SR UNIVERSITY

School of Computer Science and Artificial Intelligence

Lab Assignment # 3.2

Program	**: B. Tech (CSE)**
Specialization	**:**
Course Title	**: AI Assisted coding**
Course Code	**:**
Semester	**II**
Academic Session	**: 2025-2026**
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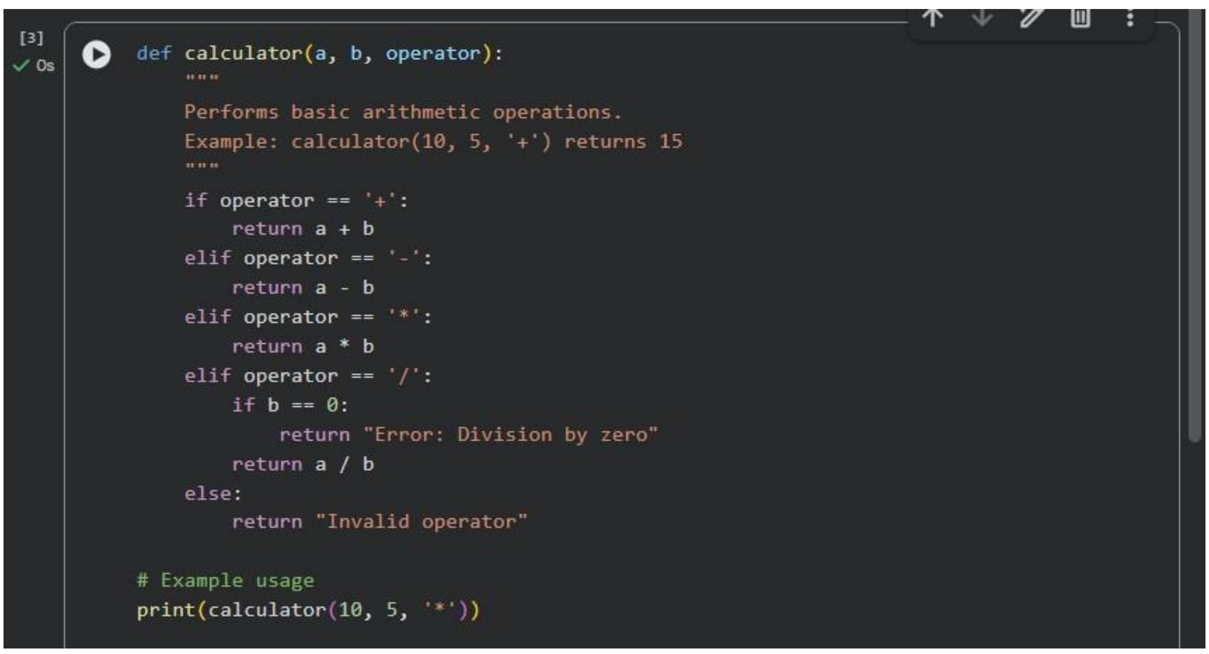
Enrollment No.	**: 2403A51L07**
Batch No.	**51**
Date	**:13-01-2026**

Task – 1

Prompt : Create a calculator function that performs addition, subtraction, multiplication, and division.
Include error handling for division by zero.



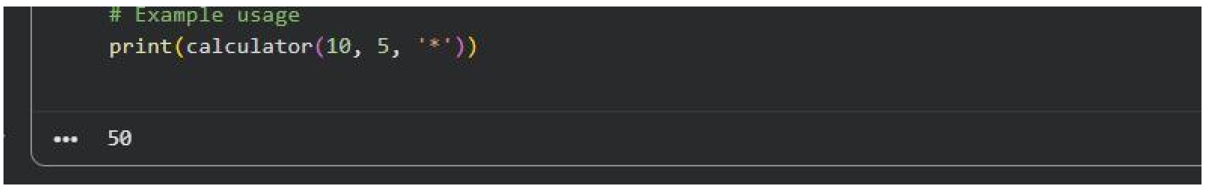
```python
def calculator(a, b, operator):
    """
    Performs basic arithmetic operations.
    Example: calculator(10, 5, '+') returns 15
    """
    if operator == '+':
        return a + b
    elif operator == '-':
        return a - b
    elif operator == '*':
        return a * b
    elif operator == '/':
        if b == 0:
            return "Error: Division by zero"
        return a / b
    else:
        return "Invalid operator"

# Example usage
print(calculator(10, 5, '*'))
```

Explanation

In this task, the goal was to understand how **progressively improving a pr ompt** affects the quality of AI-generated code.

