

## Practical Work – Introduction to Artificial Intelligence

### PW n°2: Discovering, Organizing, and Analyzing Scientific Articles with Python

#### Exercise 1: Discovering and Organizing Articles

Given the following Python code, please write it, execute it, and answer the following questions.

```
# List of sample articles
articles = [
    {"title": "ChatGPT for Natural Language Tasks", "author": "OpenAI", "year": 2023},
    {"title": "Tesla Autopilot Safety Analysis", "author": "Tesla Inc.", "year": 2022},
    {"title": "Smart Grid Management using AI", "author": "A. Smith", "year": 2023},
    {"title": "Siri and Alexa Performance Study", "author": "Apple & Amazon", "year": 2021},
    {"title": "Google Translate Improvements", "author": "Google", "year": 2020}
]
# Display all articles
for art in articles:
    print("Title:", art["title"])
    print("Author:", art["author"])
    print("Year:", art["year"])
    print("-"*30)
```

#### Questions :

1. What does the for loop do in this code?
2. How can you display only the titles of the articles?
3. How can you add a new piece of information, e.g., the main keyword for each article?
4. Why is it useful to structure articles as dictionaries?
5. What would happen if two articles have the same title?
6. How can you sort the articles by publication year in this code?

#### Exercise 2: Keyword Search

Given the following Python code, please write it, execute it, and answer the following questions. ((Note: **articles** is defined in Exercise 1)

```
keyword = "AI"
results = [art for art in articles if keyword in art["title"]]
print("Articles found with", keyword, ":")
for r in results:
    print(r["title"])
```

#### Questions :

1. Explain the line `results = [art for art in articles if keyword in art["title"]]`
2. What does `if keyword in art["title"]` mean, and why is it useful?
3. How can you modify the code to search for multiple keywords at once?
4. What happens if no article contains the keyword?
5. How can you also display the author for the found articles?
6. Why is it important to filter articles before reading them fully?

### Exercise 3: Simple Article Summary

Given the following Python code, please write it, execute it, and answer the following questions

```
article_text = """
ChatGPT is a conversational AI that can answer questions,
write texts, and summarize articles.
It is widely used in education and research.
"""
summary = " ChatGPT is an AI that answers questions, writes
and summarizes texts."
print("Summary:", summary)
```

#### Questions

1. What is the difference between `article_text` and `summary` in this code?
2. How could you generate an automatic summary in Python?
3. Why is it important to summarize articles before using them?
4. What information could be added to make the summary more complete?
5. How can you summarize multiple articles at once in a list?
6. What would happen if the original text is very long?

### Exercise 4: Simple Improvement

Given the following Python code: (Note: `articles` is defined in Exercise 1)

```
keywords = ["AI", "Smart Grid", "Translate"]

for kw in keywords:
    count = sum(1 for art in articles if kw in art["title"])
    print(f"Number of articles containing '{kw}':", count)
```

#### Questions:

1. What does `sum(1 for art in articles if kw in art["title"])` do?
2. How can you add an additional keyword "Autopilot" for analysis?
3. Why is counting keywords helpful in a literature review?
4. How can you display the list of articles for each keyword?
5. How can you sort the keywords by the number of articles in descending order?
6. What happens if an article contains multiple keywords at once?