LEARNING PYTHON (GPT CHATBOTS ASSISTED)

FRI, 26 MAY 2023

1 PM - 3 PM

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PROGRAMME ZONE

https://for.edu.sg/asr23python

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About us

We are a group of students from Anderson Serangoon Junior College and we love Computing!

Our PyLadies!

Do approach them if you need any assistance!

Vinita

Clara

Trisha

Yi Xuan

Our PyLadies!

Do approach them if you need any assistance!

Roshni

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Rui Xin

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Our PyBoys!

Do approach them if you need any assistance!

Jareth

Aakarsh

Didum

Shibo

Ying Xuan

Lesson 1

- What is Python and why learn it?
- How to use Python without downloading and installing software
- Python as a calculator
- Displaying data and getting data into the computer
- Data types: integers, floating point numbers, strings and Booleans
- Giving digital things life by naming them: variables
- Making decisions with if-elif-else
- Your personalised coding tutor(s): ChatGPT and more

Lesson 2

- Repeating and automating things – for and while
- Managing data with arrays (Python lists)
- Reusing things with functions
- Work on problems and projects
- Summary
- Question & Answer
- Self-learning resources

What is Python and why learn it?

A general purpose programming language since 1991

Simple/fun to learn and easy to use

Powerful and ubiquitous (AI, blockchain and many emerging technologies)

Click on logo to learn more about Python

How to use Python?

without downloading and installing software

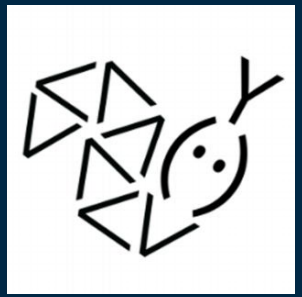
Examples

Repl.it

- an online real-time collaborative coding platform

Google Colab

- a cloud-based Python development environment (part of Google Drive)
- supports interactive computing



PythonAnywhere

- an online web development and hosting service for Python

Sample Question 3-tscl056
ide2022-code-hacker-sample-q

Stop

Resubmit

Search

Files

main.py

Packager files

poetry.lock

pyproject.toml

Tools

Instructions Docs Chat Threads Packages Git

Debugger Shell Console Secrets Database PostgreSQL

CPU RAM Storage

Try Ghostwriter

Help

main.py

```
1  userid = ["user_01", "user_02", "user_03"]
2  password = ["pw_01", "pw_02", "pw_03"]
3
4  UserID = input("Enter your UserID: ")
5  Password = input("Enter your password: ")
6  if UserID in userid and Password ==
   password[userid.index(UserID)]:
7    print("Login successful")
8  else:
9    print("Login unsuccessful")
10
11 if UserID in userid and Password ==
   password[userid.index(UserID)]:
12   Change_password = input("Do you want to change
   password? (Y/N): ")
13   if Change_password == "Y":
14     New_pw = input("Please enter new password: ")
15     Reenter_pw = input("Please re-enter your new
   password: ")
16     if New_pw == Reenter_pw:
17       print("Password changed!")
18     else:
19       print("Password does not match")
20   else:
21     print("Password remains same")
```

Ln 21, Col 35 History

Console Shell Instructions

```
Enter your UserID:
```

Google Colab
Lesson 1

https://colab.research.google.com/drive/1zWCKr9g27pxvDCjlCYF39hsju4oS7NDy?usp=sharing

Student notebook

Output

Hello World!

Let’s try!
Activity 1

Life-givers: Variables

We all start somewhere

Variables

A named location in computer memory that holds a value of a specific data type, such as numbers, strings, or objects.

Rules for Python variables:

- Consist of letters (uppercase and lowercase), digits, and underscores.
- First character cannot be a digit.
- Case-sensitive, so `age` and `Age` are different variables.
- Python has some reserved keywords (e.g. **`if`**, **`for`**, **`while`**, etc.) that cannot be used as variable names.

Use meaningful names!

Data types

Data types

String

- a sequence of characters
- enclosed in either
  - single quotes (`'`) or
  - double quotes (`"`) or
  - triple quotes (`'''` or `"""`)

Integer

- whole numbers (no fractional / decimal parts)

Let’s try!
Activity 1a

Data types

Float

- numbers with a fractional part
- eg 3.14, 9.99

Boolean

- binary values
- either `True` or `False`

Let’s try!
Activity 1b

Input

Yes let me type

Let’s try!
Activity 1c

Personalised tutors

ChatGPT, Bard, etc.

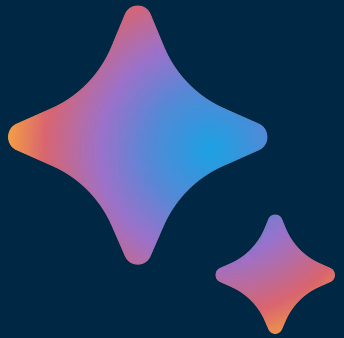
Personalised tutors

ChatGPT

Chatbot by OpenAI that uses Large Language Models (LLMs) to generate human-like conversational responses

Bard

Chat program built on Google's LLM, PaLM2
Ability to connect with Google Colab



Setting up your ChatGPT account

Decisions: if-elif-else

Conditions!

