FULL-STACK DEVELOPMENT WORKSHOP

SESSION 1

BY: MASOUD DORRIKHTEH

Agenda

- Introduction QnA
- Some Theory
- Coding!

Introduction

- Who am I?
- What is the purpose of the workshops?
- Who is the target audience for the workshops?
- What are the topics?

Covered topics

- Week 1-2: Fundamentals of Python Programming
- Week 3-4: Introduction to Web Development
- Week 5- 6: Developing Web Apps
- Week 7-8 : Developing Micro Services
- Week 9: Introduction to Cloud Computing
- Week 10: Introduction to Release Automation and DevOps

```
or_mod = modifier_ob
 mirror object to mirror
mirror_mod.mirror_object
operation == "MIRROR_X":
mirror_mod.use_x = True
mirror_mod.use_y = False
mirror_mod.use_z = False
_operation == "MIRROR_Y":
mirror_mod.use_x = False
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selection at the end -add
_ob.select= 1
ier_ob.select=1
ntext.scene.objects.activ
("Selected" + str(modifier
irror_ob.select = 0
= bpy.context.selected_obj
ata.objects[one.name].se

int("please select exactly

- OPERATOR CLASSES ----

types.Operator):
 X mirror to the selected
ject.mirror_mirror_x"
ror X"

ontext):
ext.active_object is not
```
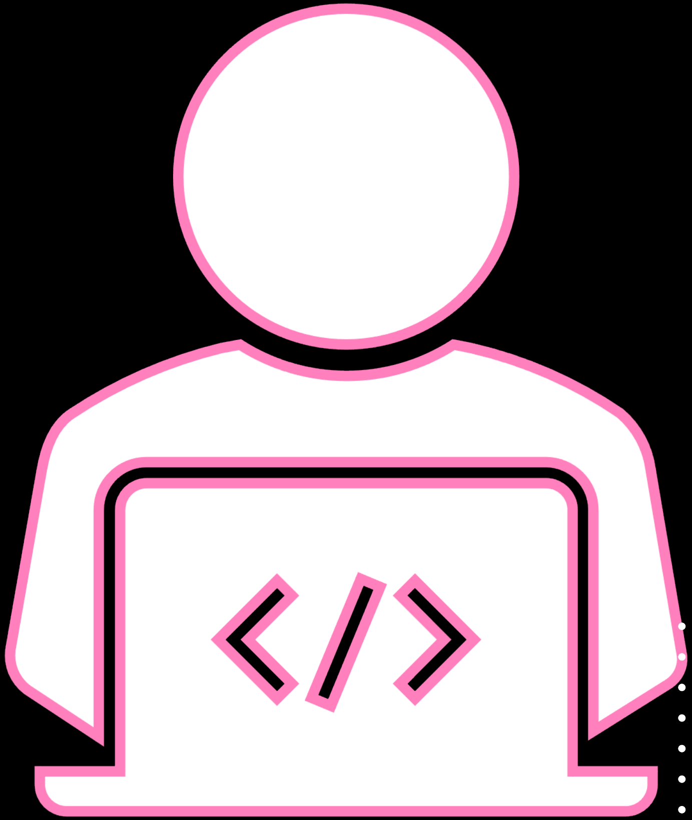
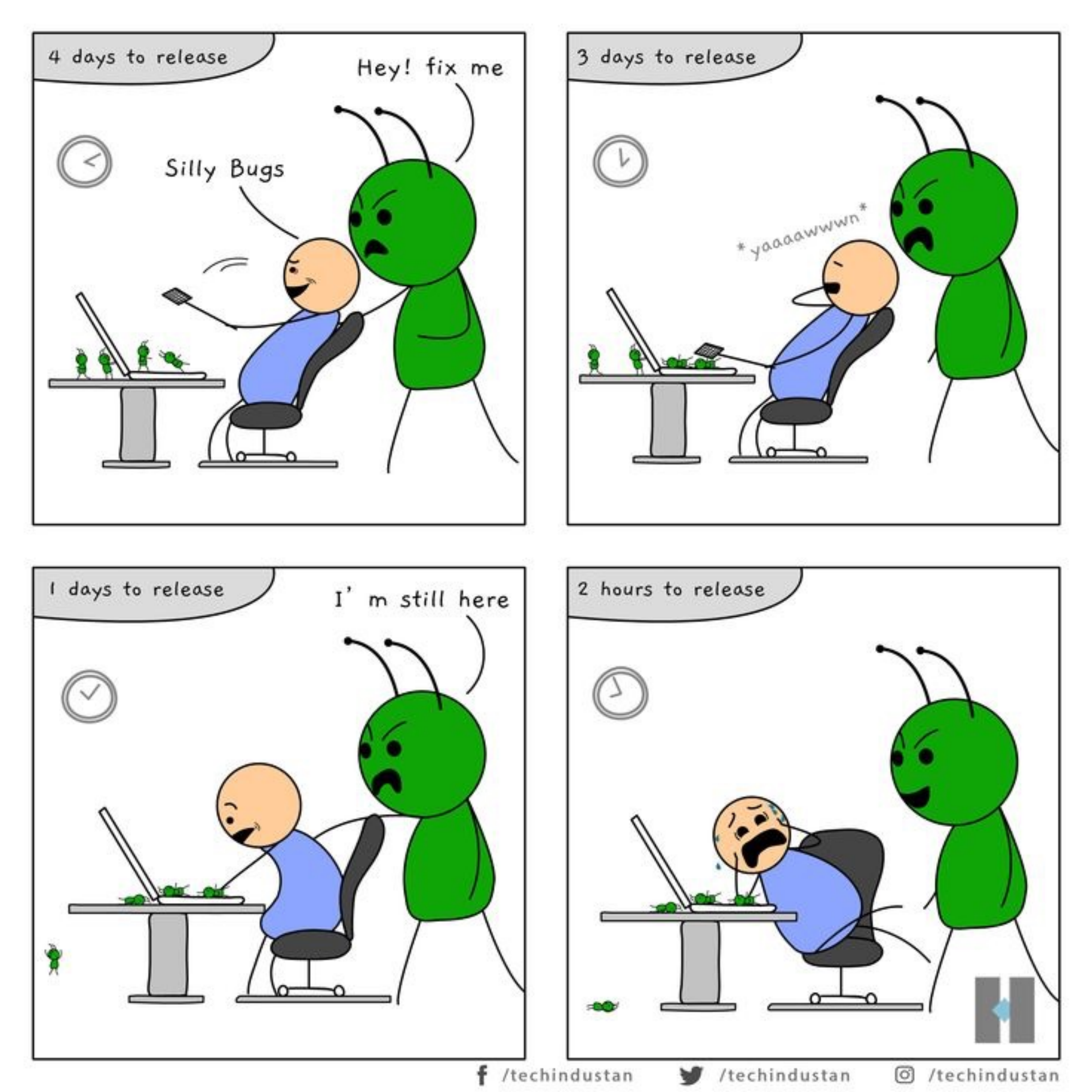