- When a **minimal prompt** was used, the AI generated a very basic calculator function with limited operations and no error handling.
- Adding **comments and context** helped the AI understand the expected functionality, resulting in support for more arithmetic operations.
- Including **constraints and usage examples** further improved the code by adding proper error handling, documentation, and clearer structure.

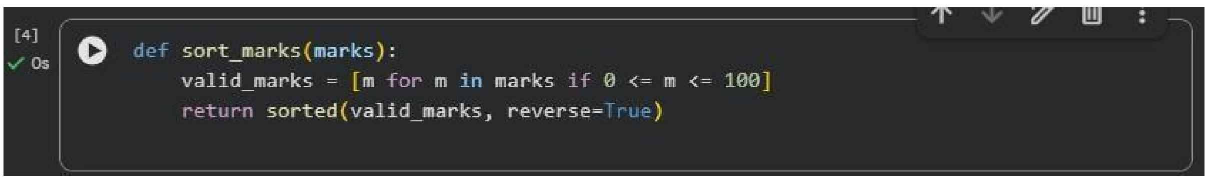
Output:



```
# Example usage
print(calculator(10, 5, '*'))

... 50
```

Task – 2

Prompt: Write a Python function to sort student marks in descending order. Marks should be integers between 0 and 100.



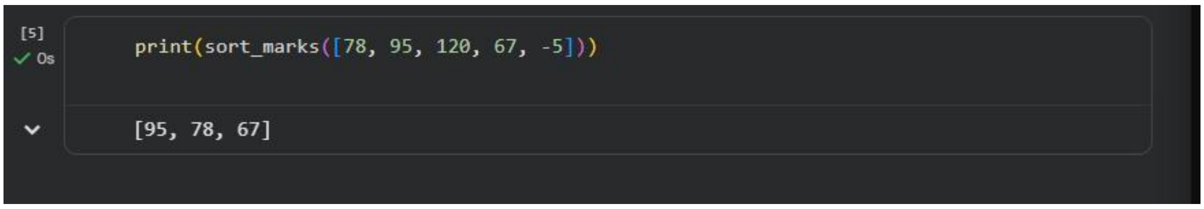
```
[4]
0s
def sort_marks(marks):
    valid_marks = [m for m in marks if 0 <= m <= 100]
    return sorted(valid_marks, reverse=True)
```

Explanation

This task focused on improving AI output by **refining vague prompts into specific ones**.

- A vague prompt resulted in a basic sorting function without a defined order or validation.
- When sorting order and constraints (valid mark range) were explicitly mentioned, the AI produced a more accurate and meaningful solution.
- The refined prompt led to better logic, including filtering invalid values and sorting in the correct order.

Output:



```
[5]
print(sort_marks([78, 95, 120, 67, -5]))

[95, 78, 67]
```

Task– 3

Prompt:

Create a Python function is_prime(n) that checks whether a given number is prime.

Examples: is_prime(2)

