UD02. Functional parts of a computer.

Part 2

Desarrollo de Aplicaciones Web
1er Curso
Curso 2020-2021

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Recordatorio

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CENTRE ESPECÍFIC
D´EDUCACIÓ A DISTÀNCIA DE
LA COMUNITAT VALENCIANA

Esta presentación no sustituye los apuntes disponibles en el aula virtual.

Las apuntes oficiales son los que tenéis en el aula virtual

Contents

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1. Instruction Cycle. Exercise 2

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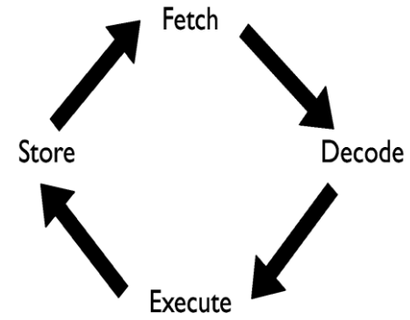
Code	Instrucction	Description
ENT M(m)	000mmmmm	Read data from keyboard to memory.
SAL M(m)	001mmmmm	Show data on screen from memory.
CAR R0, M(m)	010mmmmm	Store content of a memory address in register R0.
ALM M(m), R0	011mmmmm	Store content of R0 in a memory address.
MOV Rx, Ry	1000xxyy	Copy content of RY to RX **(X, Y are register numbers).**
SUM Rx, Ry	1001xxyy	Add RX+RY and it is stored in RX.
RES Rx, Ry	1010xxyy	Subtract RX-RY and it is stored in RX.
MUL Rx, Ry	1011xxyy	Multiply RX * RY and it is stored in RX.
DIV Rx,Ry	1100xxyy	Divide RX / RY and it is stored in RX.

1. Instruction 1 →



MEMORY UNIT

Address	Content

Data bus

Address bus

CENTRAL PROCESS UNIT

REGISTERS

PC:

PC:

RI:

ALU

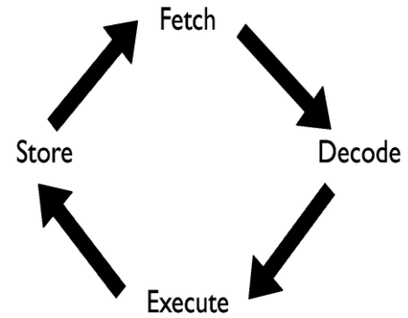
AC

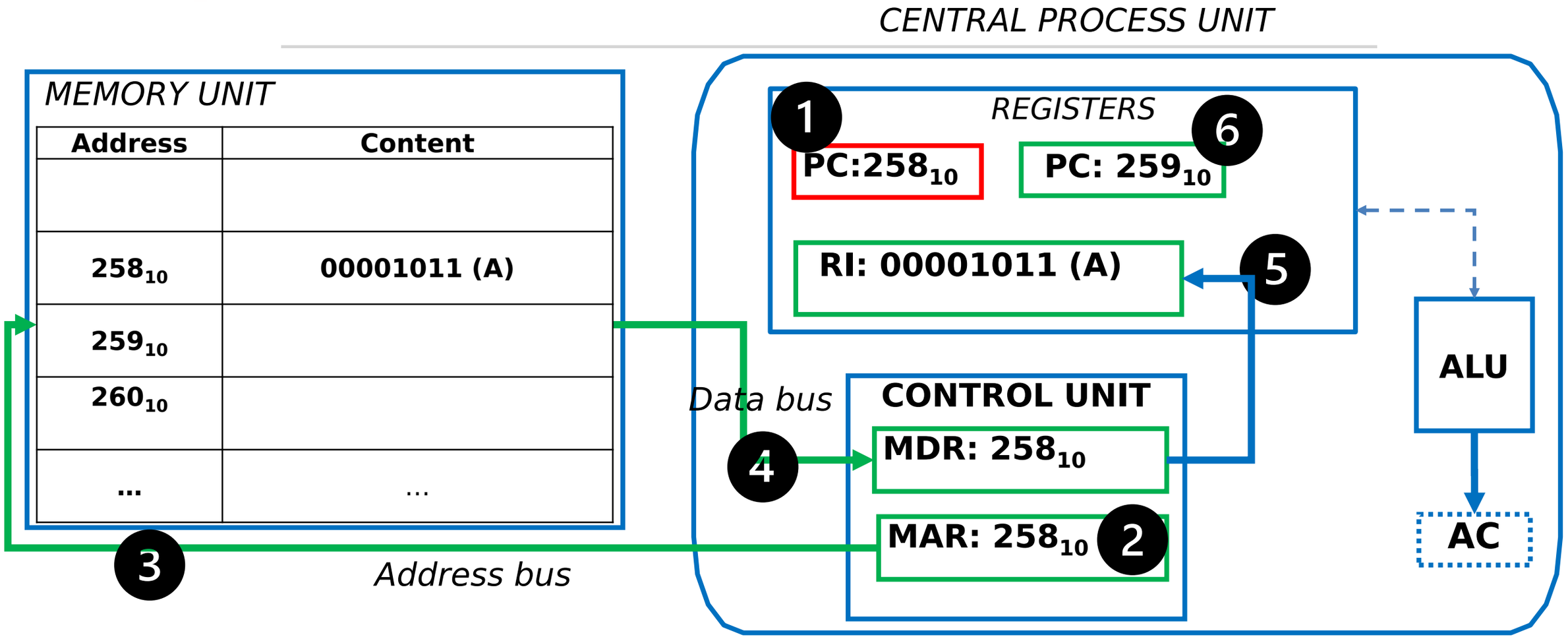
CONTROL UNIT

MDR:

