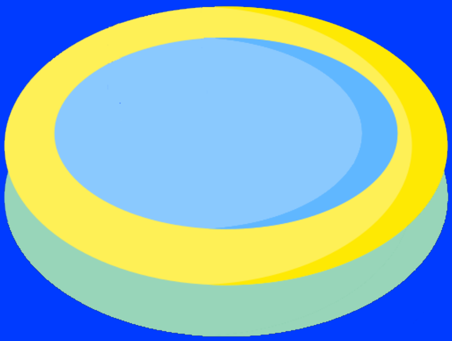
{EPITECH}

WADING POOL

< DAY 05 />



WADING POOL

OH MY GIT!
In addition to the tasks below, you must go as far as possible in this game.
Work on it as soon as you have a bit of time, or whenever you need a break in you day!

Lists creation and browsing

Task 1.1

Create a list of 5 elements. Then, print its first element.

Task 1.2

Display the last element of your list.

Your code must be functional whichever number of elements the list contains.

Task 1.3

Add the integer `42` at the end of your list.
Then, add the string `forty-two` at the end of your list.

Task 1.4

Display your entire list.
Then, display each element of your list one by one.

Task 1.5

Delete the last element of your list.
Then, display your list to check if you did it properly.

Your code must be functional whichever number of elements the list contains.

Task 1.6

Add an element at the beginning of the list and display all its elements.

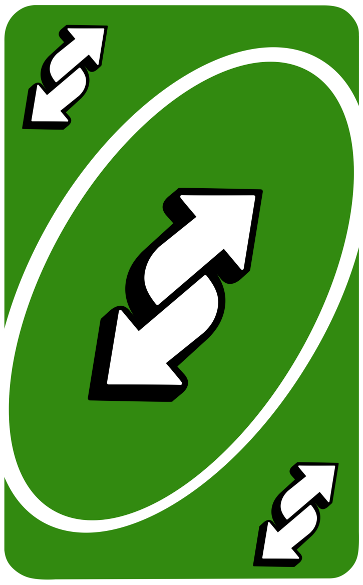
Task 1.7

Display the sub-list from the 2nd to the 4th element (included).

Can you do it in one line?

Task 1.8

Reverse the list to create a new list with the same elements, but starting from the end.
Then, display all the elements of this new list.



Task 1.9

Display one element out of two of the list.

Task 1.10

Add the ten integers from 11 to 21 at the end of your list.

Please, do not do it in 10 similar lines. Be smart and lazy.

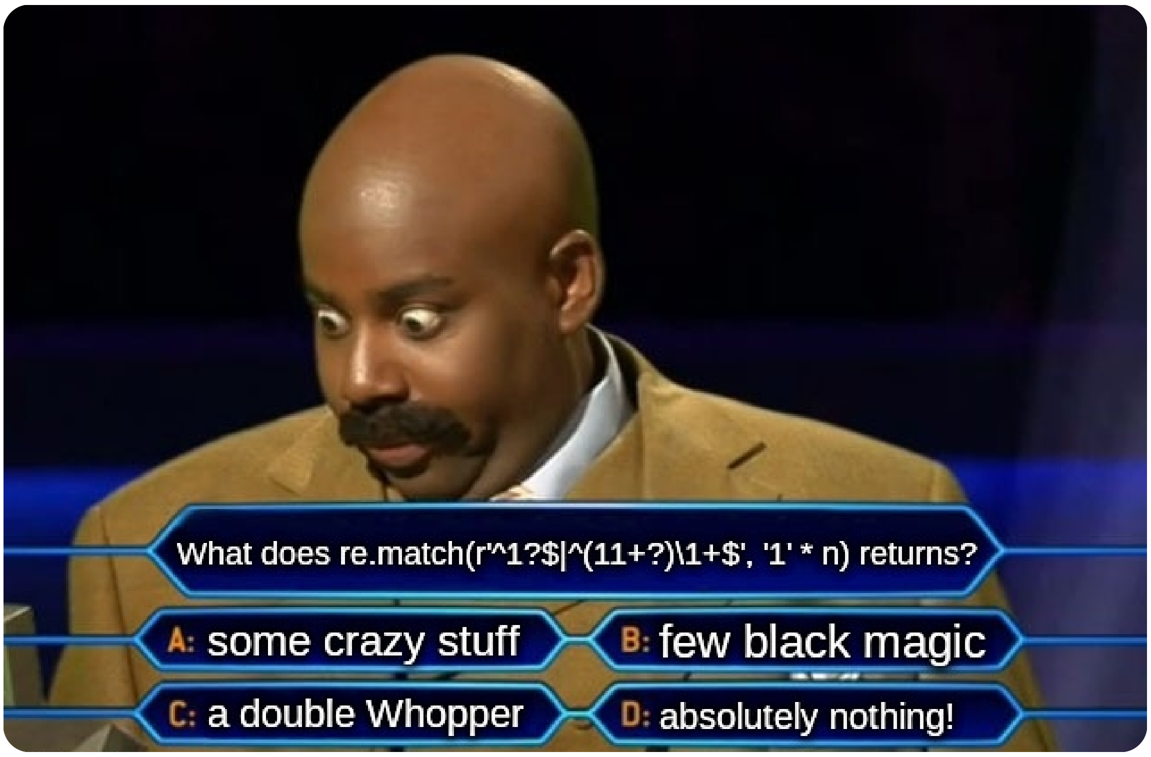
Task 1.11

What does the following code do?

```
my_first_list = [4, 5, 6]
my_second_list = [1, 2, 3]
my_first_list.extend(my_second_list)
```

