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### Task: LUHN Algorithm, Remove punctuations from a given string, Sort the sentence in alphabetical order

**AI LAB TASK: 4**

## ****Documentation****

### ****Introduction****

In this lab work I implemented three small programs using Python. The first program is the LUHN Algorithm which is commonly used to validate card numbers. The second program is used to remove punctuations from a given string so that only words and numbers remain. The third program is used to sort a given sentence in alphabetical order. These tasks helped me to practice string handling, loops and conditions in Python.

### ****Functions Used****

In the programs I used only the basic Python functions. The luhn() function is used to check card numbers with the LUHN algorithm. The remove\_punctuation() function is used to clean a string from unwanted symbols. The sort\_sentence() function is used to arrange words of a sentence in alphabetical order. These functions are simple and are written in a way that they can be reused easily in other programs.

### ****Problems Faced and Solutions****

The first problem was removing punctuations because symbols like “!” or “,” were mixing with words. I solved it by checking if the character is alphanumeric or space before adding it to the result. Secondly , sorting the sentence because directly sorting would break the sentence into characters. I solved this by first splitting the sentence into words and then applying sort.

### ****Advantages****

1. The programs are short and easy to understand.
2. Functions are reusable for other tasks.
3. Only basic Python features are used so code is simple.

### ****Disadvantages****

1. The programs work only for basic input and may fail on very large data.
2. There is no error handling for wrong input type.
3. The sorting is case-sensitive and may not always give perfect alphabetical order.