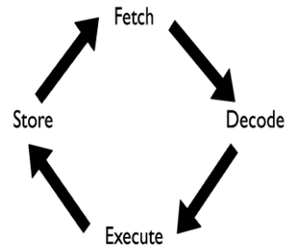
MAR:

1. Common steps for each instruction → FETCH



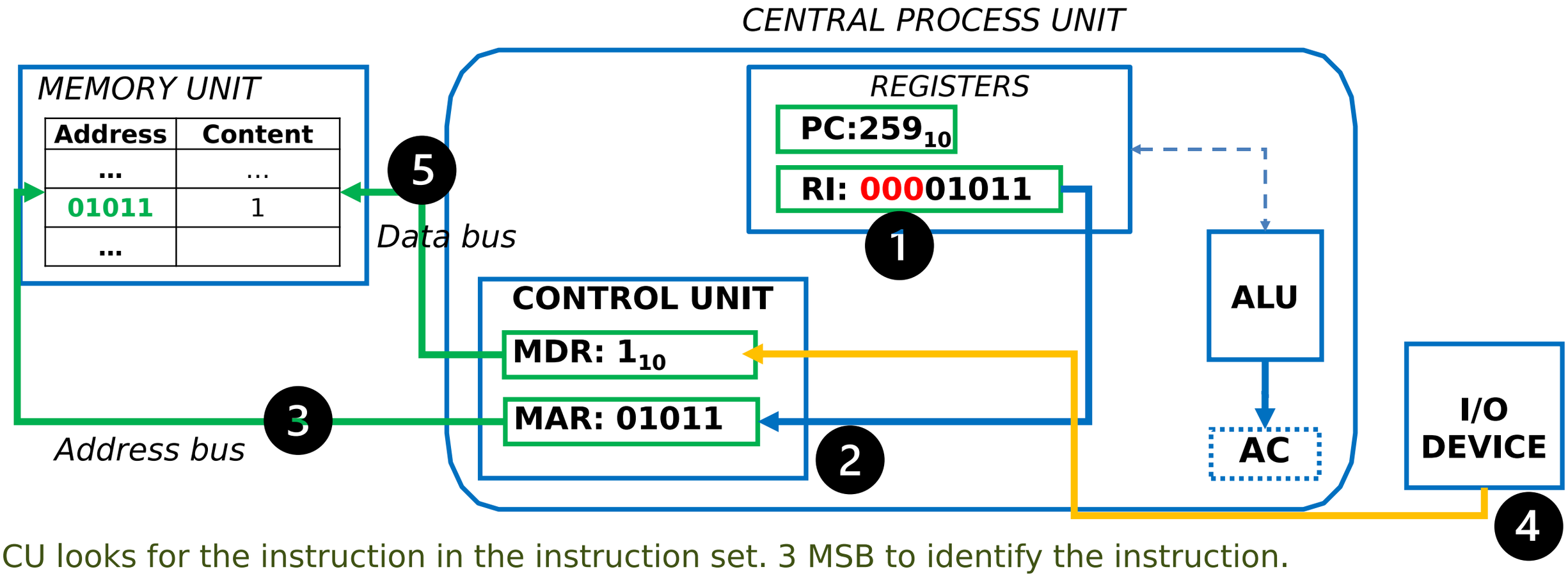


1. CU looks for the instruction in the memory address pointed by the PC
2. CU stores in the MAR the content of PC
3. CU sends signals to the address bus to point to the address stored in the MAR
4. The content stored in memory address accessed is stored in the MDR
5. The content of MDR is sent and stored in the RI
6. The CU updates the PC (increases in 1)
7. The CU can now decode de instruction → Next phase: DECODE



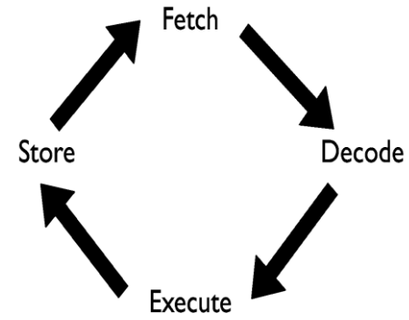
1. Instruction 1 → 00001011 (A)

00001011 (A) ENT M(m) 000**01011** Read data (A=1) **from** keyboard **to memory**.