WHY SHOULD I LEARN PROGRAMMING ?



REASON 1:

YOU WOULD UNDERSTAND PROGRAMMING **MEMES**.



FAQ

- What am I going to learn?
- Is it necessary for me to have prior programming experience?
- Can I start working as a Developer after completing the workshops?
- Why starting with Python?
- Can I code in other languages?

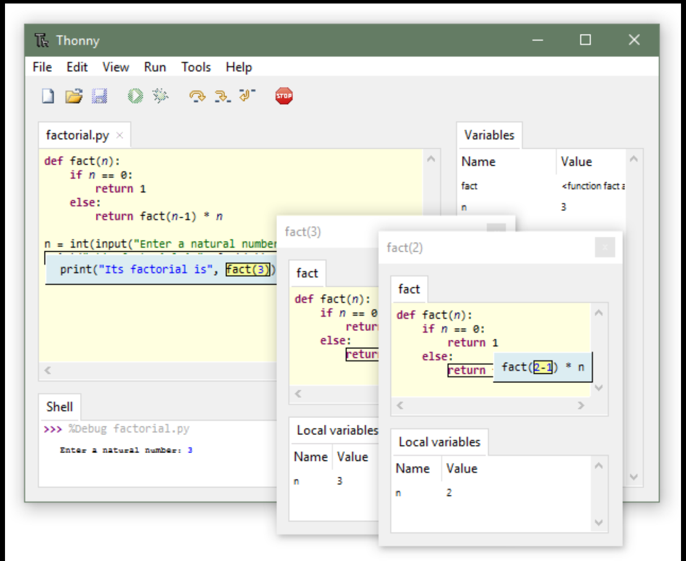
Some Notes…

- It’s intensive!
- Practice.
- Fail!
- Google is your friend.
- Stackoverflow.com is your savior.
- 20-80 Rule

