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Strings Assignments

1. Write a program that accepts a string from user. Your program should count and display number of vowels in that string.

In [74]:

```python
def count_vowels(input_string):
    vowels = 'aeiouAEIOU'
    count = 0
    for char in input_string:
        if char in vowels:
            count += 1
    return count

# Accept input from the user
user_input = input("Enter a string: ")


vowel_count = count_vowels(user_input)


print(f"The number of vowels in the string is: {vowel_count}")
```

The number of vowels in the string is: 3

2. Write a program that reads a string from keyboard and display:

- **The number of uppercase letters in the string**
- **The number of lowercase letters in the string**
- **The number of digits in the string**
- **The number of whitespace characters in the string**

In [76]:

```python
def analyze_string(input_string):
    uppercase_count = 0
    lowercase_count = 0
    digit_count = 0
    whitespace_count = 0

    for char in input_string:
        if char.isupper():
            uppercase_count += 1
        elif char.islower():
            lowercase_count += 1
        elif char.isdigit():
            digit_count += 1
        elif char.isspace():
            whitespace_count += 1

    return uppercase_count, lowercase_count, digit_count, whitespace_count


user_input = input("Enter a string: ")


uppercase_count, lowercase_count, digit_count, whitespace_count = analyze_string(user_inp
ut)
```

```python
print(f"The number of uppercase letters in the string is: {uppercase_count}")
print(f"The number of lowercase letters in the string is: {lowercase_count}")
print(f"The number of digits in the string is: {digit_count}")
print(f"The number of whitespace characters in the string is: {whitespace_count}")
```

```
The number of uppercase letters in the string is: 1
The number of lowercase letters in the string is: 6
The number of digits in the string is: 0
The number of whitespace characters in the string is: 0
```

3. Write a Python program that accepts a string from user. Your program should create and display a new string where the first and last characters have been exchanged.

In [78]:

```python
def analyze_string(input_string):
    uppercase_count = 0
    lowercase_count = 0
    digit_count = 0
    whitespace_count = 0

    for char in input_string:
        if char.isupper():
            uppercase_count += 1
        elif char.islower():
            lowercase_count += 1
        elif char.isdigit():
            digit_count += 1
        elif char.isspace():
            whitespace_count += 1

    return uppercase_count, lowercase_count, digit_count, whitespace_count


def exchange_first_last(input_string):
    if len(input_string) <= 1:
        return input_string
    return input_string[-1] + input_string[1:-1] + input_string[0]


user_input = input("Enter a string: ")


uppercase_count, lowercase_count, digit_count, whitespace_count = analyze_string(user_inp
ut)


print(f"The number of uppercase letters in the string is: {uppercase_count}")
print(f"The number of lowercase letters in the string is: {lowercase_count}")
print(f"The number of digits in the string is: {digit_count}")
print(f"The number of whitespace characters in the string is: {whitespace_count}")


exchanged_string = exchange_first_last(user_input)
print(f"The new string with first and last characters exchanged is: {exchanged_string}")
```

```
The number of uppercase letters in the string is: 1
The number of lowercase letters in the string is: 6
The number of digits in the string is: 0
The number of whitespace characters in the string is: 0
The new string with first and last characters exchanged is: damjeeT
```

4. Write a Python program that accepts a string from user. Your program should create a new string in reverse of first string and display it.

In [54]:

```python
user_string = input("Enter a string: ")
```

```
reversed_string = user_string[::-1]


print("Reversed string:", reversed_string)
```

```
Reversed string: deejmaT
```

5. Write a Python program that accepts a string from user. Your program should create a new string by shifting one position to left.

In [56]:

```
user_string = input("Enter a string: ")

if len(user_string) > 0:
    shifted_string = user_string[1:] + user_string[0]
else:
    shifted_string = user_string
print("Shifted string:", shifted_string)
```

```
Shifted string: amjeedt
```

6. Write a program that asks the user to input his name and print its initials. Assuming that the user always types first name, middle name and last name and does not include any unnecessary spaces.

In [58]:

```
full_name = input("Enter your full name (first, middle, last): ")

initials = ""


for i in range(len(full_name)):
    if i == 0 or full_name[i - 1] == " ":
        initials += full_name[i].upper() + ". "

print("Initials:", initials.strip())
```

```
Initials: M. T. H.
```

7. A palindrome is a string that reads the same backward as forward. For example, the words dad, madam and radar are all palindromes. Write a programs that determines whether the string is a palindrome.

In [66]:

```
user_string = input("Enter a string: ")

normalized_string = user_string.lower()

is_palindrome = True
for i in range(len(normalized_string) // 2):
    if normalized_string[i] != normalized_string[-(i + 1)]:
        is_palindrome = False
        break

if is_palindrome:
    print(f"'{user_string}' is a palindrome.")
else:
    print(f"'{user_string}' is not a palindrome.")
```

```
'deed' is a palindrome.
```

8. Write a program that display following output:

- **SHIFT**
- **HIFTS**
- **IFTSH**
- **FTSHI**
- **TSHIF**
- **SHIFT**

In [42]:

```python
word = input("Write any Word: ")

for i in range(len(word)):
    shifted_word = word[i:] + word[:i]
    print(shifted_word)

print(word)
```

```
SHIFT
HIFTS
IFTSH
FTSHI
TSHIF
SHIFT
```

9. Write a program in python that accepts a string to setup a passwords. Your entered password must meet the following requirements:

- **The password must be at least eight characters long.**
- **It must contain at least one uppercase letter.**
- **It must contain at least one lowercase letter.**
- **It must contain at least one numeric digit.**
- **Your program should should perform this validation.**

In [72]:

```python
def validate_password(password):

    if len(password) < 8:
        return "Password must be at least 8 characters long."

    if not any(char.isupper() for char in password):
        return "Password must contain at least one uppercase letter."

    if not any(char.islower() for char in password):
        return "Password must contain at least one lowercase letter."

    if not any(char.isdigit() for char in password):
        return "Password must contain at least one numeric digit."

    return "Password is valid!"


user_password = input("Enter your password: ")


result = validate_password(user_password)


print(result)
```

```
Password is valid!
```