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| Name: | Duplicate Code (Height Weight) |
| Location: | Formatter.py between line 57 and 62, method is called on pokemon\_scrapper.py on lines 103 and 104. |
| Reasons (2) | * Both code has the exact same code apart from one variable type. * Bloats the program with more lines than is needed. |
| Strategy/approach: | Using Extract Method:   1. Create new method with a name that will identify both previous methods 2. Copy the relevant code from the old methods to the new ones. 3. Pass in all variables 4. Create a new variable for the height and weight (m and kg) 5. Pass in new variable from when method is called. |

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| Name: | Message Chain (URL variable in Pokémon scraper class) |
| Location: | Created line 77 in scraper class, passed to format\_dex() method which passes it to add\_url() function in the Formatter class |
| Reasons (2) | * It was originally used as a hard coded URL that was only used for the initial scrape, however later functionality meant that it needed to be uses to scrape additional information from other pages that used the dame base URL * Having the declaration of the variable hard coded in the web\_scraper() method adds to the long method smell affecting this method. |
| Strategy/approach: | Extract Method   1. Create class level variable with getter and setter in the Pokemon\_Scraper class 2. Remove the declaration of URL in the web\_scraper method 3. Change format\_dex method to not require a url string to be passed in 4. Pass the add\_url method the class level variable created in step 1 using the getter method created for it |

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| Name: | Long Method (web\_scraper()) |
| Location: | Line 74 of pokemon\_scraper.py |
| Reasons (2) | * Performs multiple actions that could be effectively broken down into smaller functions |
| Strategy/approach: | Extract Method   1. Create new method for extracting page information using Beautiful Soup 2. Replace old BS4 code in web\_scraper with a call to the new method 3. Test that methods work as intended 4. Create another method for sorting through the bare BS4 data and extracting only relevant data 5. Replace current code with call to new method 6. Test again |

Justification of marks

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| Smell Detection | 1. Identified three smells 2. Documented where the original smell was found in the code 3. Showed reasons for choosing these smells 4. Showed the steps I was going to implement to remove the bad smell | I feel I should earn full marks for this section |
| Test Development | 1. Developed tests to cover the code related to the bad smells identified 2. Did not use the coverage package to determine how well my tests covered the code | I feel I should earn almost full marks for my test development, however coverage is probably lacking and I did not use the coverage package to check so I don’t feel I earned any marks for that section |
| Refactoring | 1. Performed version control using git hub 2. Modification and pep8 validation 3. Evaluated my implementation of these steps in the following section | I feel that I should earn full marks for this section as I meet the brief of the assignment |

Git Hub URL: https://github.com/l00n4t1k/PokedexRefactoring/

Evaluation

Duplicate Code

While following the prescribed steps to remove this bad smell using the extract method procedure I don’t think that I have introduced any other bad smells into the code.

Message Chain

By using extraction methods to separate the URL variable from any specific methods I don’t feel that any new bad smells have been introduced.

Long Method

As I was using the Extract method on the long web\_scrape method I had to pass along a modified version of the previously fixed url variable. While this is not specifically a new case of a message change, since web\_scraper adds to the url before passing it on, there is potential that it could be a problem if this code is further developed and added to.