NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

ARTIFICIAL INTELLIGENCE LAB

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Lab	01
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IN LAB TASKS

Task 1

Write a Python program that:

- Creates an empty list.
- Repeatedly asks the user to enter an integer and stores it in the list.
- Stops taking input when the user types no;.
- After collecting all numbers in the list, check whether all numbers are prime.
- Print the result:
- If all numbers are prime → "All numbers in the list are prime".
- Otherwise → "Not all numbers are prime."

Solution:

```python
def is_prime(num):
    if num <= 1:
        return False
    for i in range(2, num):
        if num % i == 0:
            return False
    return True

numbers = []  # Create an empty list

while True:
    user_input = input("Enter an integer (or type 'no' to stop): ")
    if user_input.lower() == 'no':
        break  # Stop the loop if user types 'no'
    try:
        number = int(user_input)  # Convert input to integer
        numbers.append(number)    # Add number to the list
    except ValueError:
        print("Please enter a valid integer or 'no' to stop.")

# Check if all numbers in the list are prime
all_prime = True
for n in numbers:
    if not is_prime(n):
        all_prime = False
        break

if all_prime and numbers:  # Also check if the list is not empty
    print("All numbers in the list are prime")
else:
    print("Not all numbers are prime.")
```

Output:

```
Enter an integer (or type 'no' to stop): 13
Enter an integer (or type 'no' to stop): 2
Enter an integer (or type 'no' to stop): 5
Enter an integer (or type 'no' to stop): 6
Enter an integer (or type 'no' to stop): 7
Enter an integer (or type 'no' to stop): 8
Enter an integer (or type 'no' to stop): 4
Enter an integer (or type 'no' to stop): no
Not all numbers are prime.
```

Task 2

Create a Python program that stores the names of students and their marks in a dictionary.

- The program should display the list of available student names.
- The user will enter a student's name, and the program should display that student' marks.
- If the name does not exist in the dictionary, the program should display a message saying "Student not found in the record."

Solution:

```python
students = {
    "Ali": 85,
    "Sara": 92,
    "Ahmed": 78,
    "Fatima": 90
}

# Show all student names
print("Available students:")
for name in students:
    print(name)

# Ask user to enter a name
user_name = input("Enter the student's name: ")

# Check if the name is in the dictionary
if user_name in students:
    print(user_name, "got", students[user_name], "marks.")
else:
    print("Student not found in the record.")
```

Output:

```
Available students:
Ali
Sara
Ahmed
Fatima
Enter the student's name: Ali
Ali got 85 marks.
```

POST LAB TASKS

Task 1

Write a Python program that:

- Accepts a string input from the user.
- Removes all the vowels (a, e, i, o, u, both uppercase and lowercase) from the string.
- Prints the resulting string after removing vowels.

Solution :

```
print("Enter a string:")
user_input = input()
vowels ='aeiouAEIOU'
if user_input == "":
    print("Empty string provided.")
else:
   # Step 3: Create a new string without vowels
     result = ""
     for char in user_input:
         if char not in vowels:
             result += char

# Step 4: Print the result
print("String after removing vowels:", result)
```

Output:

```
Enter a string:
ayesha imran
String after removing vowels: ysh mrn
```

Task 2

Create a tuple of numbers.

- Check if all numbers in the tuple are positive.
- If yes, print “All numbers are positive”, else print “Some numbers are negative”

Solution:

```
numbers = (1, 2, 3, 4, 5)
if all(num > 0 for num in numbers):
    print("All numbers are positive")
else:
    print("Some numbers are negative")
```

Output :

```
All numbers are positive
```