Coding Standard Guidelines

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Guided Exercise 1 Coding Standards

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Structured Directory Organization

```
G88.2024.TXX.GE1/                          # Root directory of your project
|── uc3m_money/                            # Python package
│   |── __init__.py                        # Package initialization file
│   |── transaction_manager.py             # File for managing transactions
│   |── transaction_request.py             # File for handling requests
│   |── transaction_management_exception.py # Custom exceptions
|── docs/                                  # Documentation
│   └── CodingStandard.pdf                 # Our coding standard document
│   └── Screenshots.pdf                    # File for all of the screenshots of Pylint
|──  test.json                             # Test file for valid IBAN
|──  invalid_test.json                     # Test file for invalid IBAN
|── main.py                                # Main program entry point
|── README.md                              # Project overview or documentation
|── .gitignore                             # Git ignore rules
```

Modified Rules

[BASIC]

➔ Attributes should follow camelCase.

Changed rule:

```
# Naming style matching correct attribute names.
# MODIFIEDRULE
# attr-naming-style=snake_cases
attr-naming-style=camelCase
```

Accepted: *totalNum*

Rejected: *totalnum*

➔ The minimum length for lines of functions/classes which require docstrings cannot be shorter than 5.

Changed rule:

```
# Minimum line length for functions/classes that require docstrings, shorter
# ones are exempt.
# MODIFIEDRULE
# docstring-min-length=-1
docstring-min-length=5
```

Accepted: *def add(a, b):*

"""Adds two numbers and returns the result."""

return a + b

Rejected: *def f():*

"""A function that does something."""

pass

➔ Good variable names that should always be accepted are i, j and k.

Changed rule:

```
# Good variable names which should always be accepted, separated by a comma.
# MODIFIEDRULE
# good-names=i,
#           j,
#           k,
#           ex,
#           Run,
#           _
good-names=i,
          j,
          k
```

Accepted: *for i in range(10)*

print(i)

Rejected: *for _ in range(10)*

print(“loop”)

[DESIGN]

➔ Max Branches for a function/method body should be less than or equal to 10.

Changed rule:

```
# Maximum number of branch for function / method body.
# MODIFIEDRULE
# max-branches=12
max-branches=10
```

Accepted: *def is_positive(n):*

"""Returns True if the number is positive, otherwise False."""

if n > 0:

return True

return False

Rejected: *def analyze_number(n):*

"""Analyzes a number based on multiple conditions."""

if n < 0:

return "Negative"

elif n == 0:

return "Zero"

if n % 2 == 0:

print("Even")

else:

print("Odd")

if n % 3 == 0:

print("Divisible by 3")

if n % 5 == 0:

print("Divisible by 5")

if n % 7 == 0:

print("Divisible by 7")

for i in range(3):

```
        if i % 2 == 0:
            print(f"{i} is even")
        else:
            print(f"{i} is odd")
    if n > 100:
        print("Number is too large")
    return "Done"
```

➔ Max number of returns per function/method is less than or equal to 5 returns.

Changed rule:

```
# Maximum number of return / yield for function / method body.
# MODIFIEDRULE
# max-returns=6
max-returns=5
```

Accepted:
```
def easy_funct(a: int):
    """Prints num."""
    if a == 2:
        return True
    return False
```

Rejected:
```
def complex_function(n):
    """Evaluates num."""
    if n < 0: return "Negative"
    if n == 0: return "Zero"
    if 1 <= n <= 10: return "Small"
    if 11 <= n <= 50: return "Medium"
    if 51 <= n <= 100: return "Large"
    if n > 100: return "Extra Large"
```

➔ Methods should not exceed 60 lines of code excluding comments and blank lines.

Changed rule:

```
# Maximum number of statements in function / method body.
# MODIFIEDRULE
# max-statements=50
max-statements=60
```

Accepted:

```
def process_data(data):
    """Processes a list of numbers and returns a dictionary with total, count and
       average."""
    if not data:
       return {"error": "No data provided"}
    total = 0
    count = 0
    for num in data: # Iterate through data
       total += num
       count += 1
    average = total / count if count > 0 else 0
    return { "total": total, "count": count, "average": average }
```

Rejected:

```
def long_function():
    """Performs a complex operation on a dataset."""
    result = []
    # Loop through a large dataset
    for i in range(100):
        value = i * 2
        result.append(value)
    for i in range(100):
        value = i * 3
        result.append(value)
    for i in range(100):
       value = i * 4
       result.append(value)
    for i in range(100):
       value = i * 5
       result.append(value)
    for i in range(100):
       value = i * 6
       result.append(value)
```

total = sum(result) # Complex calculation done

count = len(result)

average = total / count if count > 0 else 0

return {"total": total, "count": count, "average": average}

[FORMAT]

➔ 2 spaces indentation should be used for all code; not tab.

Changed rule:

```
# String used as indentation unit. This is usually "    " (4 spaces) or "\t" (1
# tab).
# MODIFIEDRULE
# indent-string='    '
indent-string='  '
```

Accepted:

def hello():

if True:

print("Hello world!")

