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	
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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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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 fuction 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	

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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	
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Question 2 [11 points]

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

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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 fuction that computes the minimum of a list of integer numbers.
3. Which are the differences between a tuple and a list data type?