



## DIGITAL TECHNOLOGY

Academic Year 2021-22

Prof. Barbara PERNICI

**Exam 23/6/2022 – Question 1 [11 points]**

Total time 1.30 h

### Exam A

Last name

First name

Matricola/Person code

Signature


*Please remember that:*

- *The exam is closed books.*
- *The use of cellular phones or any other electronic device during the exam is forbidden.*

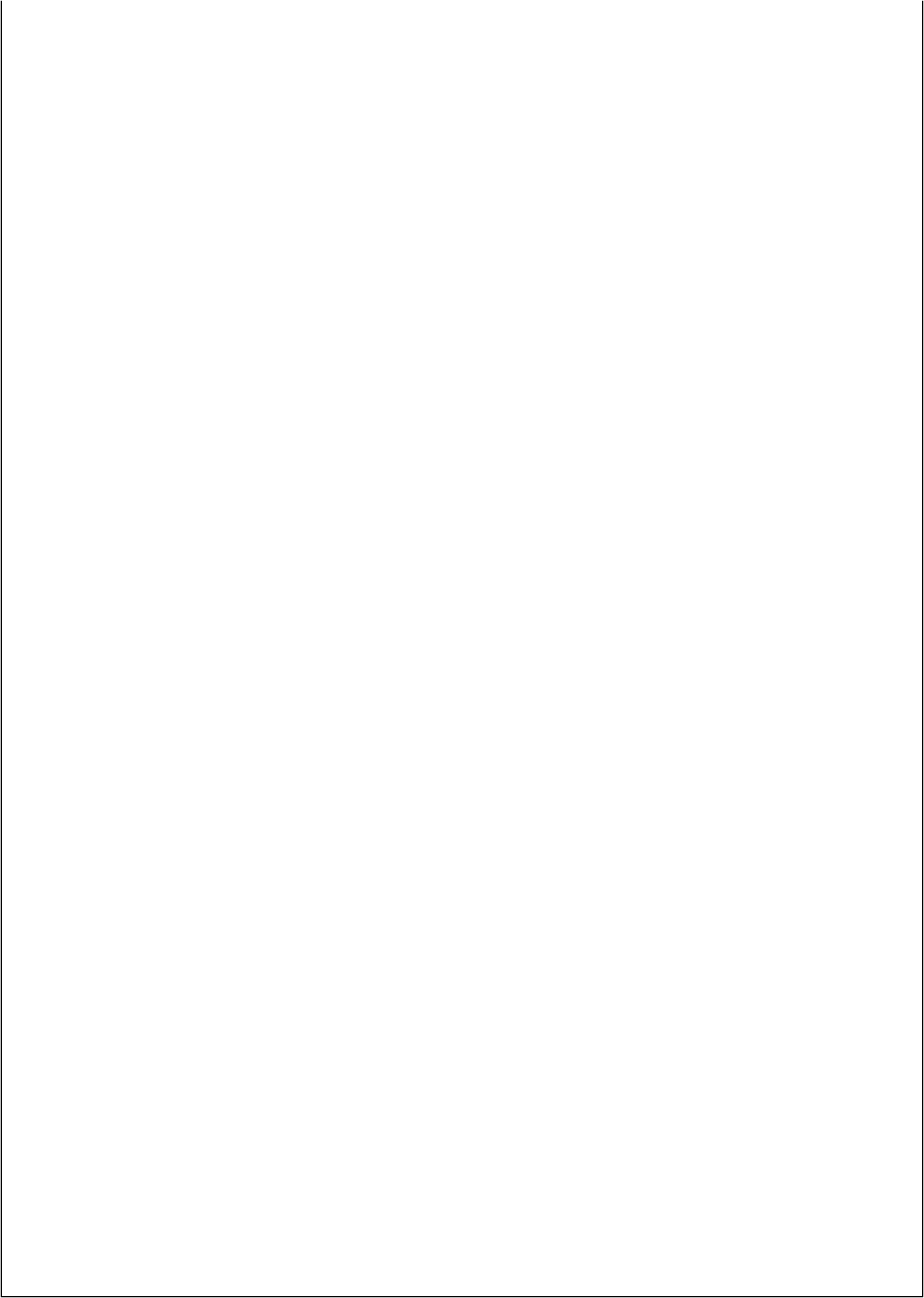
*It is necessary to answer at least partially all the questions for a positive evaluation.*

