Instituto Tecnológico y de Estudios Superiores de Monterrey

Pruebas de software y aseguramiento de la calidad

Actividad 6.2 Ejercicio de programación 3 y pruebas de unidad

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El siguiente reporte contiene un análisis de los resultados obtenidos en la ejecución del programa realizado para el ejercicio planteado.

Ejercicio Reservation System.

Se plantean los siguientes requisitos:

Req 1. Implement a set of classes in Python that implements two abstractions:
> 1. Hotel
> 2. Reservation
> 3. Customers

Req 2. Implement a set of methods to handle the next persistent behaviors (stored in files):
> 1. Hotels
>> a. Create Hotel
>> b. Delete Hotel
>> c. Display Hotel information
>> d. Modify Hotel Information
>> e. Reserve a Room
>> f. Cancel a Reservation
> 2. Customer
>> a. Create Customer
>> b. Delete a Customer
>> c. Display Customer Information
>> d. Modify Customer Information
> 3. Reservation
>> a. Create a Reservation (Customer, Hotel)
>> b. Cancel a Reservation

You are free to decide the attributes within each class that enable the required behavior.

Req 3. Implement unit test cases to exercise the methods in each class. Use the unittest module in Python.

Req 4. The code coverage for all unittests should accumulate at least 85% of line coverage.

Req 5. 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 6. Be compliant with PEP8.

Req 7. The source code must show no warnings using Fleak and PyLint.

Se implementa el programa siguiendo la guía del standard PEP8[1].

Resultados iniciales

Unit Test:

```
C:\Users\PerezSus\OneDrive - Unisys\TMP\maestria\Periodo4\PruebasDeSoftware\Semana6>python -m unittest rese
rvation_System.py
...........
----------------------------------------------------------------------
Ran 11 tests in 0.017s

OK

C:\Users\PerezSus\OneDrive - Unisys\TMP\maestria\Periodo4\PruebasDeSoftware\Semana6>
```

Code coverage:

```
(myenv) C:\Users\PerezSus\OneDrive - Unisys\TMP\maestria\Periodo4\PruebasDeSoftware\Semana6>coverage run -m unittest reservation_System.py
...........
----------------------------------------------------------------------
Ran 11 tests in 0.022s

OK

(myenv) C:\Users\PerezSus\OneDrive - Unisys\TMP\maestria\Periodo4\PruebasDeSoftware\Semana6>coverage report -m
Name                    Stmts   Miss  Cover   Missing
---------------------------------------------------------------------------
reservation_System.py     179     35    80%   71-76, 86-87, 97-98, 103-104, 111-112, 126-132, 148-154, 159-160, 171-172, 177-178, 187-188, 245
---------------------------------------------------------------------------
TOTAL                     179     35    80%

(myenv) C:\Users\PerezSus\OneDrive - Unisys\TMP\maestria\Periodo4\PruebasDeSoftware\Semana6>
```