1. CU looks for the instruction in the instruction set. 3 MSB to identify the instruction.
2. The others 5 bits are used to point to a memory address, therefore this address is stored in the MAR
3. CU sends signals to the address bus to point to the address stored in the MAR.
4. The value stored in A (A=1), sent by the keyboard (I/O device) is stored in the MDR.
5. CU sends signals to the data bus to send the data stored in the MDR to the memory address previously accessed through the address bus.

1. Instruction 2 →



MEMORY UNIT

Address	Content

Data bus

Address bus

CENTRAL PROCESS UNIT

REGISTERS

PC:

PC:

RI:

ALU

AC

CONTROL UNIT

MDR:

MAR:

1. Instruction 2 → 00001100(B)

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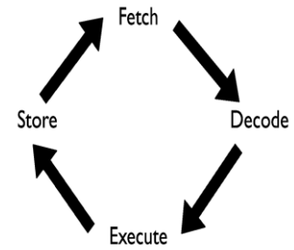
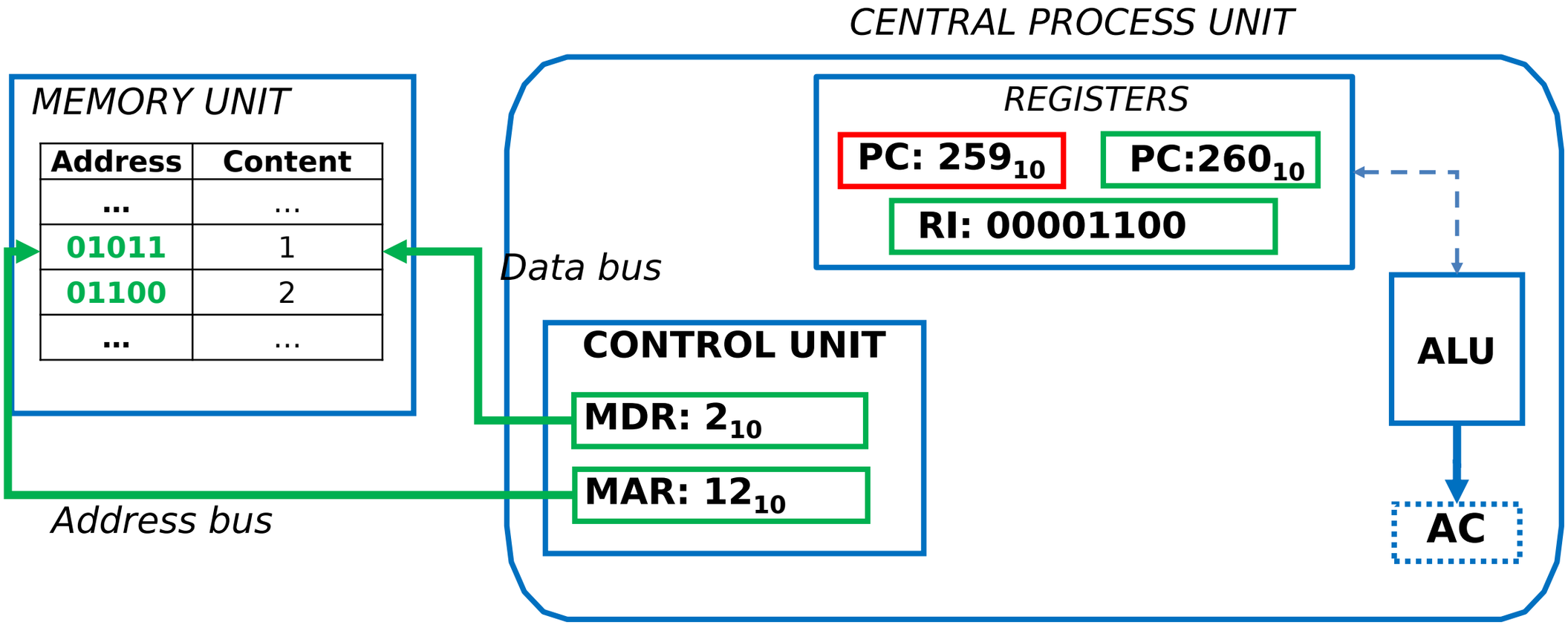
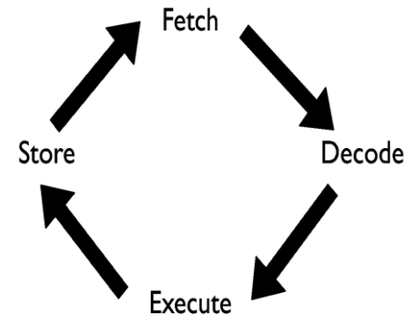


00001100 (B) ENT M(m) 000**01100** Read data (B=2) **from** keyboard **to memory**.