*Given answers should be explained, lists of bullet items are not sufficient to answer a question.*

#### Question 1 [11 points]

Explain the main steps needed to manage risks in a project according with traditional project management methodology and give at least one example of tools that could be used in each step.

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**Exam 23/6/2022– Question 2 [11 points]**

### Exam A

Last name

First name

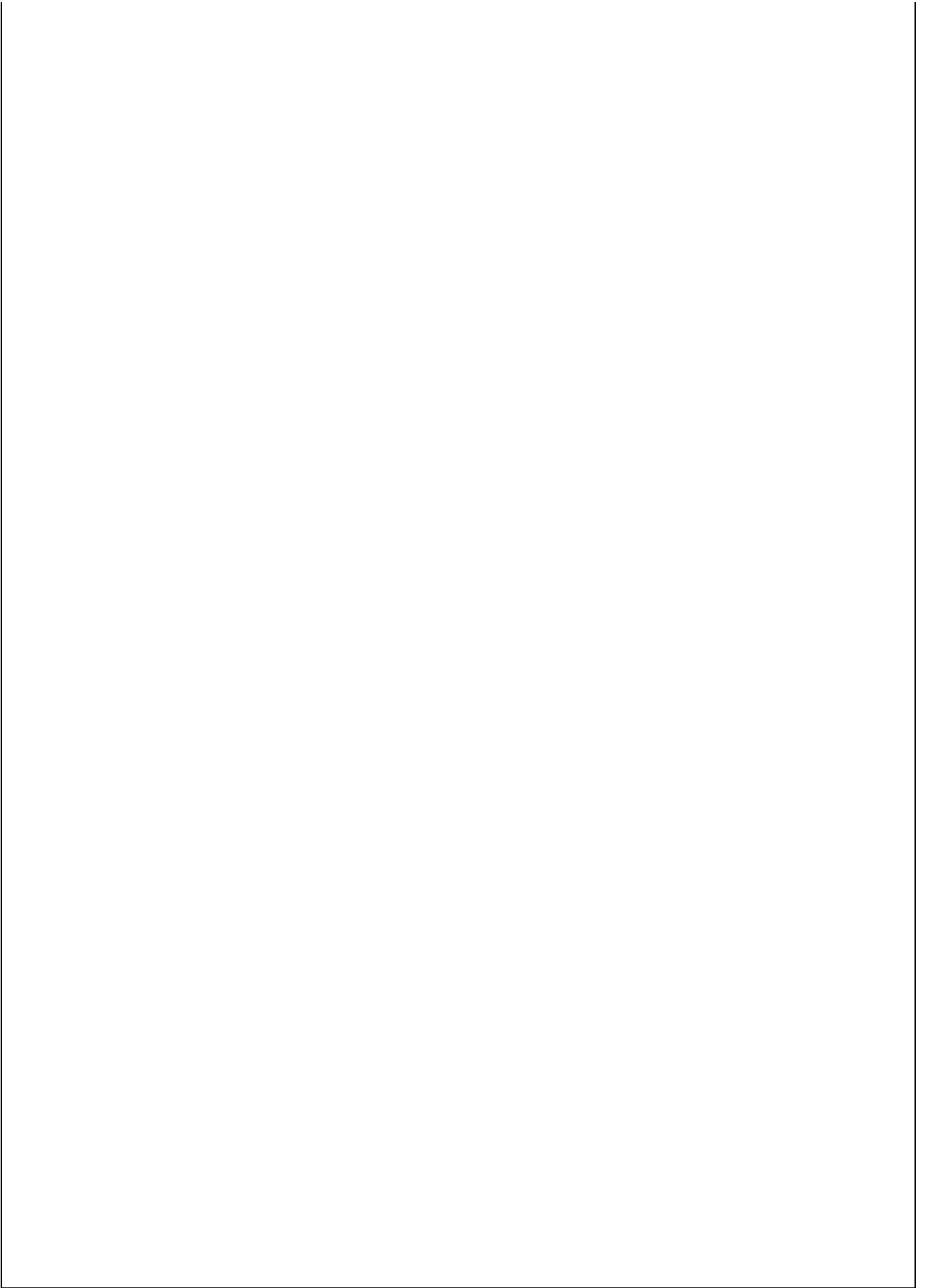
Matricola/Person code

Signature