LET'S START…

Installing IDE

- Download **Thonny** IDE (Python bundled in it).
- Install Thonny on your computer.
- Go to: **File** > **New**. Then save the file with .py extension. For example, hello.py, test.py.



```
def fact(n):
    if n == 0:
        return 1
    else:
        return fact(n-1) * n

n = int(input("Enter a natural number
    print("Its factorial is", fact(3))
```

Name	Value
fact	<function fact a
n	3

```
>>> %Debug factorial.py
  Enter a natural number: 3
```

```
def fact(n):
    if n == 0
        retur
    else:
        retur
```

Name	Value
n	3

```
def fact(n):
    if n == 0:
        return 1
    else:
        return   fact(2-1) * n
```

Name	Value
n	2

IF statement
IF THEN

IMAGINE…

Source: https://www.artstation.com/artwork/Go4eQ

Some Basic Concepts…

- High-level and Low-level Programming
- Compilers
- Libraries
- IDE

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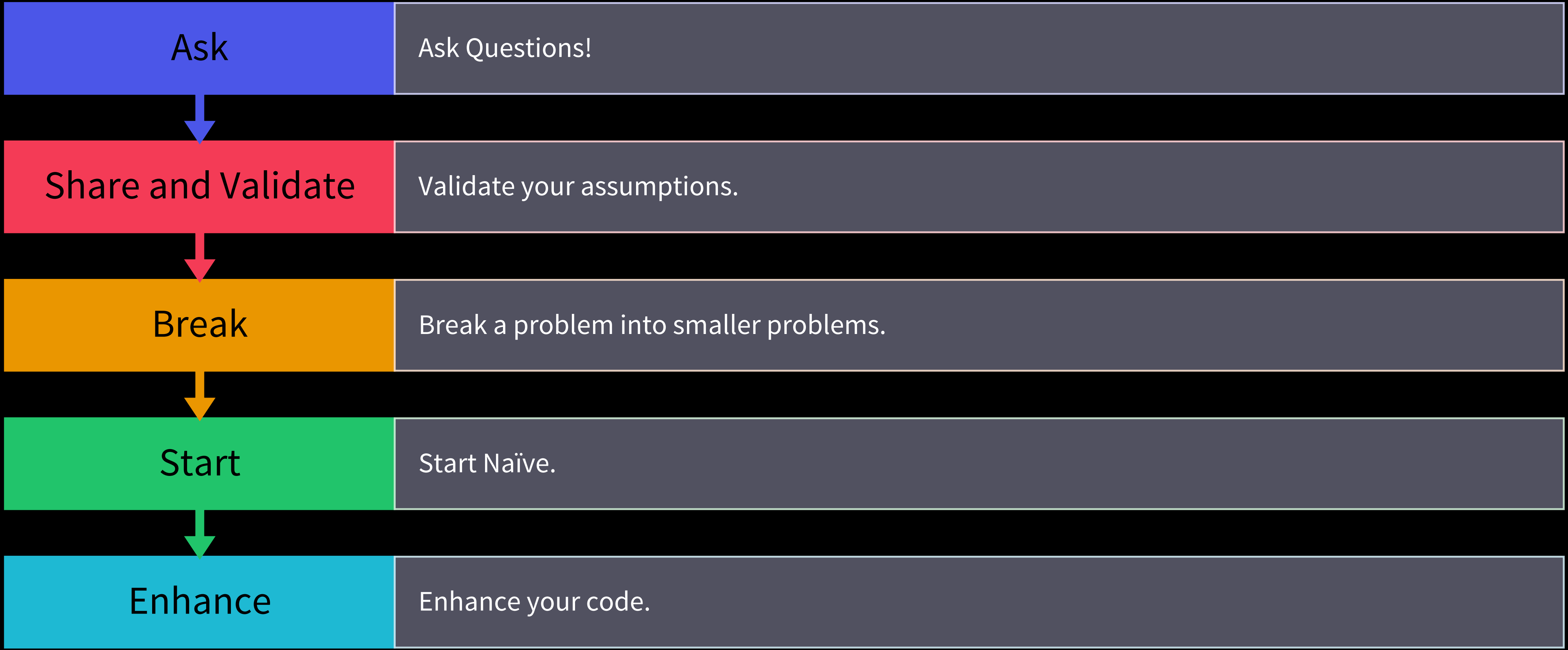
First step to programming is not coding!



