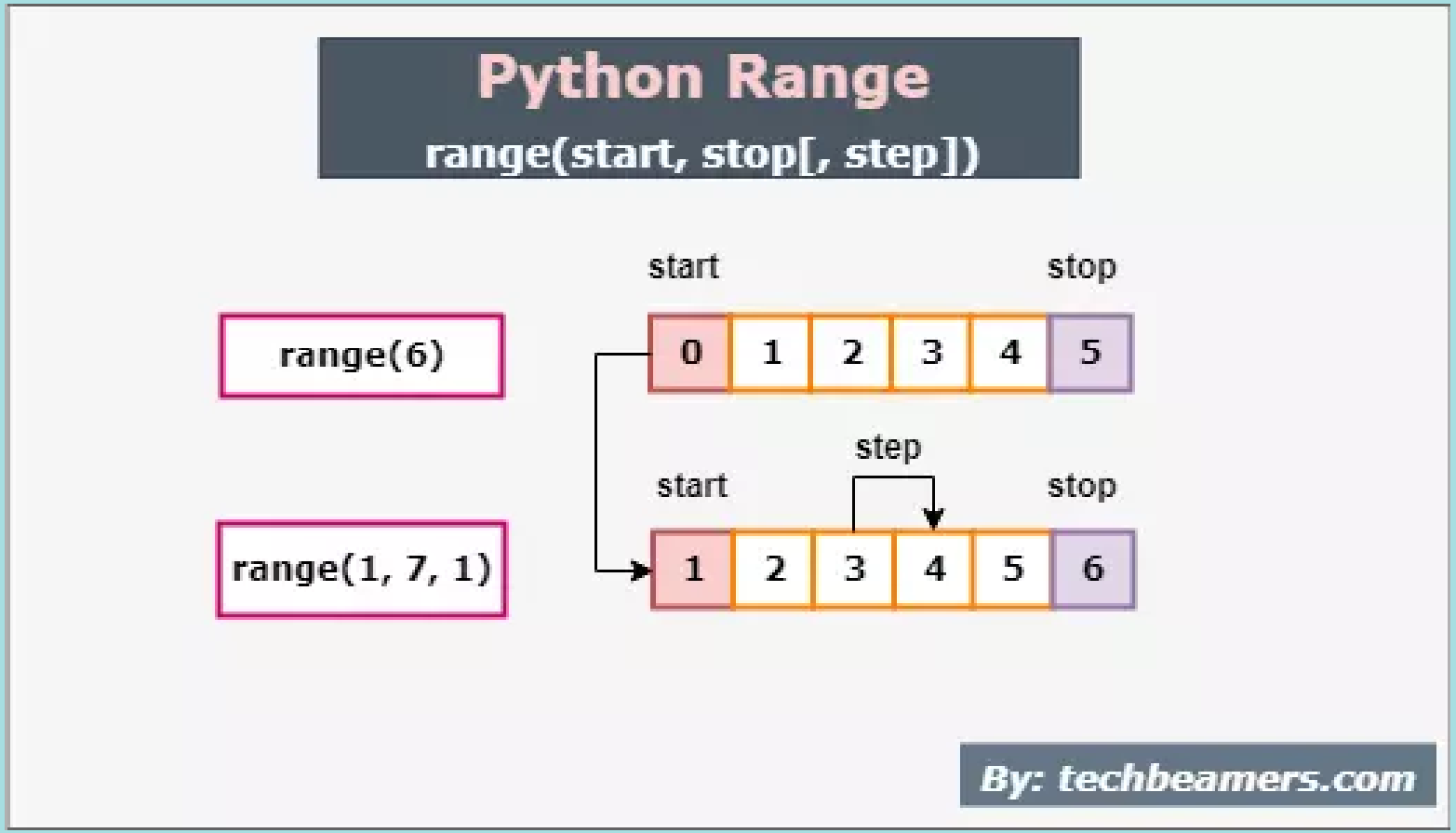




If condition

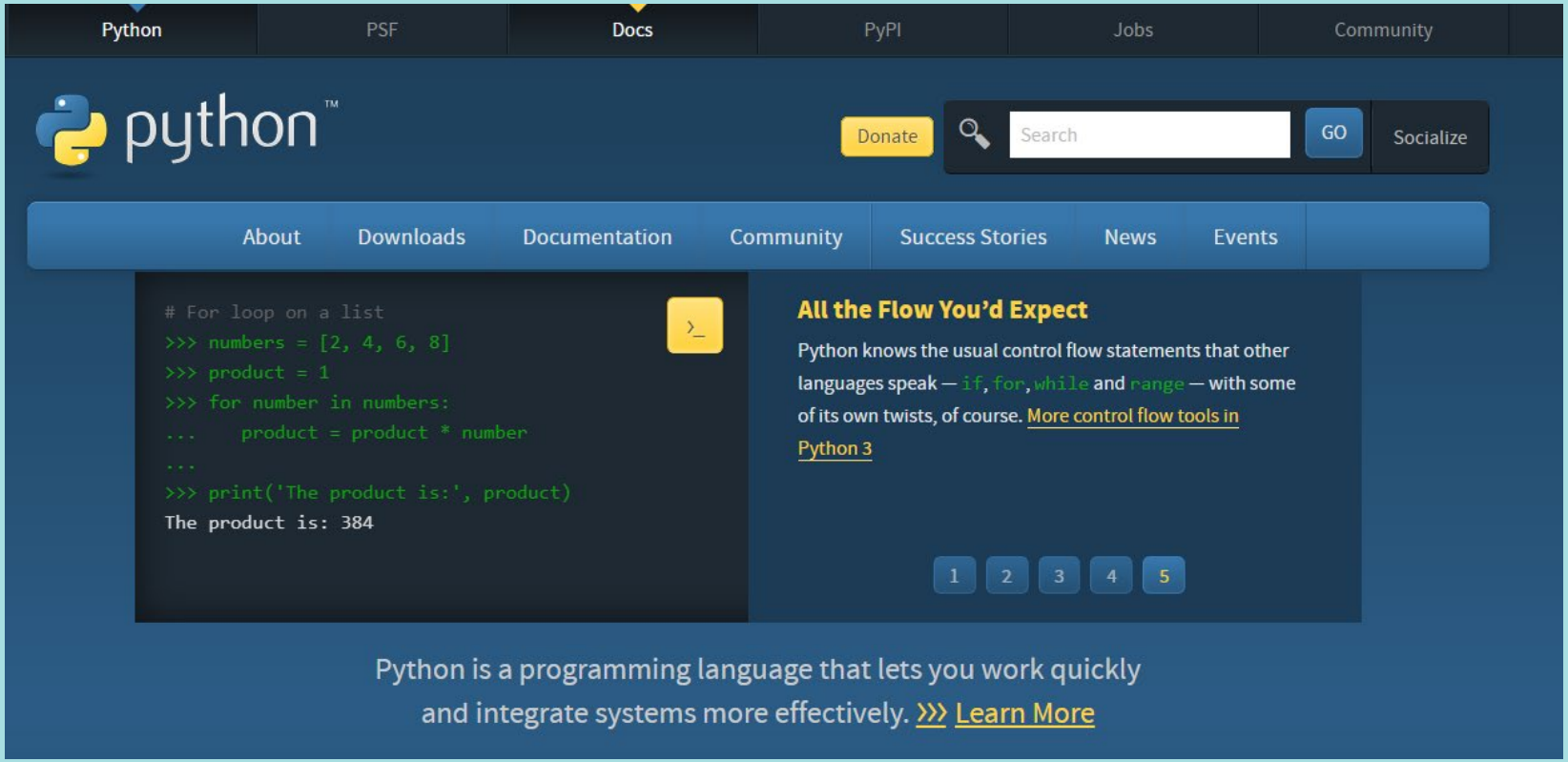


range() function



Visit Python Home

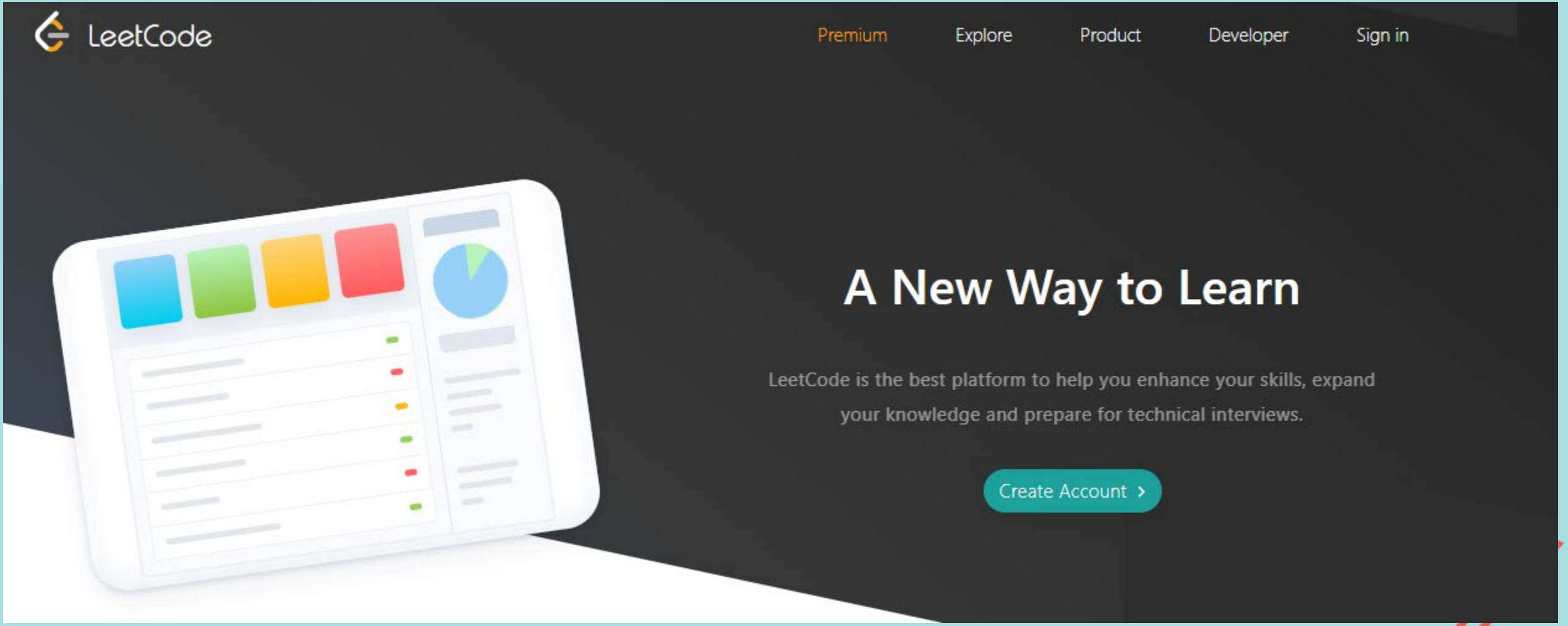
Python is a programming language that lets you work quickly and integrate systems more effectively.



https://www.python.org/

2. Introduction to the leetcode platform

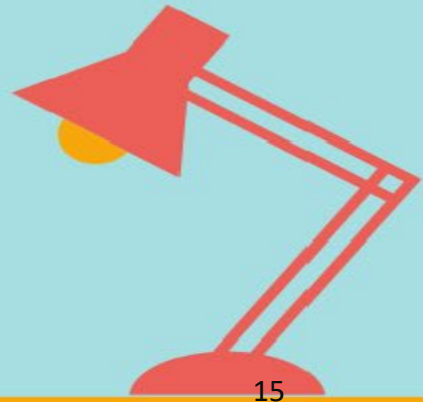
leetcode



https://leetcode.com/

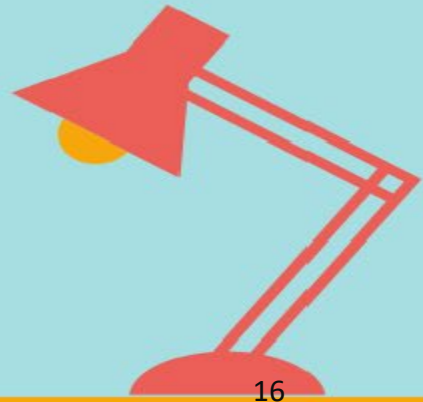
Leetcode problem: **Two Sum**

- Given an array of integers nums and an integer target, return indices of the two numbers such that they add up to target.
- You may assume that each input would have exactly one solution, and you may not use the same element twice.
- You can return the answer in any order.
- https://leetcode-cn.com/problems/two-sum



Leetcode problem: **Three Sum**

- Given an array nums of n integers, are there elements a, b, c in nums such that a + b + c = 0?
- Find all unique triplets in the array which gives the sum of zero.
- Notice that the solution set must not contain duplicate triplets.
- You can return the answer in any order.
- https://leetcode.com/problems/3sum/