#### Question 2 [11 points]

Discuss threats and attacks in an IT system and provide an overview of secure user management and associated technologies.

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## DIGITAL TECHNOLOGY

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### Exam 23/6/2022– Question 3 – Python [11 points]

## Exam A

Last name

First name

Matricola/Person code

Signature


Consider the following fragment of Python code:

```
import pandas as pd
```

```
def my_selection(a, b):
```

```
    if a > b:
```

```
        return a
```

```
    elif a == b:
```

```
        if a % 2 == 0:
```

```
            return 20
```

```
        else:
```

```
            return 13
```

```
    else:
```

```
        return b
```

```
table = {'A': [1, 2, 12], 'B': [4, 5, 6], 'C': [7, 8, 9]}
```

```
df = pd.DataFrame(table)
```

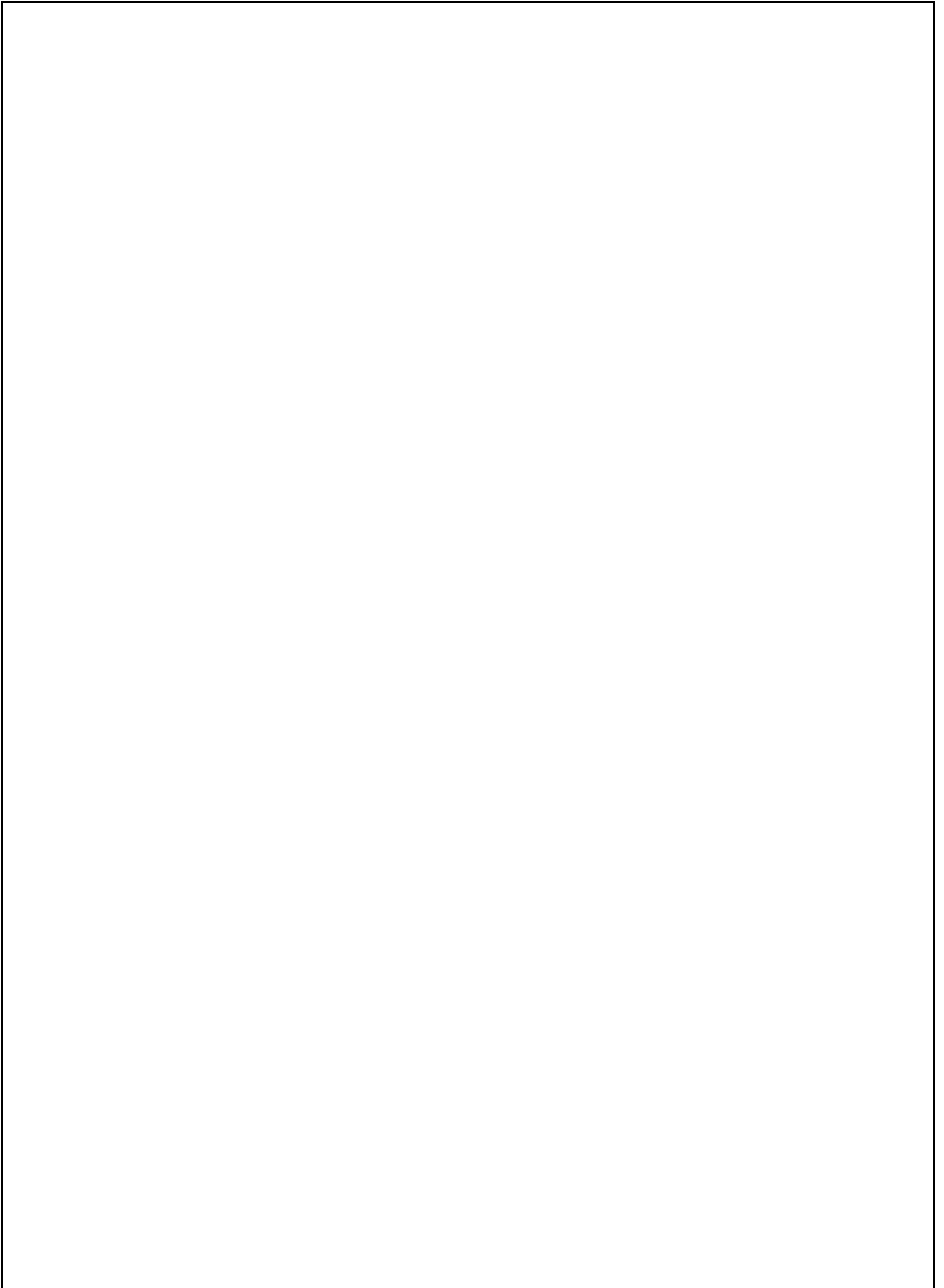
```
tmp = [max(df[c]) for c in df.columns]
```

```
array = list(df['A'] + df['B'] + df['C'])
```

```
for i in range(len(tmp)):
```

```
    print(my_selection(b=array[i], a=tmp[i]))
```

