Tecnológico de Monterrey

INSTITUTO TECNOLÓGICO Y DE ESTUDIOS

SUPERIORES DE MONTERREY

Actividad 4.2 Ejercicio de programación 1

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Pruebas de software y aseguramiento de la calidad

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Compute statistics - requerimientos

Req1. The program shall be invoked from a command line. The program shall receive a file as parameter. The file will contain a list of items (presumable numbers).

Req 2. The program shall compute all descriptive statistics from a file containing numbers. The results shall be print on a screen and on a file named StatisticsResults.txt. All computation MUST be calculated using the basic algorithms, not functions or libraries. The descriptive statistics are mean, median, mode, standard deviation, and variance.

Req 3. The program shall include the mechanism to handle invalid data in the file. Errors should be displayed in the console and the execution must continue.

Req 4. The name of the program shall be computeStatistics.py

Req 5. The minimum format to invoke the program shall be as follows: python computeStatistics.py fileWithData.txt

Req 6. The program shall manage files having from hundreds of items to thousands of items.

Req 7. The program should include at the end of the execution the time elapsed for the execution and calculus of the data. This number shall be included in the results file and on the screen.

Req 8. Be compliant with PEP8.

Resutado

A continuación, documento el proceso de pruebas que realice para el ejercicio “Compute statistics” con ayuda del analizador de código estático Pylint.

Archivo de configuración del proyecto
Dockerfile × compute_statistics.py Dockerfile > ... 1 # Usar una imagen oficial ligera de Python 2 FROM python:3.9-slim 3 4 # Establecer el directorio de trabajo en el contenedor 5 WORKDIR /app 6 7 # Instalar pylint 8 RUN pip install --no-cache-dir pandas pylint 9 10 # Copiar el script al contenedor 11 #COPY computeStatistics.py . 12 COPY . . 13 14 # Comando para ejecutar el script 15 #CMD ["python", "compute_statistics.py"] 16 # Comando para ejecutar pylint al iniciar 17 CMD ["pylint", "compute_statistics.py"]

Análisis de resultados

Prueba	Resultado del análisis
1	macor@macorona MINGW64 /c/Maestría/Quinto-trimestre/Pruebas de software/Semana4/Proyecto $ docker run -it --rm actividad4.2 ************ Module compute_statistics compute_statistics.py:14:0: C0303: Trailing whitespace (trailing-whitespace) compute_statistics.py:27:43: C0303: Trailing whitespace (trailing-whitespace) compute_statistics.py:41:0: C0325: Unnecessary parens after 'if' keyword (superfluous-parens) compute_statistics.py:42:50: C0303: Trailing whitespace (trailing-whitespace) compute_statistics.py:106:0: C0304: Final newline missing (missing-final-newline) compute_statistics.py:7:0: C0116: Missing function or method docstring (missing-function-docstring) compute_statistics.py:15:0: C0116: Missing function or method docstring (missing-function-docstring) compute_statistics.py:25:9: W1514: Using open without explicitly specifying an encoding (unspecified-encoding) compute_statistics.py:57:0: C0103: Constant name "suma" doesn't conform to UPPER_CASE naming style (invalid-name) compute_statistics.py:80:0: C0103: Constant name "max_frecuencia" doesn't conform to UPPER_CASE naming style (inv compute_statistics.py:81:0: C0103: Constant name "moda" doesn't conform to UPPER_CASE naming style (invalid-name) compute_statistics.py:88:0: C0103: Constant name "suma_cuadrados" doesn't conform to UPPER_CASE naming style (inv compute_statistics.py:97:6: W1309: Using an f-string that does not have any interpolated variables (f-string-with ---------------------------------- Your code has been rated at 7.23/10
2	macor@macorona MINGW64 /c/Maestría/Quinto-trimestre/Pruebas de software/Semana4/Proyecto $ docker run -it --rm actividad4.2 ************ Module compute_statistics compute_statistics.py:16:0: C0303: Trailing whitespace (trailing-whitespace) compute_statistics.py:30:43: C0303: Trailing whitespace (trailing-whitespace) compute_statistics.py:45:50: C0303: Trailing whitespace (trailing-whitespace) compute_statistics.py:113:0: C0304: Final newline missing (missing-final-newline) compute_statistics.py:28:9: W1514: Using open without explicitly specifying an encoding (unspecified-encoding) compute_statistics.py:28:32: W0612: Unused variable 'f' (unused-variable) compute_statistics.py:50:7: W0718: Catching too general exception Exception (broad-exception-caught) compute_statistics.py:41:9: W1514: Using open without explicitly specifying an encoding (unspecified-encoding) compute_statistics.py:88:0: C0103: Constant name "max_frecuencia" doesn't conform to UPPER_CASE naming style (inva compute_statistics.py:89:0: C0103: Constant name "moda" doesn't conform to UPPER_CASE naming style (invalid-name) compute_statistics.py:96:0: C0103: Constant name "suma_cuadrados" doesn't conform to UPPER_CASE naming style (inva compute_statistics.py:105:6: W1309: Using an f-string that does not have any interpolated variables (f-string-with ---------------------------------- Your code has been rated at 8.26/10