1. Instruction 5 →



MEMORY UNIT

Address	Content

Data bus

Address bus

CENTRAL PROCESS UNIT

REGISTERS

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PC:

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ALU

AC

CONTROL UNIT

MDR:

MAR:

1. Instruction 5 → 01001011

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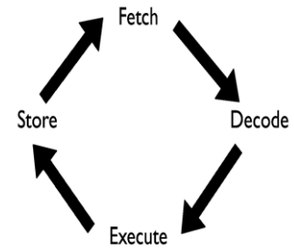
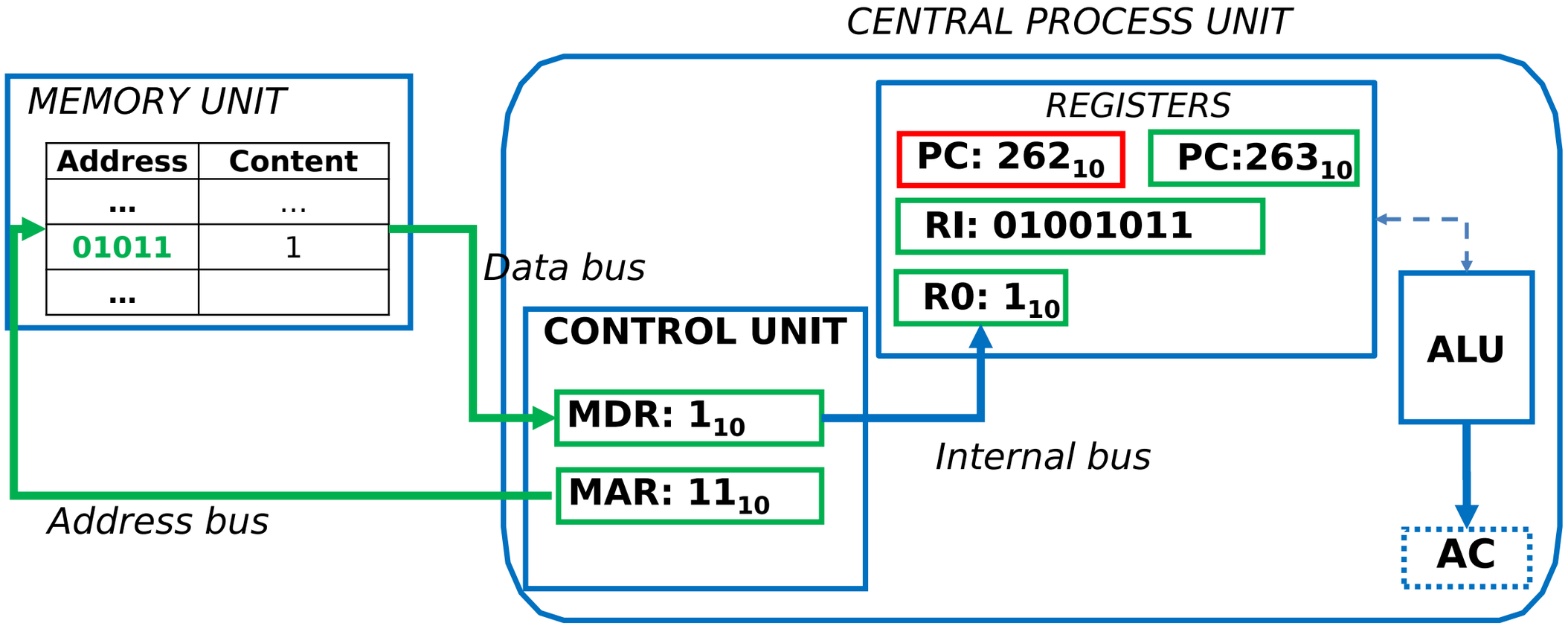
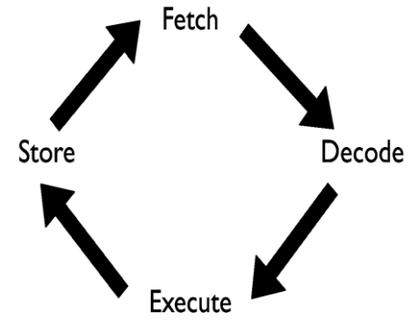


01001011 CAR R0, M(m) 010**01011** Store content of a **memory address 11** in register R0.



1. Instruction 6 →



MEMORY UNIT

Address	Content

Address bus

Data bus

CENTRAL PROCESS UNIT

REGISTERS

PC:

PC:

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ALU

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CONTROL UNIT

MDR:

MAR:

