

## JSON Preprocessor – README

### Overview

This utility provides preprocessing functions for JSON-like Python objects, such as normalizing dictionary keys and removing null values.

### Module Description

#### `json_preprocessor.py`

Contains the `JsonPreprocessor` class with the following methods:

- **`normalize_keys(json_obj)`**

Normalizes all dictionary keys by converting them to lowercase, trimming spaces, and replacing spaces or hyphens with underscores. Works recursively on nested dictionaries and lists.

- **`strip_nulls(json_obj)`**

Removes all `None` (null) values from dictionaries and lists recursively.

### How to Run the Code

1. Ensure Python 3 is installed.
2. Save the file as `json_preprocessor.py`.
3. Run the script from the terminal:

```
python json_preprocessor.py
```

### How to Run Tests

No automated tests are included. You can test functionality by modifying the input JSON data inside the file or by calling the class methods manually in a Python interpreter.

### Sample Input / Output

Sample Input:

```
{"User Name": "Alice", "Age": None, "Phone-Number": "12345"}
```

Sample Output:

```
{"user_name": "Alice", "phone_number": "12345"}
```

### Notes

- Supports nested JSON structures.
- Key normalization is applied before null removal.