3	macor@macorona MINGW64 /c/Maestría/Quinto-trimestre/Pruebas de software/Semana4/Proyecto $ docker run -it --rm actividad4.2 compute_statistics.py:16:0: C0303: Trailing whitespace (trailing-whitespace) compute_statistics.py:30:43: C0303: Trailing whitespace (trailing-whitespace) compute_statistics.py:45:50: C0303: Trailing whitespace (trailing-whitespace) compute_statistics.py:113:0: C0304: Final newline missing (missing-final-newline) compute_statistics.py:28:9: W1514: Using open without explicitly specifying an encoding (unspecified-encoding) compute_statistics.py:28:32: W0612: Unused variable 'f' (unused-variable) compute_statistics.py:50:7: W0718: Catching too general exception Exception (broad-exception-caught) compute_statistics.py:41:9: W1514: Using open without explicitly specifying an encoding (unspecified-encoding) compute_statistics.py:105:6: W1309: Using an f-string that does not have any interpolated variables (f-string-without-interpolation --- Your code has been rated at 8.70/10
4	macor@macorona MINGW64 /c/Maestría/Quinto-trimestre/Pruebas de software/Semana4/Proyecto $ docker run -it --rm actividad4.2 --- Your code has been rated at 10.00/10

Converter - requerimientos

Req1. The program shall be invoked from a command line. The program shall receive a file as parameter. The file will contain a list of items (presumable numbers).

Req 2. The program shall convert the numbers to binary and hexadecimal base. The results shall be print on a screen and on a file named ConvertionResults.txt. All computation MUST be calculated using the basic algorithms, not functions or libraries.

Req 3. The program shall include the mechanism to handle invalid data in the file. Errors should be displayed in the console and the execution must continue.

Req 4. The name of the program shall be convertNumbers.py

Req 5. The minimum format to invoke the program shall be as follows: python convertNumbers.py fileWithData.txt

Req 6. The program shall manage files having from hundreds of items to thousands of items.

Req 7. The program should include at the end of the execution the time elapsed for the execution and calculus of the data. This number shall be included in the results file and on the screen.

Req 8. Be compliant with PEP8.

Resutado

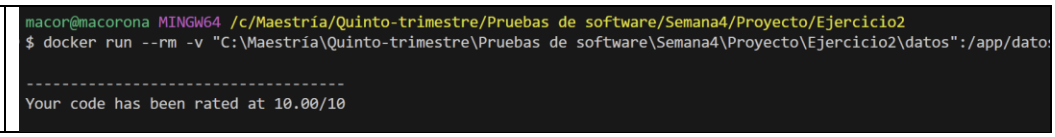
A continuación, documento el proceso de pruebas que realice para el ejercicio “Convert” con ayuda del analizador de código estático Pylint.

Archivo de configuración

```
# Usar una imagen oficial ligera de Python
FROM python:3.9-slim

# Establecer el directorio de trabajo en el contenedor
WORKDIR /app

VOLUME /app/datos

# Instalar pylint
RUN pip install --no-cache-dir pandas pylint

# Copiar el script al contenedor
#COPY computeStatistics.py .
COPY . .

# Comando para ejecutar el script
#CMD ["python", "convert_numbers.py"]
# Comando para ejecutar pylint al iniciar
CMD ["pylint", "convert_numbers.py"]
```