Rejected:

def hello():

if True:

print("Hello world!")

➔ Maximum number of characters on a single line is less than or equal to 150 characters.

Changed rule:

```
# Maximum number of characters on a single line.
# MODIFIEDRULE
# max-line-length=100
max-line-length=150
```

Accepted: *def calculate_total(price, tax_rate):*

*total = price + (price * tax_rate)*

return total

Rejected: *def calculate_total(price, tax_rate): return price + (price * tax_rate) + (price * 0.05) + (price * 0.1) + (price * 0.2) + (price * 0.3) + (price * 0.4) + (price * 0.5)*

[IMPORTS]

➔ “enchant” and “requests” should be treated as third-party libraries.

Changed rule:

```
# Force import order to recognize a module as part of a third party library.
# MODIFIEDRULE
# known-third-party=enchant
known-third-party=enchant, requests
```

Accepted: *import requests*

import enchant

Rejected: *import enchant*

~~*import requests*~~

[LOGGING]

➔ When formatting a logging module, {}-formatting or str.format() should be used.

Changed rule:

```
# The type of string formatting that logging methods do. `old` means using %
# formatting, `new` is for `{}` formatting.
# MODIFIEDRULE
# logging-format-style=old
logging-format-style=new
```

Accepted: *logging.info("User {} logged in at {}".format(username, timestamp))*

Rejected: *logging.info("User %s logged in at %s", username, timestamp)*

[MESSAGES CONTROL]

➔ “type-check” should be enabled to verify type-correctness within the code; “type-check” detects issues such as invalid assignments, using objects incorrectly, etc.

Changed rule:

```
# Enable the message, report, category or checker with the given id(s). You can
# either give multiple identifier separated by comma (,) or put this option
# multiple time (only on the command line, not in the configuration file where
# it should appear only once). See also the "--disable" option for examples.
# MODIFIEDRULE
# enable=
enable=typecheck
```

Accepted: *enable=typecheck,unused-import*

Rejected: *enable=*

enable=typecheck

enable=unused-import

[STRING]

➔ “ ” type quotes and ' ' type quotes should not be mixed together.

Changed rule:

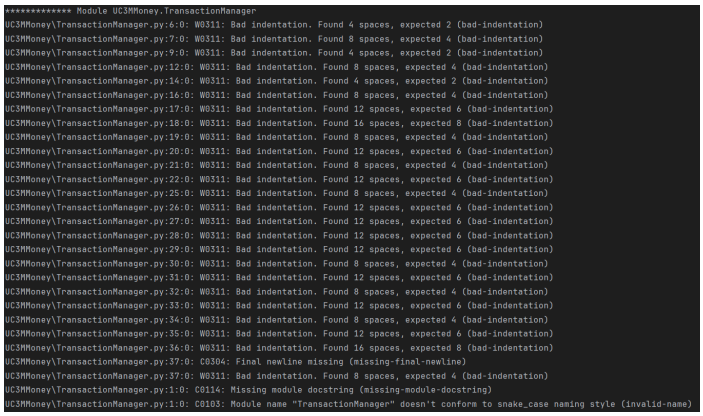
```
# This flag controls whether inconsistent-quotes generates a warning when the
# character used as a quote delimiter is used inconsistently within a module.
# MODIFIEDRULE
# check-quote-consistency=no
check-quote-consistency=yes
```

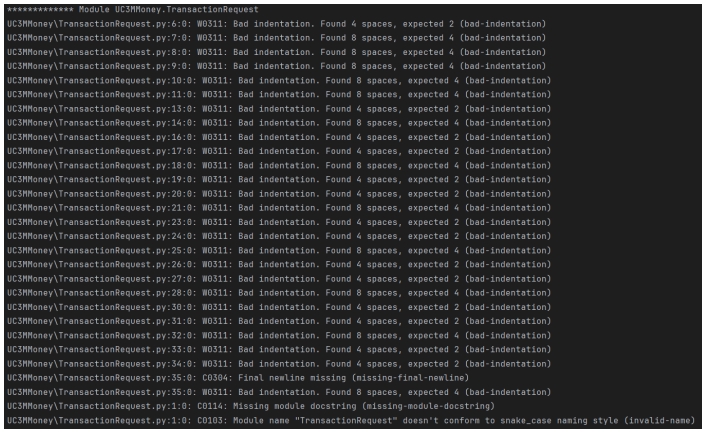
Accepted: *name = "Alice" greeting = "Hello, world!"*