Resultado inicial al correr pylint:

```
(myenv) C:\Users\PerezSus\OneDrive - Unisys\TMP\maestria\Periodo4\PruebasDeSoftware\Semana6>pylint reservation_System.py
************ Module reservation_System
reservation_System.py:58:0: C0301: Line too long (110/100) (line-too-long)
reservation_System.py:139:0: C0301: Line too long (103/100) (line-too-long)
reservation_System.py:219:0: C0303: Trailing whitespace (trailing-whitespace)
reservation_System.py:245:0: C0304: Final newline missing (missing-final-newline)
reservation_System.py:1:0: C0114: Missing module docstring (missing-module-docstring)
reservation_System.py:1:0: C0103: Module name "reservation_System" doesn't conform to snake_case naming style (invalid-name)
reservation_System.py:5:0: C0115: Missing class docstring (missing-class-docstring)
reservation_System.py:12:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:21:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:24:0: C0115: Missing class docstring (missing-class-docstring)
reservation_System.py:30:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:38:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:41:0: C0115: Missing class docstring (missing-class-docstring)
reservation_System.py:48:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:57:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:60:0: C0115: Missing class docstring (missing-class-docstring)
reservation_System.py:69:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:71:17: W1514: Using open without explicitly specifying an encoding (unspecified-encoding)
reservation_System.py:79:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:80:13: W1514: Using open without explicitly specifying an encoding (unspecified-encoding)
reservation_System.py:84:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:92:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:100:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:106:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:114:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:119:16: R1705: Unnecessary "else" after "return", remove the "else" and de-indent the code inside it (no-else-return)
reservation_System.py:134:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:139:16: R1705: Unnecessary "else" after "return", remove the "else" and de-indent the code inside it (no-else-return)
reservation_System.py:157:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:165:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:174:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:180:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:190:0: C0115: Missing class docstring (missing-class-docstring)
reservation_System.py:196:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:204:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:207:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:212:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:216:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:220:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:224:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:225:8: W0612: Unused variable 'reservation' (unused-variable)
reservation_System.py:228:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:232:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:235:4: C0116: Missing function or method docstring (missing-function-docstring)
reservation_System.py:240:4: C0116: Missing function or method docstring (missing-function-docstring)

-----------------------------------
Your code has been rated at 7.43/10
```

Incluí la siguiente línea en el archivo de configuración de pylint (.pylintrc):

[MASTER]

max-line-length = 120

Con esto, le indico a pylint que incremente el tamaño permitido de la línea de código a 120 caracteres.

Resultado inicial al correr flake8:

```
(myenv) C:\Users\PerezSus\OneDrive - Unisys\TMP\maestria\Periodo4\PruebasDeSoftware\Semana6>python -m flake8 reservation_System.py
reservation_System.py:5:1: E302 expected 2 blank lines, found 1
reservation_System.py:10:80: E501 line too long (90 > 79 characters)
reservation_System.py:22:80: E501 line too long (85 > 79 characters)
reservation_System.py:24:1: E302 expected 2 blank lines, found 1
reservation_System.py:41:1: E302 expected 2 blank lines, found 1
reservation_System.py:58:80: E501 line too long (110 > 79 characters)
reservation_System.py:60:1: E302 expected 2 blank lines, found 1
reservation_System.py:75:80: E501 line too long (81 > 79 characters)
reservation_System.py:117:80: E501 line too long (95 > 79 characters)
reservation_System.py:118:80: E501 line too long (85 > 79 characters)
reservation_System.py:120:80: E501 line too long (89 > 79 characters)
reservation_System.py:126:80: E501 line too long (94 > 79 characters)
reservation_System.py:129:80: E501 line too long (81 > 79 characters)
reservation_System.py:136:80: E501 line too long (82 > 79 characters)
reservation_System.py:139:80: E501 line too long (103 > 79 characters)
reservation_System.py:140:80: E501 line too long (89 > 79 characters)
reservation_System.py:148:80: E501 line too long (89 > 79 characters)
reservation_System.py:190:1: E302 expected 2 blank lines, found 0
reservation_System.py:197:80: E501 line too long (83 > 79 characters)
reservation_System.py:200:5: E265 block comment should start with '# '
reservation_System.py:201:9: E265 block comment should start with '# '
reservation_System.py:201:80: E501 line too long (84 > 79 characters)
reservation_System.py:202:9: E265 block comment should start with '# '
reservation_System.py:208:80: E501 line too long (83 > 79 characters)
reservation_System.py:213:80: E501 line too long (92 > 79 characters)
reservation_System.py:219:1: W293 blank line contains whitespace
reservation_System.py:225:9: F841 local variable 'reservation' is assigned to but never used
reservation_System.py:241:80: E501 line too long (82 > 79 characters)
reservation_System.py:244:1: E305 expected 2 blank lines after class or function definition, found 1
reservation_System.py:245:20: W292 no newline at end of file
```

