

Hackathon Problem Statement: Python String Operations Module Development



Time Limit: 2 Hours

Problem Statement

You are tasked with developing a Python module named **strops** that provides various string manipulation functions. Additionally, you must package it as an installable module, set up a virtual environment, and test it with an interactive program.

◆ Part 1: Implement the **strops** Module

Create a module **strops.py** that implements the following functions:

1. **getspan(s, ss)** – Returns the start and end index (span) of substring ss in string s.
 2. **reverseWords(s)** – Reverses the order of words in s.
 3. **removePunctuation(s)** – Removes all punctuation from s.
 4. **countWords(s)** – Counts the number of words in s.
 5. **charecterMap(s)** – Returns a dictionary with characters of s as keys and their frequencies as values.
 6. **makeTitle(s)** – Converts s to title case.
 7. **normalizeSpaces(s)** – Removes extra spaces, leaving only single spaces between words.
 8. **transform(s)** – Reverses the string and swaps case (e.g., "Hello" → "OLLEh").
 9. **getPermutations(s)** – Returns all permutations of the string s.
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◆ Part 2: Create a **setup.py** File

Write a **setup.py** file to package the module for installation using pip.

◆ **Part 3: Test in a Virtual Environment**

Perform the following steps in a **virtual environment**:

1. Create a virtual environment.
 2. Install the `strops` module in the virtual environment.
 3. Write a Python program that:
 - o Takes a **string (s)** and a **substring (ss)** as input.
 - o Displays the **span (start and end index) of the substring** using `getspan()`.
 4. Similarly test all other functions
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◆ **Expected Deliverables**

- `strops.py` containing the string functions.
- `setup.py` for packaging the module.
- A virtual environment where the module is installed and tested.
- A Python script (`test_strops.py`) to demonstrate the module in action.



Challenge Yourself: Optimize the functions and ensure they handle edge cases properly!