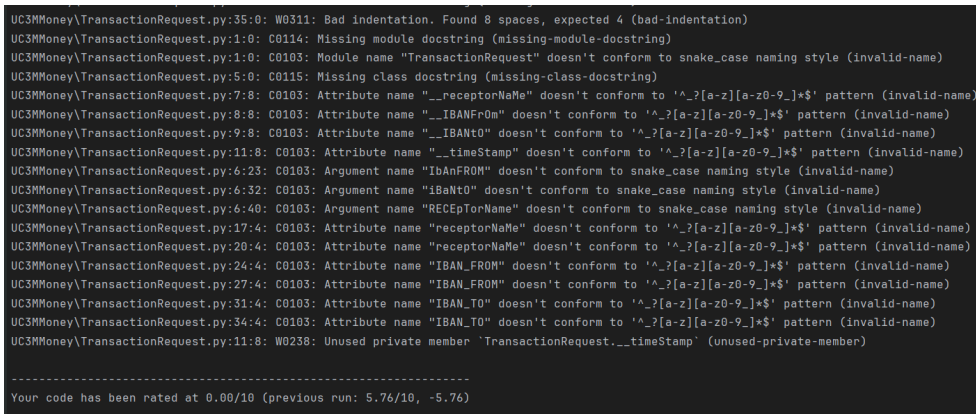
Rejected: *name = "Alice" greeting = 'Hello, world!'*

Screenshots for Pylint

★ Running Pylint after rules have been modified, without correcting the code.







Selected examples created with OpenAI (2024). *ChatGPT* (version 4o) [Large size language model]. 11https://chat.openai.com/chat. Specified in the Student Statement of Generative AI.

```
(.venv) PS C:\Users\Owner\PycharmProjects\G88.2024.TXX.GE1> pylint main.py
************* Module main
main.py:10:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:11:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:12:0: W0311: Bad indentation. Found 8 spaces, expected 4 (bad-indentation)
main.py:13:0: W0311: Bad indentation. Found 12 spaces, expected 6 (bad-indentation)
main.py:14:0: W0311: Bad indentation. Found 8 spaces, expected 4 (bad-indentation)
main.py:15:0: W0311: Bad indentation. Found 12 spaces, expected 6 (bad-indentation)
main.py:16:0: W0311: Bad indentation. Found 12 spaces, expected 6 (bad-indentation)
main.py:17:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:20:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:21:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:22:0: W0311: Bad indentation. Found 8 spaces, expected 4 (bad-indentation)
main.py:23:0: W0311: Bad indentation. Found 12 spaces, expected 6 (bad-indentation)
main.py:24:0: W0311: Bad indentation. Found 8 spaces, expected 4 (bad-indentation)
main.py:25:0: W0311: Bad indentation. Found 12 spaces, expected 6 (bad-indentation)
main.py:26:0: W0311: Bad indentation. Found 12 spaces, expected 6 (bad-indentation)
main.py:27:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:32:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:33:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:34:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:35:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:36:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:37:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:38:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:39:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:40:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:41:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
```

```
main.py:39:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:40:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:41:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:44:0: W0311: Bad indentation. Found 4 spaces, expected 2 (bad-indentation)
main.py:12:0: W1405: Quote delimiter ' is inconsistent with the rest of the file (inconsistent-quotes)
main.py:13:0: W1405: Quote delimiter ' is inconsistent with the rest of the file (inconsistent-quotes)
main.py:22:0: W1405: Quote delimiter ' is inconsistent with the rest of the file (inconsistent-quotes)
main.py:23:0: W1405: Quote delimiter ' is inconsistent with the rest of the file (inconsistent-quotes)
main.py:1:0: C0114: Missing module docstring (missing-module-docstring)
main.py:5:0: C0103: Constant name "letters" doesn't conform to UPPER_CASE naming style (invalid-name)
main.py:6:0: C0103: Constant name "shift" doesn't conform to UPPER_CASE naming style (invalid-name)
main.py:9:0: C0103: Function name "Encode" doesn't conform to snake_case naming style (invalid-name)
main.py:19:0: C0103: Function name "Decode" doesn't conform to snake_case naming style (invalid-name)
main.py:30:0: C0116: Missing function or method docstring (missing-function-docstring)
main.py:34:4: C0103: Variable name "strRes" doesn't conform to snake_case naming style (invalid-name)
main.py:34:13: C2801: Unnecessarily calls dunder method __str__. Use str built-in function. (unnecessary-dunder-call)
main.py:36:4: C0103: Variable name "EncodeRes" doesn't conform to snake_case naming style (invalid-name)
main.py:38:4: C0103: Variable name "DecodeRes" doesn't conform to snake_case naming style (invalid-name)
main.py:2:0: C0411: standard import "string" should be placed before first party import "UC3MMoney.TransactionManager"  (wrong-import-order)

-------------------------------------------------------------------
Your code has been rated at 0.00/10 (previous run: 0.00/10, +0.00)
```

★ Running Pylint after code has been corrected with the new implemented rules.

```
(.venv) PS C:\Users\Owner\PycharmProjects\G88.2024.TXX.GE1> pylint main.py

-------------------------------------------------------------------
Your code has been rated at 10.00/10 (previous run: 10.00/10, +0.00)

(.venv) PS C:\Users\Owner\PycharmProjects\G88.2024.TXX.GE1>
```

```
(.venv) PS C:\Users\Owner\PycharmProjects\G88.2024.TXX.GE1> pylint uc3m_money/

-------------------------------------------------------------------
Your code has been rated at 10.00/10 (previous run: 10.00/10, +0.00)
```

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