

Python & SQL Coding Assessment

Python Section (3 Questions)

Q1. String Cleaning & Transformation

Write a Python function that takes a sentence and performs the following:

- Removes all vowels (a, e, i, o, u)
- Replaces spaces with underscores _
- Converts it to **title case** (first letter of each word capitalized)

Example:

Input: "data engineering rocks"

Output: "Dt_Engnrng_Rcks"

SOLUTION

```
def str_cleaning(sentence):  
    vowels = "aeiouAEIOU"  
    no_vowels = ""  
  
    for char in sentence:  
        if char not in vowels:  
            no_vowels += char  
  
    with_underscores = ""  
    for char in no_vowels:  
        if char == " ":  
            with_underscores += "_"  
        else:  
            with_underscores += char  
  
    return with_underscores.title()
```

```
print(str_cleaning("data engineering rocks"))  
# Output: Dt_Engnrng_Rcks
```

Q2. Dictionary Aggregation

Given a list of dictionaries representing sales transactions:

```
sales = [  
    {"product": "Pen", "amount": 10},  
    {"product": "Book", "amount": 20},  
    {"product": "Pen", "amount": 15},  
    {"product": "Pencil", "amount": 5}  
]
```

Write a Python program to calculate **total sales per product** and print the result as:

```
Pen: 25  
Book: 20  
Pencil: 5
```

SOLUTION

```
sales = [  
    {"product": "Pen", "amount": 10},  
    {"product": "Book", "amount": 20},  
    {"product": "Pen", "amount": 15},  
    {"product": "Pencil", "amount": 5}  
]  
  
total = {}  
  
for item in sales:  
    product = item["product"]  
    amount = item["amount"]  
    total[product] = total.get(product, 0) + amount  
  
for product, total in total.items():  
    print(f"{product}: {total}")  
  
# Output  
# Pen: 25  
# Book: 20  
# Pencil: 5
```

Q3. Unique Numbers in List

Write a Python function that takes a list of integers and returns a **new list** containing elements that appear **exactly once**.

Example:

Input: [4, 5, 4, 6, 7, 5, 8]

Output: [6, 7, 8]

SOLUTION

```
def unique_numbers(nums):  
    unique_list = []  
    occurence = 0  
    for x in nums:  
        occurence = nums.count(x)  
        if occurence == 1:  
            unique_list.append(x)  
  
    return unique_list
```

```
# Example  
# input_list = [4, 5, 4, 6, 7, 5, 8]  
# print(unique_numbers(input_list))  
# Output  
# [6, 7, 8]
```

SQL Section (2 Questions)

Q4. Find the Second Highest Salary

Table: **employees**

id	name	salary
1	Alice	90000
2	Bob	85000
3	Charlie	85000
4	David	80000

5 Eva 70000

Requirement:

Write a SQL query to find the **second highest distinct salary**.

Expected Output:

second_highest_saly

85000

SOLUTION

```
SELECT DISTINCT salary AS second_highest_salary  
FROM Employees  
ORDER BY salary DESC  
LIMIT 1 OFFSET 1;
```

Q5. Find Customers with No Orders

customers

customer_id	customer_name
1	Alice
2	Bob
3	Charlie

orders

order_id	customer_id	amount
1	1	200
2	2	150

Write a SQL query to find customers who have **not placed any orders**.

Expected Output:

customer_name

Charlie

SOLUTION

```
SELECT c.customer_name  
FROM customers c  
LEFT JOIN orders o ON c.customer_id = o.customer_id  
WHERE o.order_id IS NULL;
```