Ask	Ask Questions!
Share and Validate	Validate your assumptions.
Break	Break a problem into smaller problems.
Start	Start Naïve.
Enhance	Enhance your code.

LET'S CODE!

The First Program!

```
print("Hello World!")
```

Then Go to **Run** > **Run current script** or click **F5** to run.

IDENTIFIERS

THE NAME SEEMS SCARY, IS IT GETTING HARDER?

Identifiers

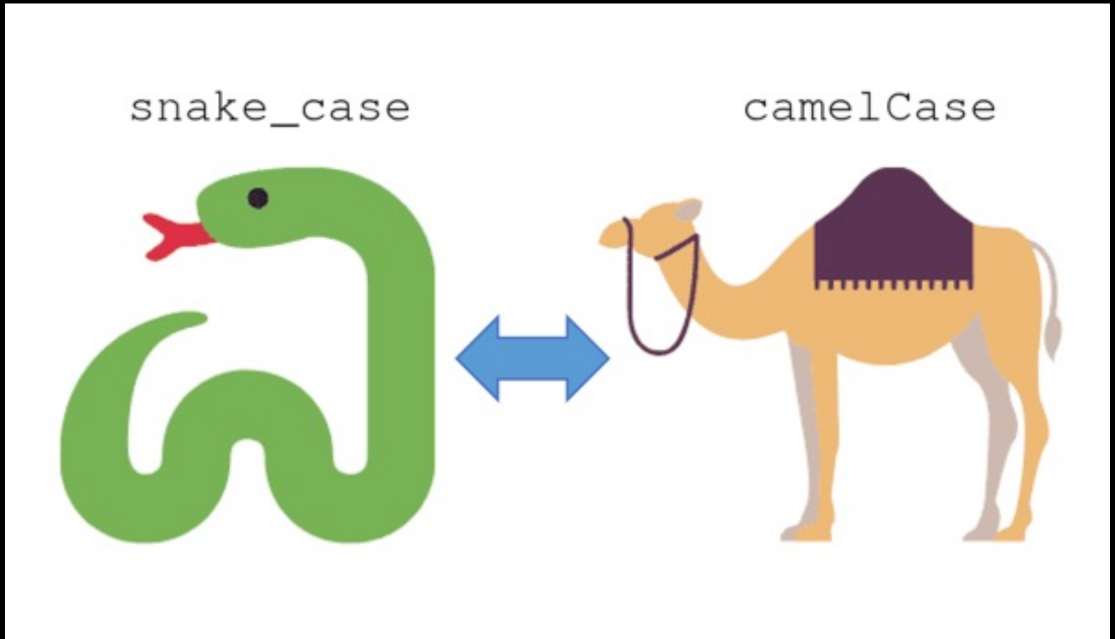
- What is it?
  - Basically, It’s a name given to an entity in the code.
- Why do we need them?
  - The same reasons that as a human we do have names.

