Tech Debt

Computer Science - Week 12  
Jul 1, 2024 - Version 0.1.1

Please make sure to place UD **email** AND **name** all members of your group below. Unless your UD emails are included in this table, then you will not earn any points for this assignment when it is graded! **Only one group member should submit the worksheet**.

Choose roles following the [instructions here](https://blockpy.cis.udel.edu/assignments/reading/bakery_appendix_pogil).

You should work in groups of 3. If you cannot find 3 group members, then work in groups of 2.

| **Role** | **Name** | **Email** |
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| **Manager** |  |  |
| **Speaker** |  |  |
| **Recorder** |  |  |

# 0) Setup

Today, you are going to need to **download TWO files** and put them into the same folder. If you fail to do so, you will not be able to run the code and confirm that nothing is broken.

* [tech\_debt.py](https://gist.githubusercontent.com/acbart/cc71088ac25a8a7f1f025e80d5953264/raw/bd75bd95cdbb0633a120d7e3cd6ad12af3dfc961/tech_debt.py)
* [data.py](https://gist.githubusercontent.com/acbart/cc71088ac25a8a7f1f025e80d5953264/raw/9e629abb2dd4916fc7d3cf1869b6656f5cbdb83d/data.py)

You can either download the files and move them into the same folder, or you can create two new files in the same directory and copy/paste the code into them. Make absolutely sure that the files have the correct file names (tech\_debt.py and data.py).

0.1) To ensure that nothing is broken, run the program and copy the output to the box below. There should be a single test that passes, with no error messages.

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0.2) Skim over the entire program. What is your current best guess about what this program does? Make some kind of guess - do not just say “I do not know”. It’s okay if you are wrong!

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# 1) Start

You are going to be fixing all of the names in this program. It might be difficult to know what a good name is until you have replaced all the other names. For each of the following sections, we will present the names you have to replace in our recommended order. However, you may find that it is **easier to skip over some sections and come back later**. That is perfectly fine, as long as you choose good variable names for everything by the end.

1) Section (1) is at the bottom of the file, after all the imports, global constants, dataclass definitions, and function definitions. This is where the main functions are executed and unit tested. You will need to choose a better variable name for the one variable here. Remember, you may find it much easier to skip this variable for now, and return later when you know what the functions do.

**Capitalization counts for this assignment.** Make sure that Google Docs does not change the capitalization of your variable names!

| **Original Name** | **Improved Name** | **Notes (optional)** |
| --- | --- | --- |
| c |  | *You may replace this text with your own notes, if you find that helpful as you work!* |

Hints:

* As you choose new names, make sure you update your program AND this worksheet.
* Run the program every time you finish refactoring a name, to make sure nothing broke.
* Skip over parts you don’t recognize; later context may provide more clues.

# 2) Dataclass Definitions

Section (2) is the dataclass definitions at the start of the program. They are defined before section 1 executes, but we have them as section 2. This is because we found it easier to orient ourselves around the main functions first. However, you need to choose better names for the dataclasses and their fields.

2.1) The C dataclass and its fields:

| **Original Name** | **Improved Name** | **Notes (optional)** |
| --- | --- | --- |
| C |  |  |
| cc |  |  |
| t |  |  |
| g |  |  |

2.2) The S dataclass and its fields:

| **Original Name** | **Improved Name** | **Notes (optional)** |
| --- | --- | --- |
| S |  |  |
| n |  |  |
| t |  |  |

2.3) Why was it NOT a problem that both the S dataclass and the C dataclass have a field named t?

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# 3) First Phase

The functions in this program come in two phases with four functions each. The first phase functions are below, in roughly the order that they will end up being executed.

3.1) The cts function and its variables:

| **Original Name** | **Improved Name** | **Notes (optional)** |
| --- | --- | --- |
| cts |  |  |
| ts |  |  |
| s |  |  |
| c |  |  |
| ls |  |  |

3.2) The ct function and its variables:

| **Original Name** | **Improved Name** | **Notes (optional)** |
| --- | --- | --- |
| ct |  |  |
| ls |  |  |
| n |  |  |
| cs |  |  |

3.3) The tuds function and its variables:

| **Original Name** | **Improved Name** | **Notes (optional)** |
| --- | --- | --- |
| tuds |  |  |
| ls |  |  |
| r |  |  |
| t |  |  |
| l |  |  |

3.4) The pc function and its variables:

| **Original Name** | **Improved Name** | **Notes (optional)** |
| --- | --- | --- |
| pc |  |  |
| l |  |  |
| c |  |  |
| t |  |  |
| g |  |  |

3.5) What does this phase of the program do? Give a clear but brief one sentence explanation.

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# 4) Second Phase

The last four functions of the program are below, along with one constant from the top.

4.1) The gts function and its variables:

| **Original Name** | **Improved Name** | **Notes (optional)** |
| --- | --- | --- |
| gts |  |  |
| s |  |  |
| ts |  |  |
| st |  |  |

4.2) The global TG variable from the top of the file:

| **Original Name** | **Improved Name** | **Notes (optional)** |
| --- | --- | --- |
| TG |  |  |

4.3) The oc function and its variables:

| **Original Name** | **Improved Name** | **Notes (optional)** |
| --- | --- | --- |
| oc |  |  |
| cs |  |  |
| ccs |  |  |
| c |  |  |

4.4) The ag function and its variables:

| **Original Name** | **Improved Name** | **Notes (optional)** |
| --- | --- | --- |
| ag |  |  |
| cs |  |  |
| t |  |  |
| c |  |  |

4.5) The gtps function and its variables:

| **Original Name** | **Improved Name** | **Notes (optional)** |
| --- | --- | --- |
| gtps |  |  |
| g |  |  |

# 5) Refactored Code

Look over your refactored program.

5.1) Now that you have better variable names, what would you say that this program does? Give 1-2 clear sentences.

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5.2) Why are good variable names important?

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# 6) Reflect and Review

Discuss among yourselves: what did you learn from this activity? What was surprising or interesting? If you didn’t learn anything, what do you think we were trying to teach you? How could this activity be improved?

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# Final Submission

When your team is happy with your answers for all the questions, download this file as a Word Document (docx) and upload the file to the appropriate assignment on Canvas.