Incluí la siguiente línea en el archivo de configuración de flake8 (.flake8):

[flake8]
max-line-length = 120

Resultados al aplicar las sugerencias de pylint:

```
(myenv) C:\Users\PerezSus\OneDrive - Unisys\TMP\maestria\Periodo4\PruebasDeSoftware\Semana6>pylint reservation_System.py

-----------------------------------------------------------------
Your code has been rated at 10.00/10 (previous run: 9.83/10, +0.17)
```

Resultados al aplicar las sugerencias de flake8:

```
(myenv) C:\Users\PerezSus\OneDrive - Unisys\TMP\maestria\Periodo4\PruebasDeSoftware\Semana6>python -m flake8 reservation_System.py
reservation_System.py:20:80: E501 line too long (90 > 79 characters)
reservation_System.py:38:80: E501 line too long (85 > 79 characters)
reservation_System.py:100:80: E501 line too long (110 > 79 characters)
reservation_System.py:127:80: E501 line too long (81 > 79 characters)
reservation_System.py:187:80: E501 line too long (95 > 79 characters)
reservation_System.py:188:80: E501 line too long (85 > 79 characters)
reservation_System.py:190:80: E501 line too long (89 > 79 characters)
reservation_System.py:196:80: E501 line too long (90 > 79 characters)
reservation_System.py:209:80: E501 line too long (82 > 79 characters)
reservation_System.py:212:80: E501 line too long (103 > 79 characters)
reservation_System.py:213:80: E501 line too long (89 > 79 characters)
reservation_System.py:221:80: E501 line too long (85 > 79 characters)
reservation_System.py:293:80: E501 line too long (83 > 79 characters)
reservation_System.py:306:80: E501 line too long (83 > 79 characters)
reservation_System.py:314:80: E501 line too long (92 > 79 characters)
reservation_System.py:362:80: E501 line too long (82 > 79 characters)

(myenv) C:\Users\PerezSus\OneDrive - Unisys\TMP\maestria\Periodo4\PruebasDeSoftware\Semana6>python -m flake8 reservation_System.py

(myenv) C:\Users\PerezSus\OneDrive - Unisys\TMP\maestria\Periodo4\PruebasDeSoftware\Semana6>
```

Resultados al incrementar el coverage de código:

```
(myenv) C:\Users\PerezSus\OneDrive - Unisys\TMP\maestria\Periodo4\PruebasDeSoftware\Semana6>coverage run -m unittest reservation_System.py
.Customer with ID 1 already exists.
...Customer with ID 8 does not exist.
..Hotel with ID 1 does not exist.
........Reservation with ID 5 does not exist.
.
----------------------------------------------------------------------
Ran 15 tests in 0.020s

OK

(myenv) C:\Users\PerezSus\OneDrive - Unisys\TMP\maestria\Periodo4\PruebasDeSoftware\Semana6>coverage report -m
Name                    Stmts   Miss  Cover   Missing
-----------------------------------------------------
reservation_System.py     189     28    85%   123-128, 144-145, 167-168, 178-179, 196-202, 221-225, 259-260, 272-273, 347, 398
-----------------------------------------------------
TOTAL                     189     28    85%

(myenv) C:\Users\PerezSus\OneDrive - Unisys\TMP\maestria\Periodo4\PruebasDeSoftware\Semana6>
```

Referencias:

1. Van Rossum, G., Warsaw, B. & Coghlan, Alyssa (2013). *PEP 8 – Style Guide for Python Cod. Convención de codificación de Python - PEP8*

2. Python Code Quality Authority. (n.d.). *Flake8: Your tool for style guide enforcement*. Flake8 7.1.0 documentation. https://flake8.pycqa.org/en/latest/

3. Sale, D. (2014). *Testing Python: Applying unit testing, TDD, BDD and acceptance testing*. Wiley.