**Report on Task 4: Implementation of Various Python Programs**

**1. Introduction**

This task involves three distinct Python programs:

1. LUHN Algorithm Validates credit card numbers.

2. Punctuation Removal Eliminates punctuation from a given string.

3. Sentence Sorting Arranges words in a sentence in alphabetical order.

**2. Task 1: LUHN Algorithm for Credit Card Validation**

**2.1 Overview**

The LUHN Algorithm is a mathematical method used to verify credit card numbers.The program takes a card number as input and checks its validity.

**2.2 Implementation Details**

* The input card number is cleaned by removing spaces and dashes.
* The digits are reversed to correctly apply the LUHN check.
* Every second digit (counting from the right) is doubled, and if the result exceeds 9, 9 is subtracted from it.
* The total of all digits is calculated, and if the sum is divisible by 10, the card is deemed valid

2.3 Sample Output

4532 1488 0343 6467 is valid.

2.4 Suggested Improvements

* Enable user input for validating multiple card numbers at once.
* Incorporate card brand detection (e.g., Visa, MasterCard).

**3. Task 2: Removing Punctuation from a String**

3.1 Overview

This program removes all punctuation marks from a specified string using Python’s string translation method

**3.2 Implementation Details**

* Utilizes `str.maketrans` to map punctuation characters to `None`.
* Translates the string to eliminate punctuation.

3.3 Sample Output

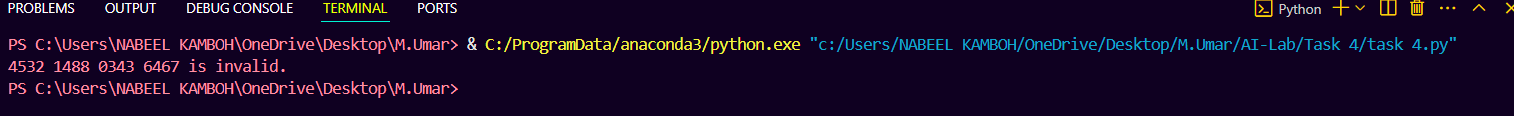
Original String: Hello, world! This is a test string: does it work?

String without Punctuation: Hello world This is a test string does it work

**3.4 Suggested Improvements**

* Allow users to input their own text.
* Offer a option to replace punctuation with spaces instead of removing it entirely

**5 output**

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