Same with:

```
my_first_list = [7, 8, 9]
my_second_list = [4, 5, 6]
my_first_list = [*my_first_list, *my_second_list]
```


What does re.match(r'^1?$|^(11+?)\1+$', '1' * n) returns?
A: some crazy stuff
B: few black magic
C: a double Whopper
D: absolutely nothing!

Operations on lists

Task 2.1

Create a list of 5 numbers. Then, print the result of the multiplication of all its elements.

The input `[1, 2, 3, 4, 5]` should return `120`.

Task 2.2

Test this code and try to explain it: `[x + 10 for x in [3, 2, 6, 7, 1, 4]]`

Task 2.3

✓ dig this code `list(filter(lambda x: x > 10, [42, 3, 4, 7]))`;
✓ try to predict its output ;
✓ then, test it to check if you're right.

Task 2.4

Create a list of 5 numbers. Then, display the smallest element. Finally, display its biggest element.

Task 2.5

Sort your list in descending order.

Task 2.6

Test this code and try to explain it `[x //2 if x % 2 == 0 else x * 2 for x in [42, 3, 4, 18, 3, 10]]`

Task 2.7

Test this code and try to explain it: `[*enumerate([42, 3, 4, 18, 3, 10])]`

Task 2.8

Test this code and try to explain it:

```
first_names = ["Jackie", "Chuck", "Arnold", "Sylvester"]
last_names = ["Stallone", "Schwarzenegger", "Norris", "Chan"]

magic = [*zip(first_names, last_names[::-1])]

print(magic[0])
print(magic[3])
print(magic[1][0])
print(magic[0][1])
print(magic[2])
```

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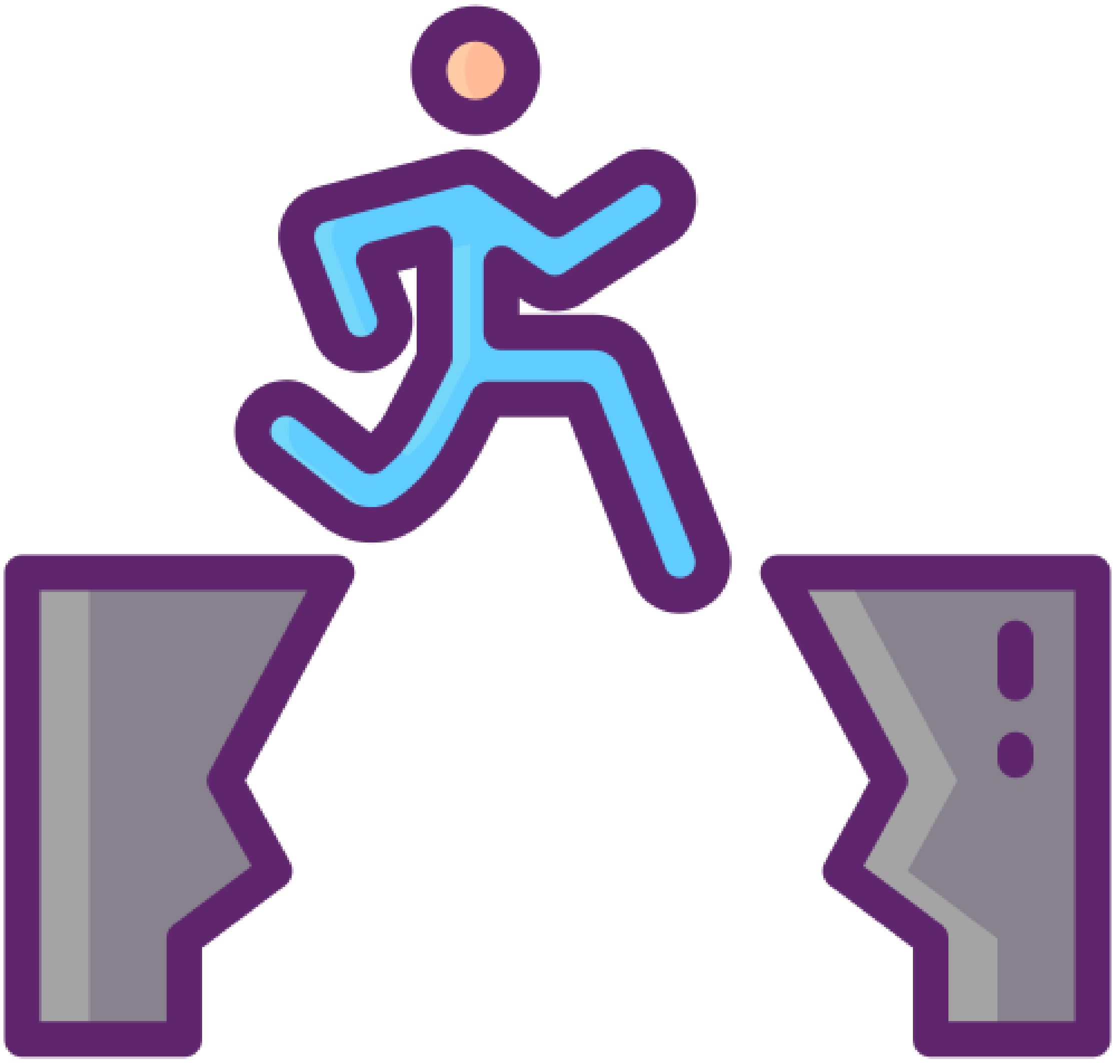
CHALLENGE