1. Instruction 6 → 10000100

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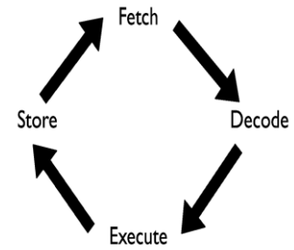
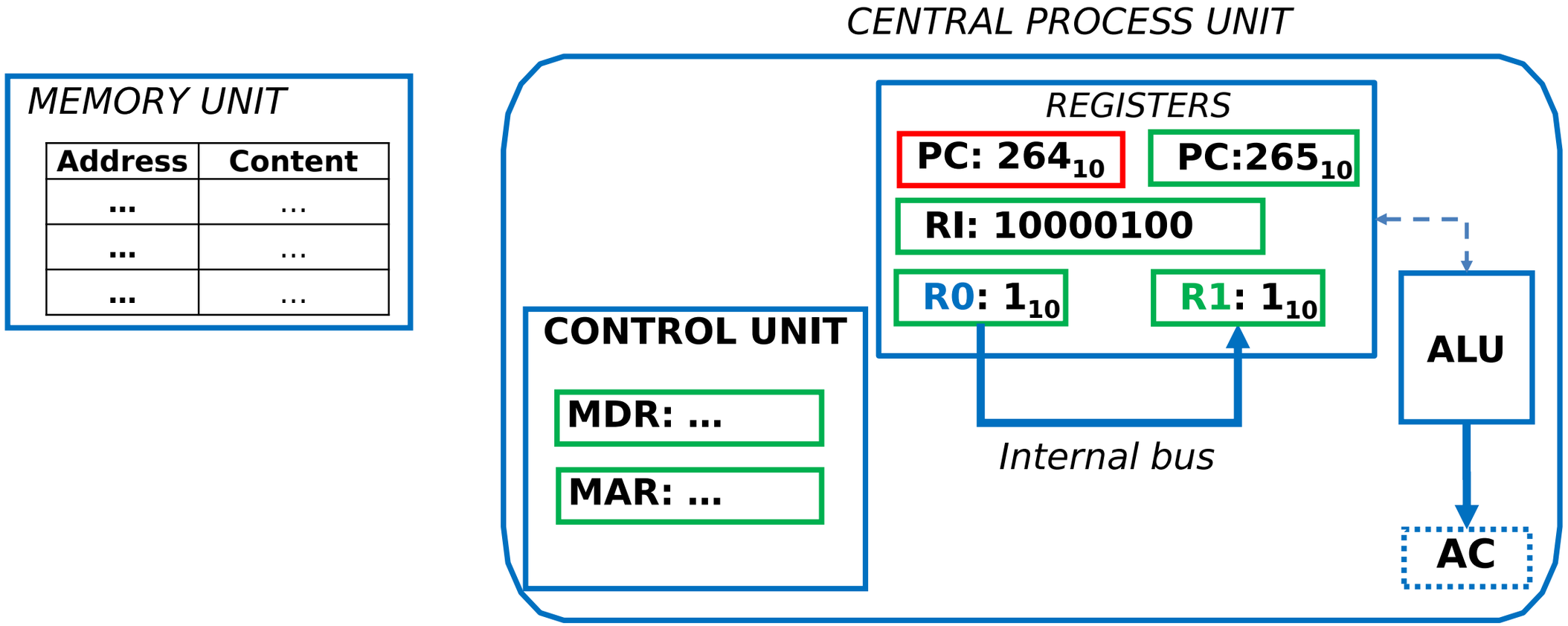
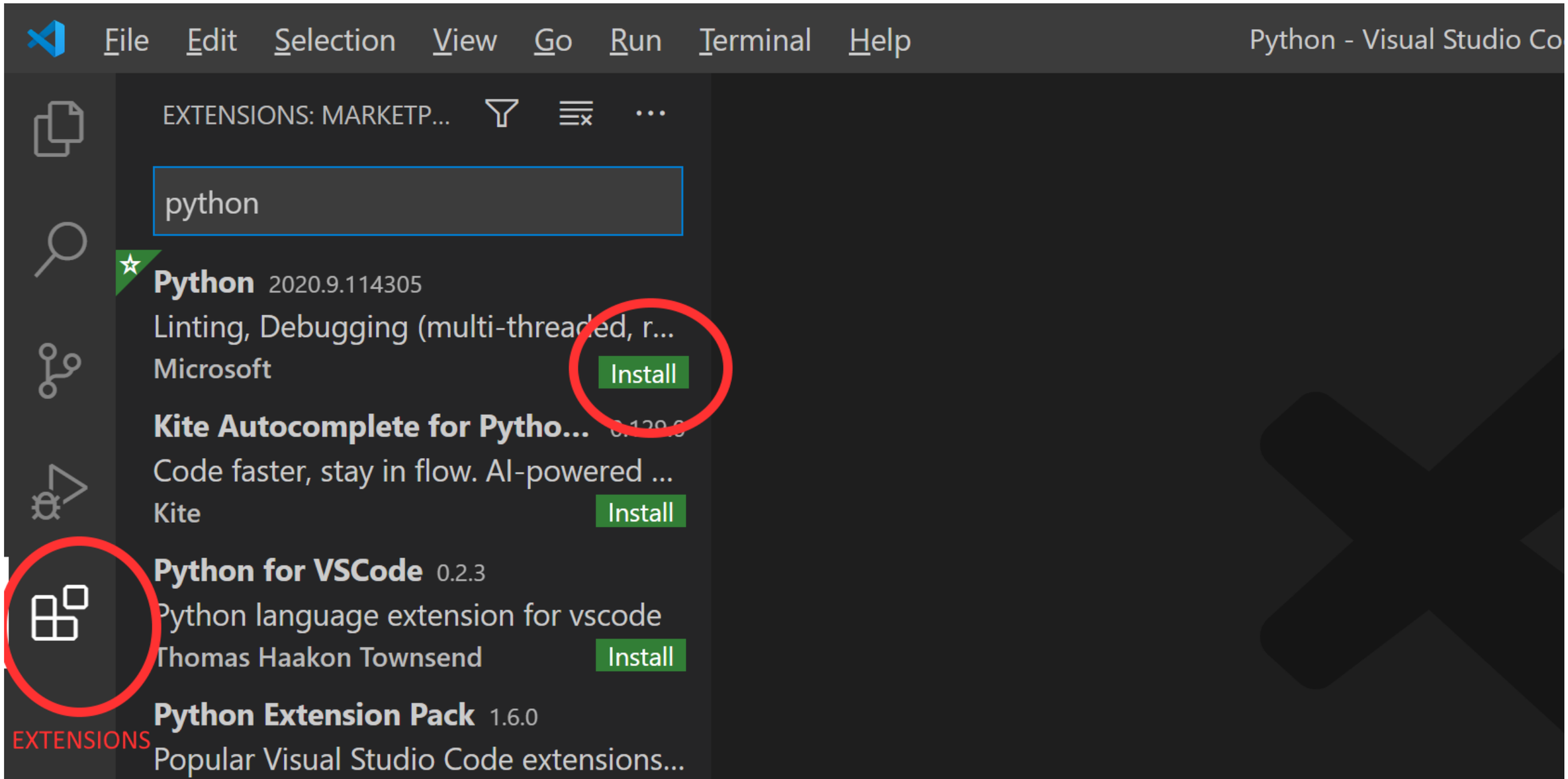