→ True is_prime(3) →

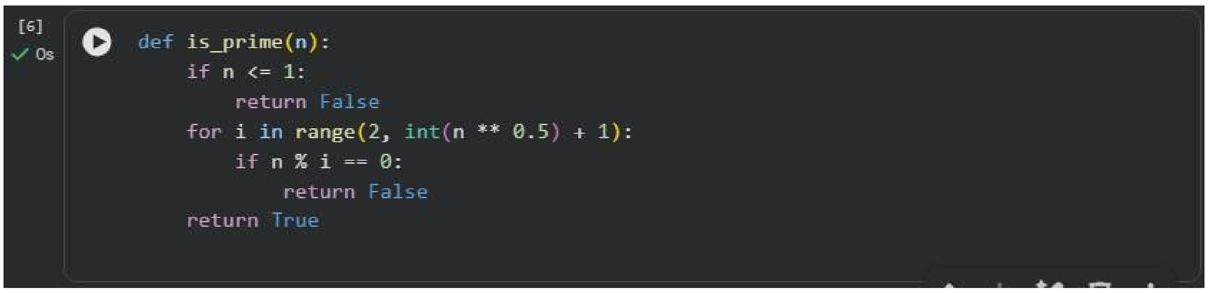
True is_prime(4) →

False is_prime(17) →

True is_prime(1) →

False is_prime(0) →

False



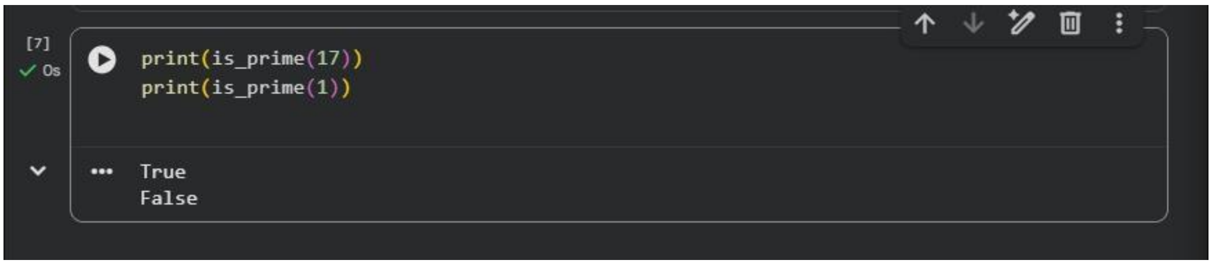
```
[6]
def is_prime(n):
    if n <= 1:
        return False
    for i in range(2, int(n ** 0.5) + 1):
        if n % i == 0:
            return False
    return True
```

Explanation

Few-shot prompting involves providing **example inputs and expected outputs** along with the prompt.

- By including multiple examples, the AI clearly understood how to handle edge cases such as 0 and 1.
- The generated code correctly implemented an optimized prime-checking algorithm.
- Compared to zero-shot prompting, few-shot prompting significantly improved correctness and efficiency

Output:

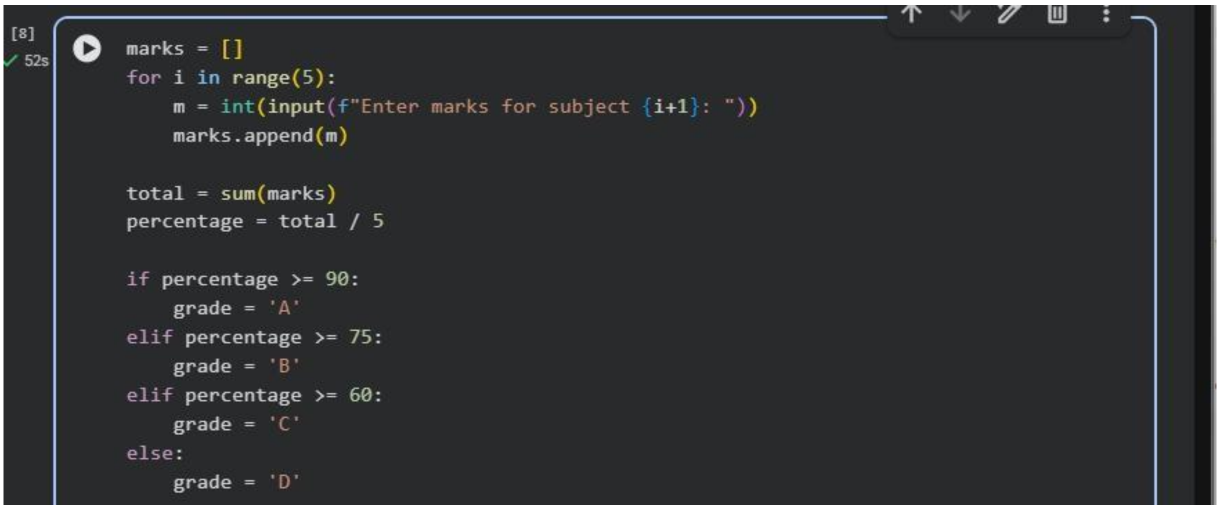


```
print(is_prime(17))
print(is_prime(1))
```

```
True
False
```

Task-4 Prompt:

Create a simple Python-based user interface for a student grading system. The program should:
– Ask the user to enter marks for 5 subjects
– Calculate total marks
– Calculate percentage
– Display grade based on percentage



```python
marks = []
for i in range(5):
    m = int(input(f"Enter marks for subject {i+1}: "))
    marks.append(m)

total = sum(marks)
percentage = total / 5

if percentage >= 90:
    grade = 'A'
elif percentage >= 75:
    grade = 'B'
elif percentage >= 60:
    grade = 'C'
else:
    grade = 'D'
```