Create a list of 1000000 random integers. Then, sort this list as fast as possible.

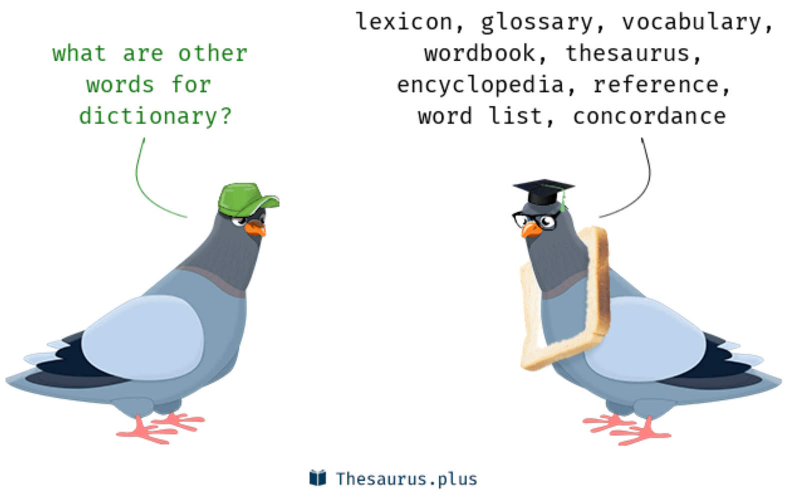


If you want to know precisely how long the execution of your program lasted, you can put the code `start = time.time()` at the beginning and `print(time.time()- start)` at the end.

Dictionaries

Task 3.1

Create a **dictionary** stored in a `student` variable.
This dictionary must contain 2 key/value pairs.
The keys must be `player` and `team`.
The associated values are up to you, but please keep them coherent!


what are other words for dictionary?
lexicon, glossary, vocabulary, wordbook, thesaurus, encyclopedia, reference, word list, concordance
Thesaurus.plus

Task 3.2

Store this dictionary into the variable `superheroes`.
Then, print the value of `Superman`'s `city`.

```
{
  "Batman" : {
    "id": 1,
    "aliases": ["Bruce Wayne", "Dark knight"],
    "location": {
      "number" : 1007,
      "street": "Mountain Drive",
      "city": "Gotham"
      }
  },
  "Superman" : {
    "id": 2,
    "aliases": ["Kal-El", "Clark Kent", "The Man of Steel"],
    "location": {
      "number" : 344,
      "street": "Clinton Street",
      "apartment": "3D",
      "city": "Metropolis"
      }
  },
}
```

Task 3.3 🥕

Inside the previous dictionary `superheroes`, add `Caped Crusader` inside `Batman`'s `aliases`.

Task 3.4 🌶️

Get the key of the maximum value inside this dictionary:

```
{
  "dalmatians": 101,
  "pi": 3.14,
  "beast": 3*2*111,
  "life": 42,
  "googol": 10^100
}
```

Lets' go further

Task 4.1

Let's consider a list of names (the ambassador's banquet guests).
Write a program that displays:

- ✓ ”welcome in” if a given name belongs to this list ;
- ✓ and ”get lost!” otherwise.

Task 4.2

Write a program that deletes all the duplicated elements in a list.
Test it with `[1, 1, 2, 2, 3]` and with `['a', 2, 'a', 2, 'A']`, they should return 3 elements.

Task 4.3

Let consider a list of meetings. Each meeting is a list containing the day, the time of the meeting and the name of all the participants.

For instance:

```
[
  ["Monday", "3:30 PM", "Joe", "Sam"],
  ["Monday", "4:30 PM", "Bob", "Alice"],
  ["Tuesday", "3:30 PM", "Joe", "Bob", "Alice", "Sam"],
  ["Tuesday", "9:30 AM", "Joe", "Bob"]
]
```

Write a program that, given a name, displays all the day and the time of all meetings in which this person is involved.

Task 4.4

Humm... you seem like a fast scorer!
Wander in the halls and find some desperate colleagues that need help.

Of course, review their code. You may even try a bit of peer-coding.

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