

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 = []
    occurrence = 0
    for x in nums:
        occurrence = nums.count(x)
        if occurrence == 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_nae

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;
```