University of M'sila, Algeria

Computer science department

1st year undergraduate (2025/2026)

Introduction to Artificial intelligence

Lab 2 (program that tries to make decisions like an expert)

Task 1:

```
problem = input("Describe your problem as a student: ").lower()

if "exam" in problem:
    print("Advice: revise early.")
elif "sleep" in problem:
    print("Advice: get more rest.")
else:
    print("Advice: stay organized.")
```

Run the program with different inputs.

Q. Is the program now reacting, or making a decision?
Q. Where does the advice come from?
Q. Does the program know *why* this advice is given?

Task 2:

Add at least three new rules, for example related to:

- deadlines
- stress
- motivation

Each rule must produce different advice.

Run multiple tests.

Q. Who decides what is "good advice"?
Q. Is the computer choosing the advice, or following instructions?

Task 3:

Modify the program to ask:

```
sleep_hours = int(input("Hours of sleep last night: "))
days_before_exam = int(input("Days before next exam: "))
```

Add rules that combine these values, for example:

- little sleep + exam soon
- enough sleep + exam far away

Test several situations.

Q. Is the program reasoning about the situation, or checking conditions?
Q. What happens if values are unexpected (very large, very small)?

Create a situation where:

- one rule suggests **resting**
- another rule suggests **studying more**

Example idea:

- exam tomorrow → study
- very tired → rest

Test such cases.

Q. Which rule is applied?
Q. Why does that rule win?
Q. Is this how humans resolve conflicts?

Add two more inputs, for example:

- part-time job (yes/no)
- class attendance (good/average/bad)

Then add **at least five new rules**.

Pause and observe.

Q. Is the system becoming smarter or harder to manage?
Q. Can you still predict its behavior easily?
Q. How many rules are you now maintaining?

Task 4:

Now you must **make the system fail**.

Try:

- contradictory inputs
- incomplete answers
- unrealistic values

Examples:

- 0 hours of sleep + “not tired”
- exam tomorrow + “no stress”

Record **at least three failures**.

For each failure:

1. Input
2. Output
3. Why the advice is wrong or unsafe

Q. Did the system notice that it was wrong?

Q. If this system gives bad advice, who is responsible?
Q. Can the system explain its own decisions?
Q. Can it improve by itself?

Q. Where is the “expertise” in this system?
Q. Is the system intelligent, or well programmed?
Q. Would adding more and more rules eventually make it intelligent?
Q. What kinds of situations will this system *always* struggle with?