10000100 MOV Rx, Ry 1000**0100** Copy content of **R0** to **R1**



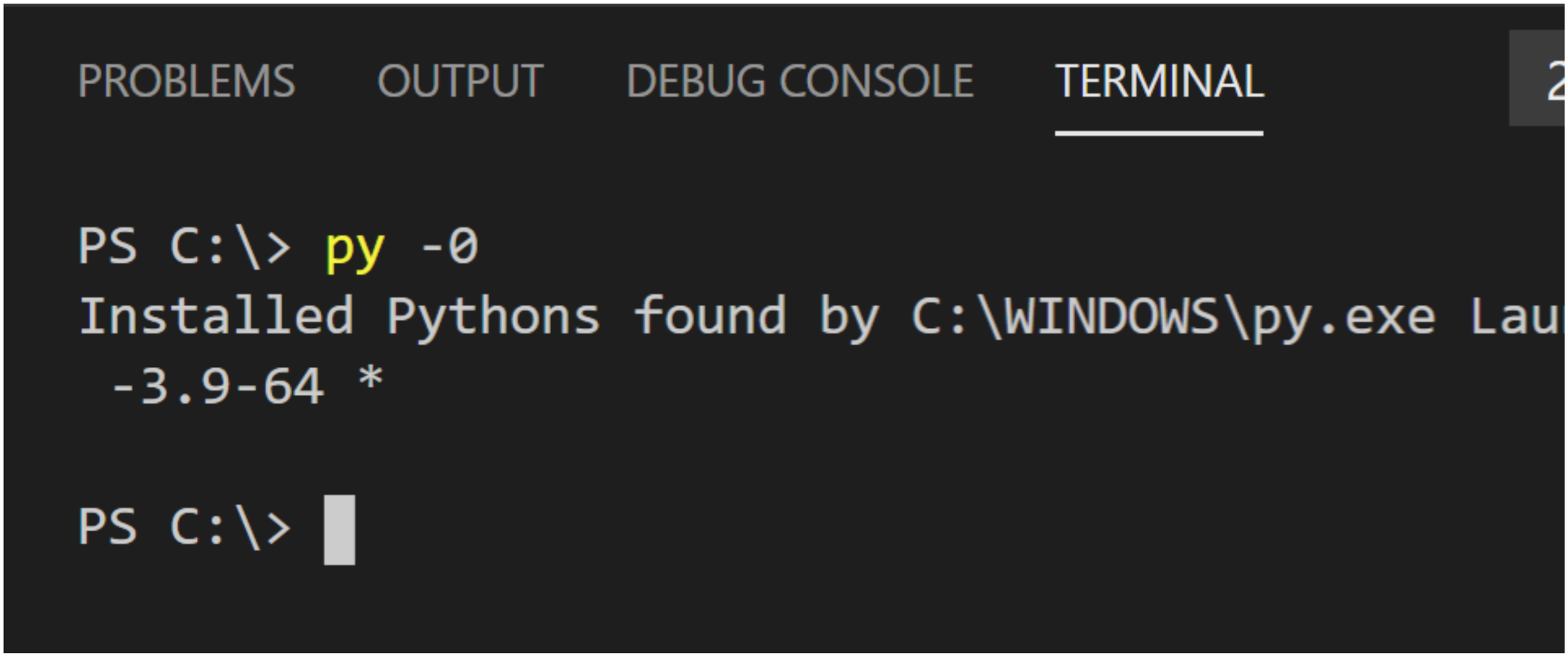
2. Configure VS Code

- First, install Visual Studio Code
- Second, open VS Code and install the Python Extension. Click on the extension's icon and search for “python”. Then click on “install” and finally restart VS Code.



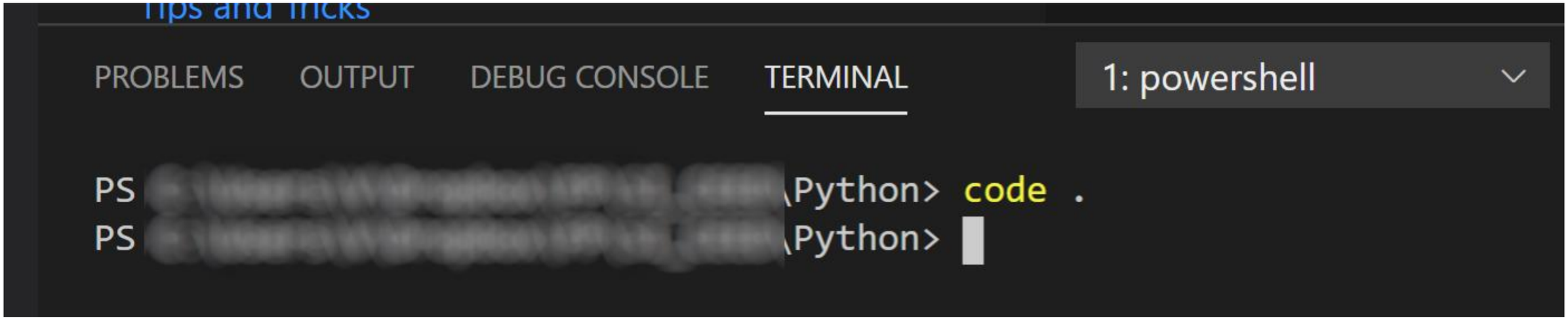
2. Configure VS Code

- Verify Python is working properly.
- Open a Terminal in VS Code, using the top menu: Terminal → New Terminal.
- Write “py -0”

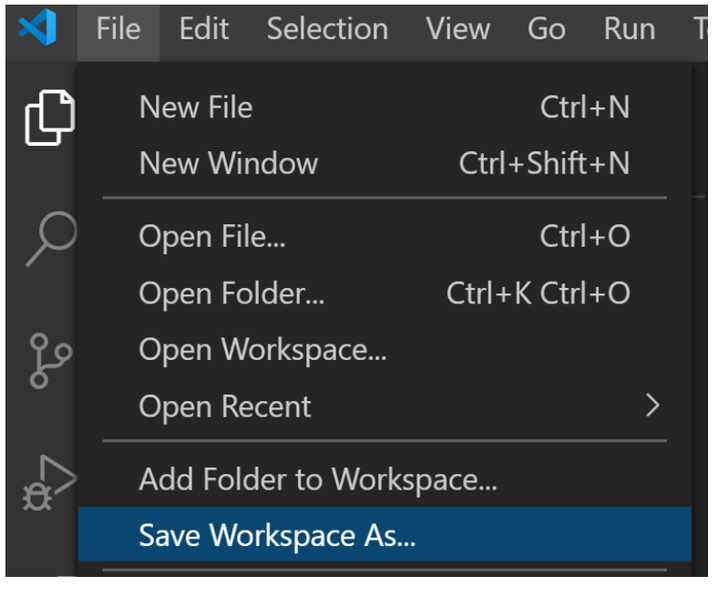


2. Configure VS Code

- Create a workspace for your exercises.
- Create a folder.
- Open a terminal, locate the folder created and type “code.”



- and save your workspace.



