**IT 3883 Final Exam**

**Introduction**

For this exam you are asked to follow an abridged form of the software development lifecycle, consisting of two “sprints”. Each sprint will consist of the following stages:

* Requirements
* Design
* Implementation
* Testing

For each stage, you will be asked to create or update a type of project documentation or source code. Please see the list of deliverables below for more information.

**Problem Description**

Write a python program that will interpret pseudo-English statements describing an amount of money in coins and convert them into a dollar amount.

Input

Each sentence will follow the standard rules of English grammar, the only exception being the omission of the ending punctuation. The format of a sentence will consist of a quantity and a denomination. The quantity will always be a numeral and the denomination will always be a word.

Output

Each output should be an amount listed in dollars

**Test Cases**

* 1 penny and 2 nickels -> 0.11
* 4 dimes and 7 quarters -> 2.15
* 1 quarter and 3 pennies -> 0.28
* 21 pennies and 17 dimes and 52 quarters -> 14.91
* 95 dimes and 73 quarters and 22 nickels and 36 pennies -> 29.21
* 1 nickel and 17 quarters -> 4.30
* 21 nickels and 15 pennies -> 1.20
* 1 dime and 1 nickel and 1 penny and 1 quarter -> 0.41

Feel free to include any other test cases you think would be appropriate.

**Deliverables**

* Sprint 1
  + Requirements – Please select *one* of the following:
    - A list of requirements with sufficient detail to ensure the correct problem is solved.
    - A set of user stories that include details about user input and output.
  + Design – Please select *one* of the following:
    - An algorithm written in pseudocode.
    - A flow chart showing each of the steps followed by the program.
  + Implementation
    - Your source code with comments
  + Testing

|  |  |  |  |
| --- | --- | --- | --- |
| **Input Sentence** | **Expected Output** | **Actual Output** | **Pass?** |
| 1 penny and 2 nickels | 0.11 | 0.11 | ✅ |
| 4 dimes and 7 quarters | 2.15 | 2.15 | ✅ |
| 1 quarter and 3 pennies | 0.28 | 0.28 | ✅ |
| 21 pennies and 17 dimes and 52 quarters | 14.91 | 14.91 | ✅ |
| 95 dimes and 73 quarters and 22 nickels and 36 pennies | 29.21 | 29.21 | ✅ |
| 1 nickel and 17 quarters | 4.30 | 4.30 | ✅ |
| 21 nickels and 15 pennies | 1.20 | 1.20 | ✅ |
| 1 dime and 1 nickel and 1 penny and 1 quarter | 0.41 | 0.41 | ✅ |

* Sprint 2
  + - Lowercasing input to handle case-insensitivity.
    - Trimming whitespace and validating word splits for robustness.
    - Coin denominations are case-insensitive.
    - Only valid coins are penny, nickel, dime, quarter (singular or plural).
    - Outputs must be rounded to two decimal places.
  + Testing

|  |  |  |  |
| --- | --- | --- | --- |
| **Input Sentence** | **Expected Output** | **Actual Output** | **Pass?** |
| 1 penny and 2 nickels | 0.11 | 0.11 | ✅ |
| 4 dimes and 7 quarters | 2.15 | 2.15 | ✅ |
| 1 quarter and 3 pennies | 0.28 | 0.28 | ✅ |
| 21 pennies and 17 dimes and 52 quarters | 14.91 | 14.91 | ✅ |
| 95 dimes and 73 quarters and 22 nickels and 36 pennies | 29.21 | 29.21 | ✅ |
| 1 nickel and 17 quarters | 4.30 | 4.30 | ✅ |
| 21 nickels and 15 pennies | 1.20 | 1.20 | ✅ |
| 1 dime and 1 nickel and 1 penny and 1 quarter | 0.41 | 0.41 | ✅ |

**Your Submission**

Your submission should be in the form of a zip folder containing each sprint deliverable. Each document should be clearly named and reflect which sprint it belongs to. All source code should be in the form of a python source file and all other documents should be Microsoft word documents of PDFs. **You should submit everything via Github homework repository and let TA and I know your Github link via D2L.**