IF, ELIF, ELSE STATEMENTS IN PYTHON

if-elif-else

if

execute a block of code if a condition is met

elif

check additional conditions if the previous conditions are not met

else

execute when none of the above conditions are met

Let’s try!
Activity 1d


Python is the easier language to learn. No brackets, no main.
You get errors for writing an extra space

Up for a challenge?

Prompt:
Create a chatbot about shopping

Fine-tuning prompts

- Use if-elif-else statements
- Use variables
- Use input() and print()

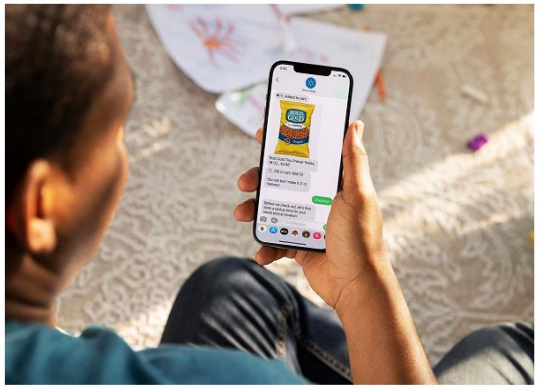
You have 20 minutes. Have fun!

Purpose

Encourage digitalisation online shopping

Walmart Starts Testing Chatbot Shopping by Text

ERIC HAL SCHWARTZ on October 18, 2021 at 4:00 pm



Walmart is working on a new feature that would enable shoppers to text their shopping lists to the store through a chatbot. The project, part of Walmart's Store No. 8 research and development group, ties into the company's ongoing plans for conversational commerce by voice and text.

Google Colab
Lesson 2

https://colab.research.google.com/drive/1AJQoyW8bK_haVJxI4or8vcyw5G8uTddq?usp=sharing

Student notebook

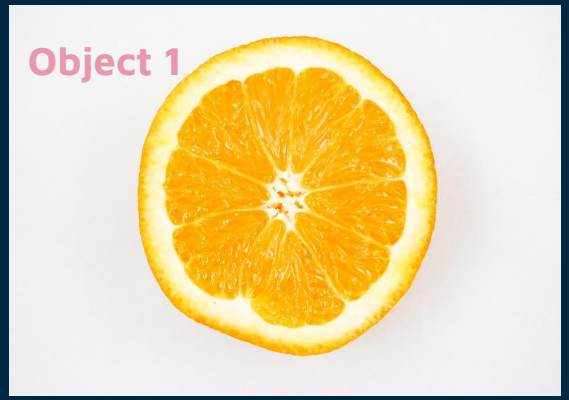
Lesson Objectives

Managing data with arrays (Python 1D lists)

What are Lists?

- Allows you to store an indexed collection of values.
- You can think of a list as a container that can hold same or different elements, such as numbers, strings, or even other lists.

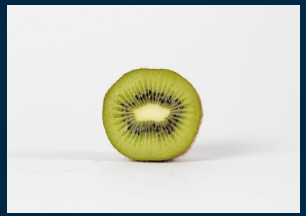
Examples of Lists in Real-life



Understanding the Lists Index Structure

- In Python, an index refers to the position of an item within a list

Previously our list was the shopping cart which had 2 items: orange and kiwi. Let's say we add another item into the shopping cart. We would now have 3 items. What would the items' indexes be?

0	1	2
		

Managing data with arrays (Python 1D Lists)

Python has many built-in methods to help us manage lists.

We will cover the following common ones:

- `append()`
- `insert()`
- `len()`
- `pop()`
- `remove()`
- `index()`
- `count()`

Practical Hands On Run through of various list methods using Google Colab

https://colab.research.google.com/drive/1YZ1v6UZq2FGkLar7bzVUtN-sCceMMB6C?usp=sharing

Loops

Again and again

What are loops?

2 types: `for` and `while`

For loops

Iterate over a **sequence of items** or repeat a block of code a **specific number of times**

We will be looking at **2 variants**

While loops:

Allows us to **repeat** a block of code as long as the condition is **true**

General form:

```
while <condition>:
    # code block to be executed
```

Lists:

Lists allows us to **store** and organize a collection of items.

Lists can **contain elements** of different data types, such as **integers, floats and strings.**

Let’s try!
Activities: 2a & 2b

Functions

Activity 2c

What are functions?

Functions are a set of statements which can be **reused without repeating the same code**.

Google Colab

Lesson 1:
https://colab.research.google.com/drive/1Iy4jHyWYhAV04otBYuilmicli_9-ZOcS?usp=sharing
Lesson 2:
https://colab.research.google.com/drive/1cd-WqgWMCV9E5PM6fdeVkR-nNtrDYIR-?usp=sharing

Teacher notebook

Additional Resources

Slides:
https://docs.google.com/presentation/d/1FP9gsbQh_BRs4FqxKTNiocjhcHDtW_wiEhGG6B8FZsM/edit?usp=sharing

Google Colab:
https://colab.research.google.com/drive/1YZ1v6UZq2FGkLar7bzVUtN-sCceMMB6C?usp=sharing

Video Link:
https://drive.google.com/file/d/1gUwUCDP1Fe1tZDC-dT6Y0Hyl6xyjvq3C/view?usp=share_link

Lesson 2

Thank you!

https://for.edu.sg/asr23python

We hope you enjoyed today’s session!