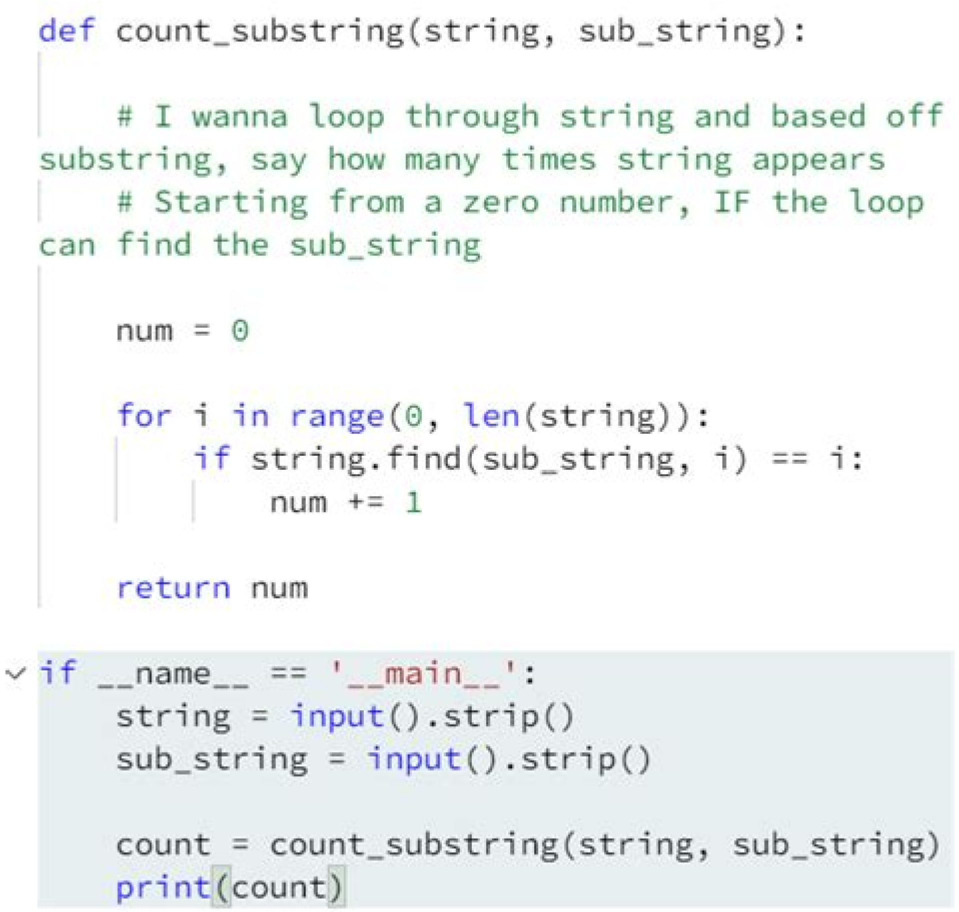
Ascii Encoded String Hackerrank Solution



```
def count_substring(string, sub_string):

    # I wanna loop through string and based off
substring, say how many times string appears
    # Starting from a zero number, IF the loop
can find the sub_string

    num = 0

    for i in range(0, len(string)):
        if string.find(sub_string, i) == i:
            num += 1

    return num

if __name__ == '__main__':
    string = input().strip()
    sub_string = input().strip()

    count = count_substring(string, sub_string)
    print(count)
```

Understanding the ASCII Encoded String Challenge on HackerRank

ASCII encoded string hackerrank solution is a popular problem that many coding enthusiasts encounter on the HackerRank platform. This challenge not only tests basic string manipulation skills but also requires a good understanding of ASCII values and the encoding process. In this article, we will delve into the problem statement, discuss the necessary concepts, provide a step-by-step solution, and explore the implementation in Python.

Problem Statement

The ASCII Encoded String problem typically presents a scenario where you are given a string that is encoded using ASCII values. The task is to decode the string back into its original form. The specifics of the problem can vary, but commonly, you might be required to:

1. Read a string of numbers which represent ASCII values.
2. Convert these values back to their corresponding characters.

3. Output the resulting string.

For example, if you receive the input string "72 101 108 108 111", the output should be "Hello", since the ASCII values correspond to the characters 'H', 'e', 'l', 'l', and 'o'.

Understanding ASCII Encoding

ASCII (American Standard Code for Information Interchange) is a character encoding standard that uses numerical values to represent characters. Each character, including letters, digits, punctuation marks, and control characters, is assigned a unique ASCII value ranging from 0 to 127.