Análisis de resultados

Prueba	Resultado del análisis
1	macor@macorona MINGW64 /c/Maestría/Quinto-trimestre/Pruebas de software/Semana4/Proyecto/Ejercicio2 $ docker run --rm -v "C:\Maestría\Quinto-trimestre\Pruebas de software\Semana4\Proyecto\Ejercicio2\datos":/app/dato ************ Module convert_numbers convert_numbers.py:1:0: C0114: Missing module docstring (missing-module-docstring) convert_numbers.py:6:0: C0116: Missing function or method docstring (missing-function-docstring) convert_numbers.py:9:4: W0621: Redefining name 'binary' from outer scope (line 75) (redefined-outer-name) convert_numbers.py:16:0: C0116: Missing function or method docstring (missing-function-docstring) convert_numbers.py:20:4: W0621: Redefining name 'hexadecimal' from outer scope (line 76) (redefined-outer-name) convert_numbers.py:49:0: C0103: Constant name "error_count" doesn't conform to UPPER_CASE naming style (invalid-nam convert_numbers.py:52:9: W1514: Using open without explicitly specifying an encoding (unspecified-encoding) convert_numbers.py:60:0: C0103: Constant name "output_file" doesn't conform to UPPER_CASE naming style (invalid-nam convert_numbers.py:75:8: C0103: Constant name "binary" doesn't conform to UPPER_CASE naming style (invalid-name) convert_numbers.py:78:8: C0103: Constant name "result" doesn't conform to UPPER_CASE naming style (invalid-name) convert_numbers.py:91:0: C0103: Constant name "error_info" doesn't conform to UPPER_CASE naming style (invalid-name
2	macor@macorona MINGW64 /c/Maestría/Quinto-trimestre/Pruebas de software/Semana4/Proyecto/Ejercicio2 $ docker run --rm -v "C:\Maestría\Quinto-trimestre\Pruebas de software\Semana4\Proyecto\Ejercicio2\datos":/app/dato ************ Module convert_numbers convert_numbers.py:1:0: C0114: Missing module docstring (missing-module-docstring) convert_numbers.py:51:0: C0103: Constant name "error_count" doesn't conform to UPPER_CASE naming style (invalid-nam convert_numbers.py:54:9: W1514: Using open without explicitly specifying an encoding (unspecified-encoding) convert_numbers.py:84:8: E0602: Undefined variable 'TOTAL_ERRORES' (undefined-variable) --- Your code has been rated at 8.87/10
3	macor@macorona MINGW64 /c/Maestría/Quinto-trimestre/Pruebas de software/Semana4/Proyecto/Ejercicio2 $ docker run --rm -v "C:\Maestría\Quinto-trimestre\Pruebas de software\Semana4\Proyecto\Ejercicio2\datos":/app/dato ************ Module convert_numbers convert_numbers.py:57:4: W0105: String statement has no effect (pointless-string-statement) convert_numbers.py:58:9: W1514: Using open without explicitly specifying an encoding (unspecified-encoding) --- Your code has been rated at 9.72/10

4	

Count Words - requerimientos

Req1. The program shall be invoked from a command line. The program shall receive a file as parameter. The file will contain a words (presumable between spaces).

Req 2. The program shall identify all distinct words and the frequency of them (how many times the word "X" appears in the file). The results shall be print on a screen and on a file named WordCountResults.txt. All computation MUST be calculated using the basic algorithms, not functions or libraries.

Req 3. The program shall include the mechanism to handle invalid data in the file. Errors should be displayed in the console and the execution must continue.

Req 4. The name of the program shall be wordCount.py

Req 5. The minimum format to invoke the program shall be as follows: python wordCount.py fileWithData.txt

Req 6. The program shall manage files having from hundreds of items to thousands of items.

Req 7. The program should include at the end of the execution the time elapsed for the execution and calculus of the data. This number shall be included in the results file and on the screen.

Req 8. Be compliant with PEP8.

Resultado

A continuación, documento el proceso de pruebas que realice para el ejercicio "Count Word" con ayuda del analizador de código estático Pylint.