3. Introduction to Python

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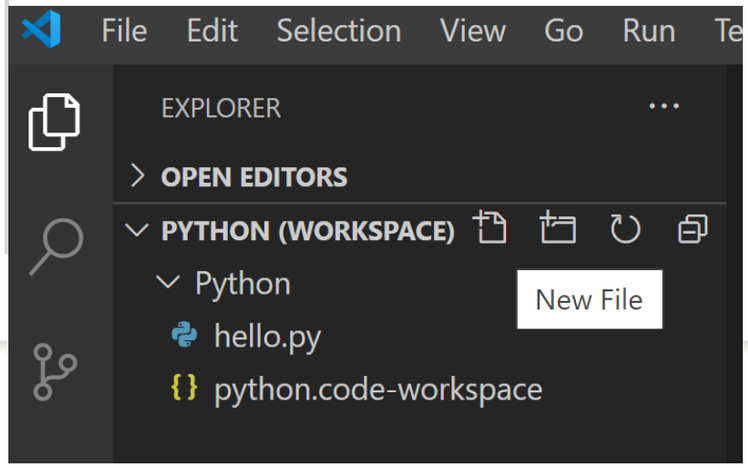
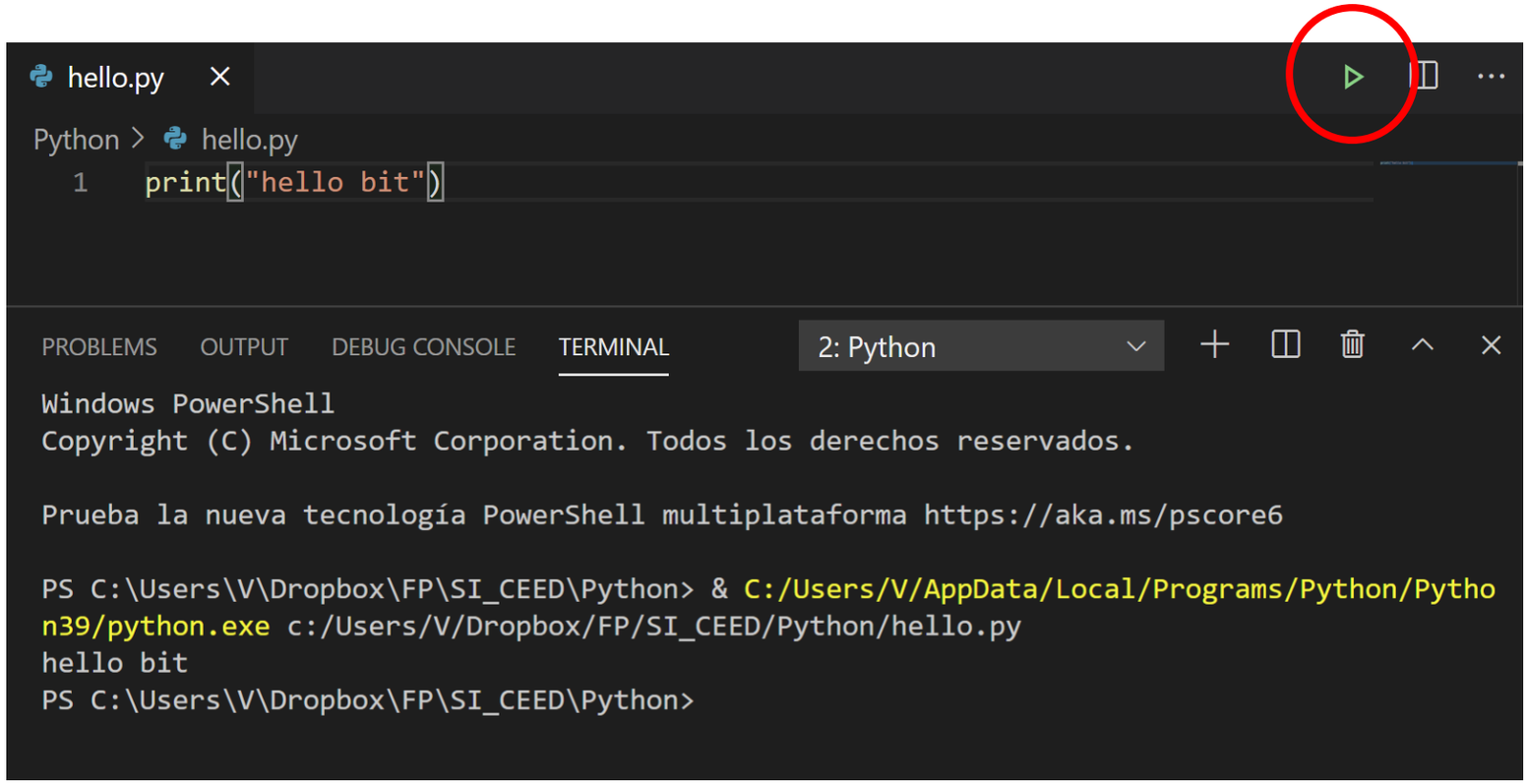
- Open VStudio Code and create the first file in Python.



- Type print("hello") and RUN!!!!



Questions? Share in the forum

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If we have an instruction set with 12 instructions, how many bits at least do we need in the *op*_code field of the instruction format to decode all the instructions?

Think of an instruction where you will use immediate and direct addressing modes.

In an instruction, do we have to decode all the bits? Justify your answer.

Questions?

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Questions?

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Next week?

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- ✓ Contents of Unit 3 will be opened during the afternoon on Friday 30th.
- ✓ Please complete the TC survey that it will be published in Unit 3. It helps to plan each TC.