Key Points about ASCII:
- Standard Characters: The characters from 'A' (65) to 'Z' (90) are represented by the ASCII values 65 to 90, while 'a' (97) to 'z' (122) occupy the range from 97 to 122.
- Numerical Characters: The digits '0' (48) through '9' (57) are represented by ASCII values 48 to 57.
- Control Characters: ASCII also includes non-printable control characters, such as newline (10) and carriage return (13).

Steps to Solve the Problem

To arrive at a solution for the ASCII encoded string challenge, follow these steps:

1. Read the input string containing ASCII values.

2. Split the string into individual numbers.

3. Convert each ASCII number to its corresponding character.

4. Join the characters to form the final decoded string.

5. Print or return the decoded string.

Implementation in Python

Now, let’s implement the solution in Python. Python provides several built-in functions that can simplify our task, particularly the `chr()` function, which converts an ASCII value to its corresponding character.

Here is a straightforward implementation:

```python
def decode_ascii_string(ascii_string):
Split the input string into a list of ASCII values
ascii_values = ascii_string.split()
```

```
Initialize an empty string to store the decoded characters
decoded_string = ""

Iterate through the ASCII values and convert them to characters
for value in ascii_values:
Convert string to integer and then to character
decoded_string += chr(int(value))

return decoded_string

Example usage
input_string = "72 101 108 108 111"
output_string = decode_ascii_string(input_string)
print(output_string) Output: Hello
```

Explanation of the Code:
1. Function Definition: The function `decode_ascii_string` takes a single argument, `ascii_string`.
2. Splitting the String: The input string is split into a list of strings, each representing an ASCII value.
3. Decoding: We initialize an empty string `decoded_string`. We loop through each ASCII value, convert it to an integer, and then to its corresponding character using `chr()`.
4. Concatenation: Each character is concatenated to `decoded_string`.
5. Return Value: Finally, the decoded string is returned.

Testing the Solution

To ensure the robustness of our solution, we can test it with various inputs. Here are some test cases:

```python
Test Cases
test_cases = [
"65 66 67", Expected Output: ABC
"119 111 114 108 100", Expected Output: world
"70 111 111 100 98 121 101", Expected Output: Foodbye
]

for test in test_cases:
print(f"Input: {test} => Output: {decode_ascii_string(test)}")
```

Sample Outputs:
- Input: "65 66 67" => Output: ABC
- Input: "119 111 114 108 100" => Output: world
- Input: "70 111 111 100 98 121 101" => Output: Foodbye

Complexity Analysis

Understanding the time and space complexity of our solution is crucial:

- Time Complexity: The time complexity of the above implementation is O(n),

where n is the number of ASCII values in the input string. This is because we traverse each value once for conversion.
- Space Complexity: The space complexity is also O(n) due to the storage of the decoded string, which grows linearly with the number of characters.

Conclusion

The ASCII encoded string challenge on HackerRank is a great exercise to enhance your string manipulation skills and understanding of character encoding. By breaking down the problem into manageable steps and implementing a simple solution in Python, we can efficiently decode ASCII values into their corresponding characters.

This problem not only serves as an excellent introduction to string processing and ASCII values but also lays the groundwork for understanding more complex encoding and decoding tasks in computer science. Whether you are a beginner or an experienced coder, tackling such challenges will significantly improve your programming abilities and problem-solving skills.

Frequently Asked Questions

What is the ASCII encoded string challenge on HackerRank?

The ASCII encoded string challenge on HackerRank typically involves converting a given string into its ASCII values and performing operations like encoding or decoding based on those values.

How do you convert a string to its ASCII values in Python for the HackerRank challenge?

You can convert a string to its ASCII values in Python using the 'ord()' function in a list comprehension, like this: [ord(char) for char in string].

What are common pitfalls to avoid when solving the ASCII encoded string challenge?

Common pitfalls include not handling non-ASCII characters, incorrect string indexing, and failing to properly format the output as required by the problem statement.

Can you provide a sample Python solution for the ASCII encoded string challenge?

Sure! A simple solution in Python might look like this: 'def ascii_encode(s): return [ord(char) for char in s]' which returns a list of ASCII values for each character in the string.

How can I optimize my solution for the ASCII encoded

string challenge?

```
Optimizing your solution may involve minimizing space complexity by
processing the string in-place or using efficient data structures to store
the ASCII values if needed.
```

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