1. Provide a qualitative description step by step, in simple terms, of the program workflow.
2. Replace the built-in min function with a custom function that computes the minimum of a list of integer numbers.
3. Which are the differences between a set and a list data type?





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### Exam 23/6/2022 – Question 1 [11 points]

Total time 1.30 h

## Exam B

Last name

First name

Matricola/Person code

Signature


*Please remember that:*

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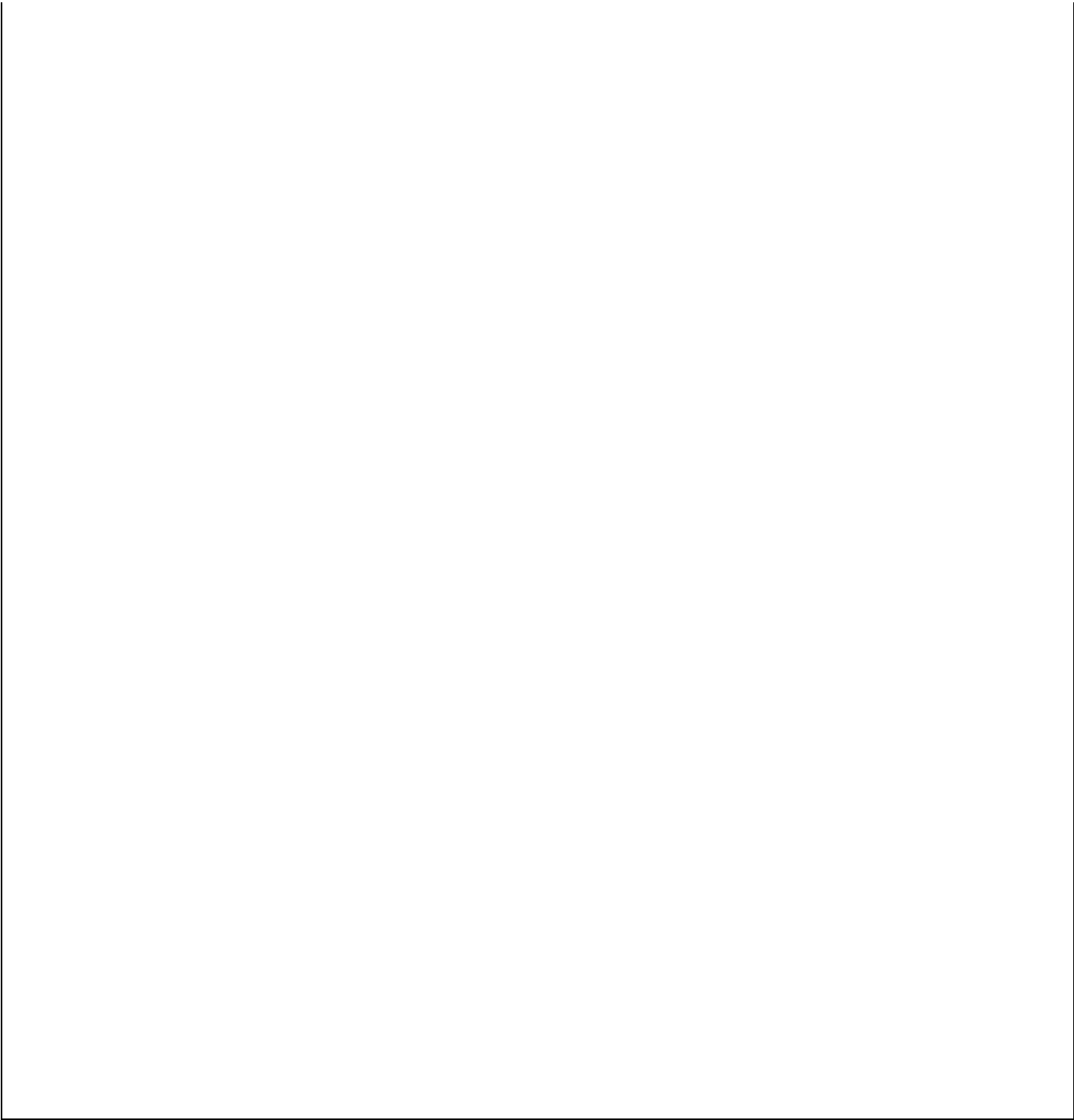
*It is necessary to answer at least partially all the questions for a positive evaluation.*

*Given answers should be explained, lists of bullet items are not sufficient to answer a question.*

### Question 1 [11 points]

Explain the main benefits related to Agile methodologies focusing on how uncertainty is managed compared with the traditional project management methodology.

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**Exam 23/6/2022– Question 2 [11 points]**