Archivo de configuración

```
# Usar una imagen oficial ligera de Python
FROM python:3.9-slim

# Establecer el directorio de trabajo en el contenedor
WORKDIR /app

VOLUME /app/datos

# Instalar pylint
RUN pip install --no-cache-dir pandas pylint

# Copiar el script al contenedor
#COPY computeStatistics.py .
COPY . .

# Comando para ejecutar el script
#CMD ["python", "word_count.py"]
# Comando para ejecutar pylint al iniciar
CMD ["pylint", "word_count.py"]
```

Análisis de resultados

Prueba	Resultado del análisis
1	macor@macorona MINGW64 /c/Maestría/Quinto-trimestre/Pruebas de software/Semana4/Proyecto/Ejercicio3 $ docker run --rm -v "C:\Maestría\Quinto-trimestre\Pruebas de software\Semana4\Proyecto\Ejercicio3\datos":/app/datos actividad4.2.3 ************ Module word_count word_count.py:11:0: C0303: Trailing whitespace (trailing-whitespace) word_count.py:36:90: C0303: Trailing whitespace (trailing-whitespace) word_count.py:38:60: C0303: Trailing whitespace (trailing-whitespace) word_count.py:39:44: C0303: Trailing whitespace (trailing-whitespace) word_count.py:70:13: C0303: Trailing whitespace (trailing-whitespace) word_count.py:86:67: C0303: Trailing whitespace (trailing-whitespace) word_count.py:93:0: C0304: Final newline missing (missing-final-newline) word_count.py:1:0: C0114: Missing module docstring (missing-module-docstring) word_count.py:6:0: C0116: Missing function or method docstring (missing-function-docstring) word_count.py:6:20: W0621: Redefining name 'word' from outer scope (line 64) (redefined-outer-name) word_count.py:35:12: W0621: Redefining name 'i' from outer scope (line 71) (redefined-outer-name) word_count.py:35:8: C0200: Consider using enumerate instead of iterating with range and len (consider-using-enumerate) word_count.py:60:0: C0103: Constant name "current_word" doesn't conform to UPPER_CASE naming style (invalid-name) word_count.py:69:12: C0103: Constant name "current_word" doesn't conform to UPPER_CASE naming style (invalid-name) word_count.py:71:12: C0200: Consider using enumerate instead of iterating with range and len (consider-using-enumerate) word_count.py:75:20: C0103: Constant name "found" doesn't conform to UPPER_CASE naming style (invalid-name) word_count.py:84:16: C0103: Constant name "current_word" doesn't conform to UPPER_CASE naming style (invalid-name) word_count.py:87:8: C0103: Constant name "current_word" doesn't conform to UPPER_CASE naming style (invalid-name)
2	macor@macorona MINGW64 /c/Maestría/Quinto-trimestre/Pruebas de software/Semana4/Proyecto/Ejercicio3 $ docker run --rm -v "C:\Maestría\Quinto-trimestre\Pruebas de software\Semana4\Proyecto\Ejercicio3\datos":/app/datos actividad4.2.3 ************ Module word_count word_count.py:15:0: C0303: Trailing whitespace (trailing-whitespace) word_count.py:40:100: C0303: Trailing whitespace (trailing-whitespace) word_count.py:42:60: C0303: Trailing whitespace (trailing-whitespace) word_count.py:43:44: C0303: Trailing whitespace (trailing-whitespace) word_count.py:74:13: C0303: Trailing whitespace (trailing-whitespace) word_count.py:90:67: C0303: Trailing whitespace (trailing-whitespace) word_count.py:97:0: C0304: Final newline missing (missing-final-newline) word_count.py:39:8: C0200: Consider using enumerate instead of iterating with range and len (consider-using-enumerate) word_count.py:75:12: C0200: Consider using enumerate instead of iterating with range and len (consider-using-enumerate) word_count.py:79:20: C0103: Constant name "found" doesn't conform to UPPER_CASE naming style (invalid-name) ----------------------------------- Your code has been rated at 8.41/10
3	macor@macorona MINGW64 /c/Maestría/Quinto-trimestre/Pruebas de software/Semana4/Proyecto/Ejercicio3 $ docker run --rm -v "C:\Maestría\Quinto-trimestre\Pruebas de software\Semana4\Proyecto\Ejercicio3\datos":/app/datos actividad4.2.3 ----------------------------------- Your code has been rated at 10.00/10

Conclusión

Este fue un ejercicio bastante bueno para mí, descubrí y entendí las recomendaciones de programación en proyectos Python. En mi caso tengo experiencia en buenas practicas de programación con Java, javascript, lenguaje C y me apoyo de guías de programación que generamos en la empresa. Pero con el analizador pylint es bastante bueno ya que te permite hacer un análisis en línea de manera rápida sin necesidad de una configuración especial. Será mi herramienta base para proyectos Python.

Referencias

PEP 8 – Style Guide for Python Code https://peps.python.org

Python Tutorial. https://docs.python.org/3/tutorial/index.html