Source: https://www.allaboutcircuits.com/technical-articles/introduction-to-dram-dynamic-random-access-memory/

Some Rules for Identifiers

- Letters in lowercase **(a to z)** or uppercase **(A to Z)** or digits **(0 to 9)** or an underscore _ are allowed:
  - Examples: var_1 and print_results.
- An identifier cannot start with a digit:
  - Example: 1test is invalid.
- Specific Language-Specific Keywords are not allowed:
  - Example: Global, if, for.
  - Full list: https://www.w3schools.com/python/python_ref_keywords.asp
- Python is a case-sensitive language → Name ≠ name
- Use a name that makes sense
  - Example: instead of v = something use variable = something

Snake Casing



Source: https://www.mathworks.com/matlabcentral/fileexchange/101118-convert-naming-convention/?s_tid=LandingPageTabfx

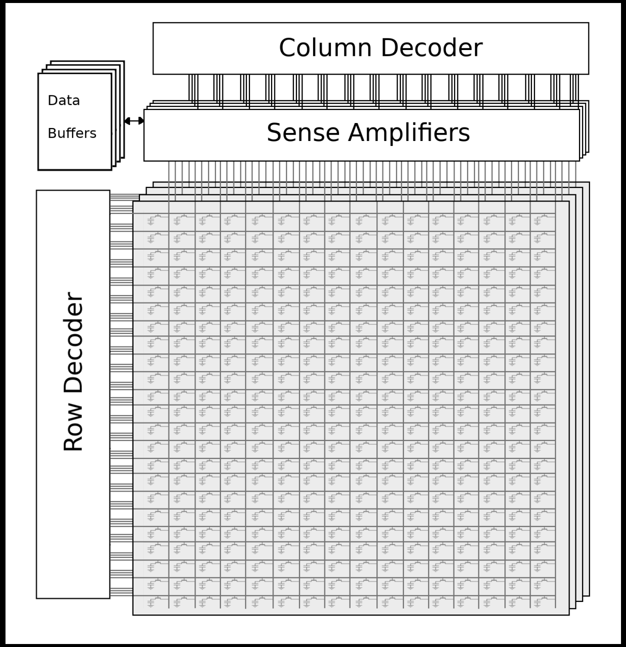
- Snake Casing is mostly used for scripting languages (e.g., Python, TypeScript)`
- All letters are written in lower-case
- Words are separated by an underscore
- Examples:
  - Snake Case
    - this_is_snake_case
  - Camel case (Usually not used for Python)
    - thisIsSnakeCase
- What happens if I don’t use Snake Casing?
  - Almost nothing! But you should follow it to increase your code readability
- For more info: Python Style Guide:
  - https://peps.python.org/pep-0008/

VARIABLES

A CHILD OF IDENTIFIERS

Variable

- Is a type of identifiers
- Helps us access values in memory
  - Variable Assignment Examples:
    - `age=50`
    - `name=‘Max’`
- Can we change values assigned to a variable?
  - If the variable was not defined as a constant, Yes.
    - e.g., changing age value from 50 to 60 → `age=60`



Constant Variable:

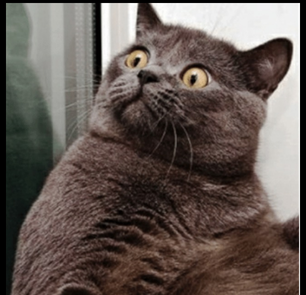
- A type of variable that cannot be changed after initialization
  - e.g., `PI=3.14`
- Note***: Constants are defined using capital letters
  - e.g., `THIS_IS_A_CONSTANT_VARIABLE='test'`

STATEMENTS

AS SIMPLE AS BEFORE

Statements

- What is it?
  - Usually a single(or maybe multiple) line(s) of code instruction that perform(s) a specific task.
    - Example:
      - `Print statement:` `print(”This is a statement!")`
      - `Assignment statement:` `age=50`
  - *The definition from wikipedia.com:*
    - *“In computer programming, a statement is a syntactic unit of an imperative programming language that expresses some action to be carried out. A program written in such a language is formed by a sequence of one or more statements. A statement may have internal components (e.g., expressions)”.*



Source: https://dailybayonet.com/best-cat-meme-2020/

Statements in Python

- In python, end of a statement is indicated by a new line.
- Tab and Indentation matter in Python.

*More on this when we write more complex codes.

- What if I wanted to write a single statement in multiple lines?
  - You have two options:
    1. continuation character (\)

       ```
       sum = 1 + 2 + 3 + \
       4 + 5 + 6 + 7
       ```

    2. Using parentheses ( ), brackets [ ], and braces { }

       ```
       sum = (1 + 2 + 3 +
       4 + 5 + 6 +7)
       ```

LET’S PRACTICE