Explanation

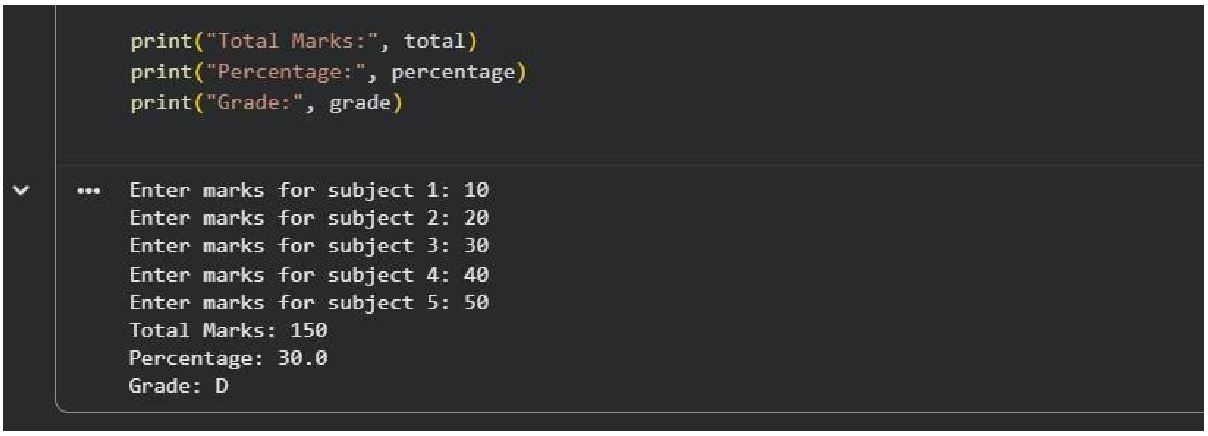
This task demonstrated how a **structured and detailed prompt** can guide AI to create a complete user-interface-based program.

The prompt clearly specified user input, calculations, and output requirements.

As a result, the AI generated a well-structured program that calculates total marks, percentage, and grade.

The code followed a logical flow, making it easy to understand and user-friendly.

Output:



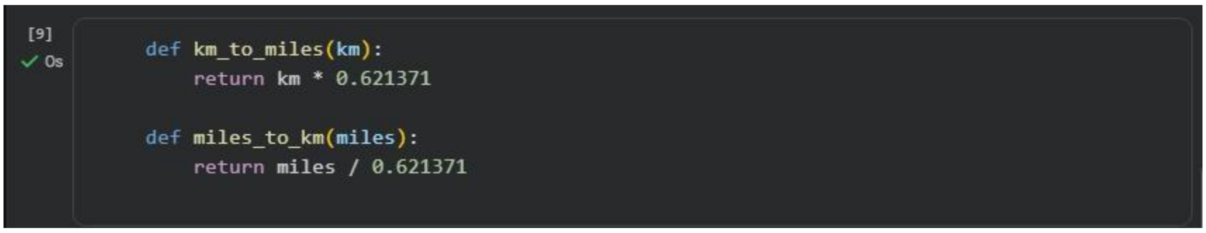
```
    print("Total Marks:", total)
    print("Percentage:", percentage)
    print("Grade:", grade)
```

```
Enter marks for subject 1: 10
Enter marks for subject 2: 20
Enter marks for subject 3: 30
Enter marks for subject 4: 40
Enter marks for subject 5: 50
Total Marks: 150
Percentage: 30.0
Grade: D
```

Task – 5:

Prompt:

Create two Python functions:
1. Convert kilometers to miles
2. Convert miles to kilometers
Use accurate conversion formulas and return the result.



```
[9]
✓ 0s
def km_to_miles(km):
    return km * 0.621371

def miles_to_km(miles):
    return miles / 0.621371
```

Explanation

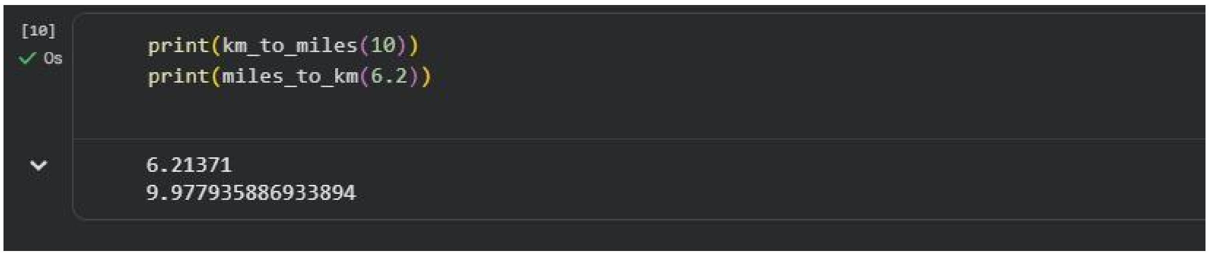
This task analyzed how **prompt specificity affects accuracy and code quality**.

A vague prompt produced an unclear and inaccurate conversion function.

A more specific prompt resulted in correct and separate functions for each unit conversion.

Explicit instructions ensured the use of correct formulas and meaningful function names.

Output:



```
[10]
✓ 0s
print(km_to_miles(10))
print(miles_to_km(6.2))
```

```
6.21371
9.977935886933894
```

Conclusion

Across all tasks, it was observed that:

- AI performance improves with **clear, structured, and specific prompts**.
- Adding comments, constraints, and examples significantly enhances output quality.
- Prompt engineering is a critical skill for effective AI-assisted programming.