### Exam B

Last name

First name

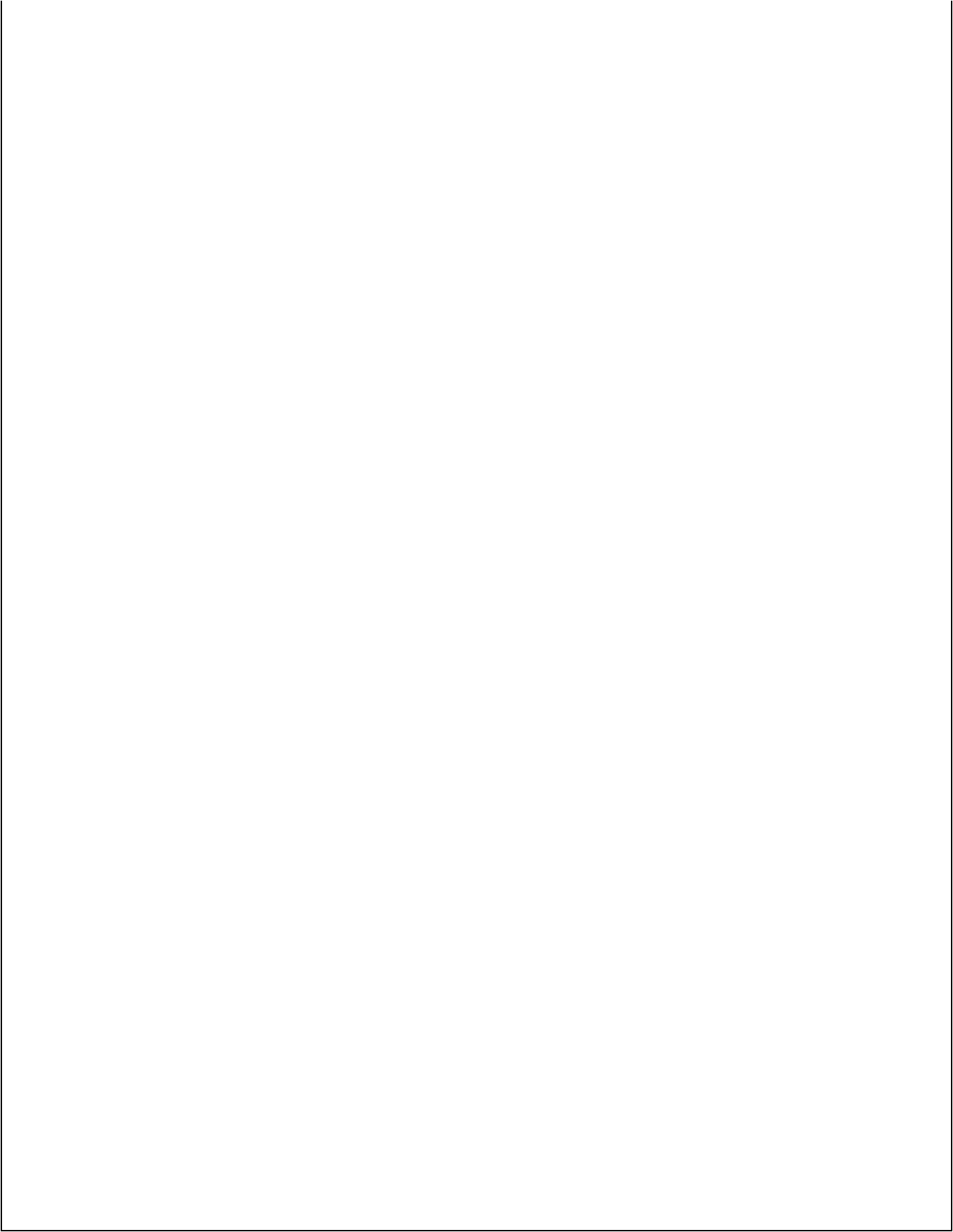
Matricola/Person code

Signature


#### Question 2 [11 points]

Define data quality dimensions and illustrate the data quality improvement process and profiling techniques.

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## DIGITAL TECHNOLOGY

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### Exam 23/6/2022– Question 3 – Python [11 points]

#### Exam B

Last name

First name

Matricola/Person code

Signature


Consider the following fragment of Python code:

```
import pandas as pd
```

```
table = {'A': [3, 4, 12], 'B': [1, 2, 3], 'C': [7, 7, 9]}
```

```
df = pd.DataFrame(table)
```

```
tmp = [min(df[c]) for c in df.columns]
```

```
array = list(df['C'] + df['B'] - df['A'])
```

```
def my_selection(a, b):
```

```
    if a < b:
```

```
        return a
```

```
    elif a == b:
```

```
        if a % 2 != 0:
```

```
            return 20
```

```
    else:
```

```
        return 13
```

```
    else:
```

```
        return b
```

```
for i in range(len(tmp)):
```

```
    print(my_selection(b=array[i], a=tmp[i]))
```

1. Provide a qualitative description step by step, in simple terms, of the program workflow.
2. Replace the built-in min function with a custom function that computes the minimum of a list of integer numbers.
3. Which are the differences between a tuple and a list data type?

