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Data Science
Capsule-2 assignment

Q1) Write a program that prompts the user to input a year, checks whether it's a leap year, and then prints the result.

```
def check_leap_year():
    year = int(input("Enter a year: "))
    if (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0):
        print(f"{year} is a leap year.")
    else:
        print(f"{year} is not a leap year.")
check_leap_year()
```

Q2) Write a Python program that prompts the user to input a word. The program should then determine and output the count of vowels (a, e, i, o, u) in the provided word. Additionally, consider that the word can be in either uppercase or lowercase.

```
def count_vowels():
    word = input("Enter a word: ").lower()
    vowels = 'aeiou'
    count = sum(1 for letter in word if letter in vowels)
    print(f"The number of vowels in '{word}' is {count}.")
count_vowels()
```

Q3) Write a Python program that allows the user to input a list of 6 names. After receiving the list, the program should print only the names that start with the letter 'a', regardless of whether the letter is uppercase or lowercase.

```
def filter_names():
    names = [input("Enter name: ").strip() for _ in range(6)]
    filtered_names = [name for name in names if
    name.lower().startswith('a')]
    print("Names starting with 'a':")
    for name in filtered_names:
        print(name)
filter_names()
```

Q4) Write a Python program that takes a list of 10 integers as input. Your program should iterate through the list and print the following:

- For each even number encountered, print the number squared.
- For each odd number encountered, print the number cubed.

```
def process_integers():
    numbers = [int(input(f"Enter integer {i+1}: ")) for i in range(10)]
    for number in numbers:
        if number % 2 == 0:
            print(f"{number} squared is {number ** 2}")
        else:
            print(f"{number} cubed is {number ** 3}")
process_integers()
```

Q5) Imagine you're ordering flowers from a local delivery service. They offer a selection of beautiful flowers, including roses. Each rose is priced at Rs. 10. Along with your choice of roses, you'll need to provide the count of roses you wish to order and the delivery distance. The delivery charges are as follows: Rs. 25 for distances within 5 kilometers, Rs. 50 for distances between 5 and 10 kilometers, and Rs. 75 for distances greater than 10 kilometers. Write a Python program that prompts the user to enter the count of roses and the delivery distance, then calculates and displays the total price to pay, including both the cost of roses and the delivery charge.

```
def calculate_total_price():
    rose_count = int(input("Enter the count of roses: "))
   delivery_distance = float(input("Enter the delivery distance in
    kilometers: "))
    rose_price = 10 * rose_count
    if delivery_distance <= 5:
        delivery_charge = 25
    elif delivery_distance <= 10:
        delivery_charge = 50
    else:
        delivery_charge = 75
    total_price = rose_price + delivery_charge
    print(f"The total price to pay is Rs. {total_price}")
calculate_total_price()
```