Leetcode problem: Add Two Numbers

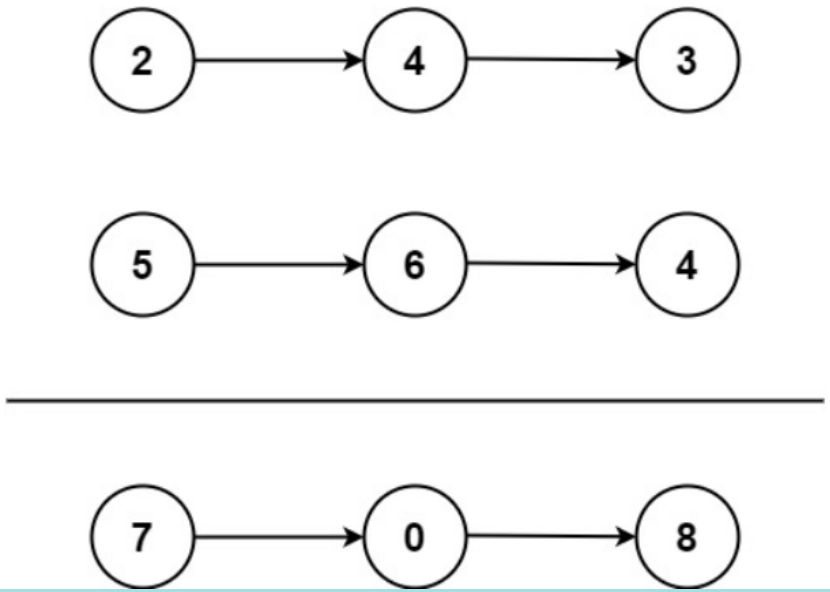
2. Add Two Numbers

Medium 11104 2659 Add to List Share

You are given two **non-empty** linked lists representing two non-negative integers. The digits are stored in **reverse order**, and each of their nodes contains a single digit. Add the two numbers and return the sum as a linked list.

You may assume the two numbers do not contain any leading zero, except the number 0 itself.

Example 1:




```
Input: l1 = [2,4,3], l2 = [5,6,4]
Output: [7,0,8]
Explanation: 342 + 465 = 807.
```

Example 2:

```
Input: l1 = [0], l2 = [0]
Output: [0]
```

Example 3:

```
Input: l1 = [9,9,9,9,9,9,9], l2 = [9,9,9,9]
Output: [8,9,9,9,0,0,0,1]
```

Constraints:

- The number of nodes in each linked list is in the range `[1, 100]`.
- `0 <= Node.val <= 9`
- It is guaranteed that the list represents a number that does not have leading zeros.

Accepted 1,832,262 Submissions 5,152,815

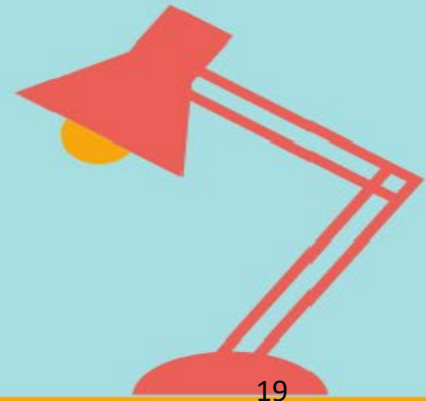
https://leetcode.com/problems/add-two-numbers/

Leetcode problem: **Reverse Integer**

- Given a 32-bit signed integer, reverse digits of an integer.
- **Note:** Assume we are dealing with an environment that could only store integers within the 32-bit signed integer range: $[-2^{31}, 2^{31} - 1]$. For the purpose of this problem, assume that your function returns 0 when the reversed integer overflows.
- （LeetCode）
- https://leetcode.com/problems/reverse-integer/

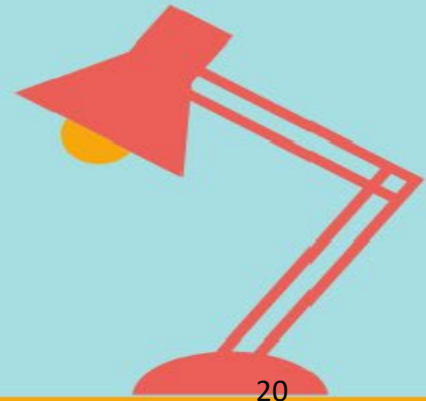
Activity-1 (S-S)

- Open the Google Jamboard for the class
- Check the grammar you have used in Python Cheatsheet.



Activity-2 (S-S)

- Open the Google Jamboard for the class
- Discuss what you know (K), want to know (W), and have learned (L) about this topic in the KWL chart.



Thanks!

Q&A