School of Computer Science and Artificial Intelligence

Lab Assignment # 3.2

Program : B. Tech (CSE)

Specialization :AIML

Course Title : AI Assisted Coding

Course Code : 23CS002PC304

Semester : VI

Academic Session : 2025-2026

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Enrollment No. : 2303A52096

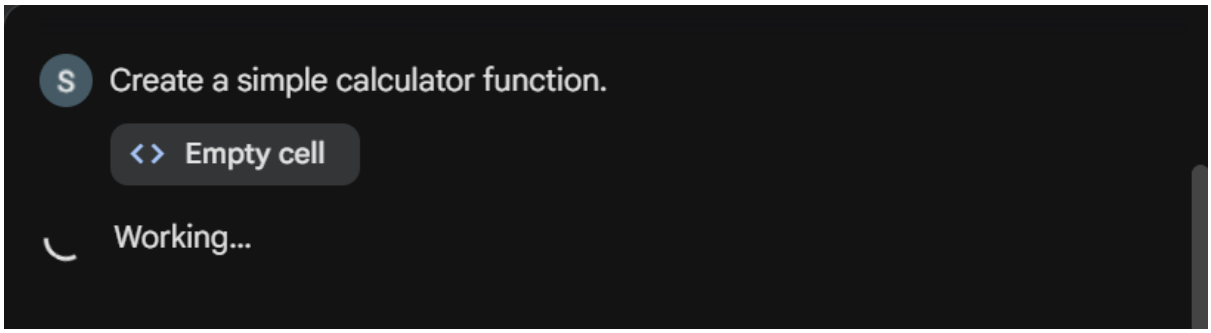
Batch No. : 33

Date :13/01/26

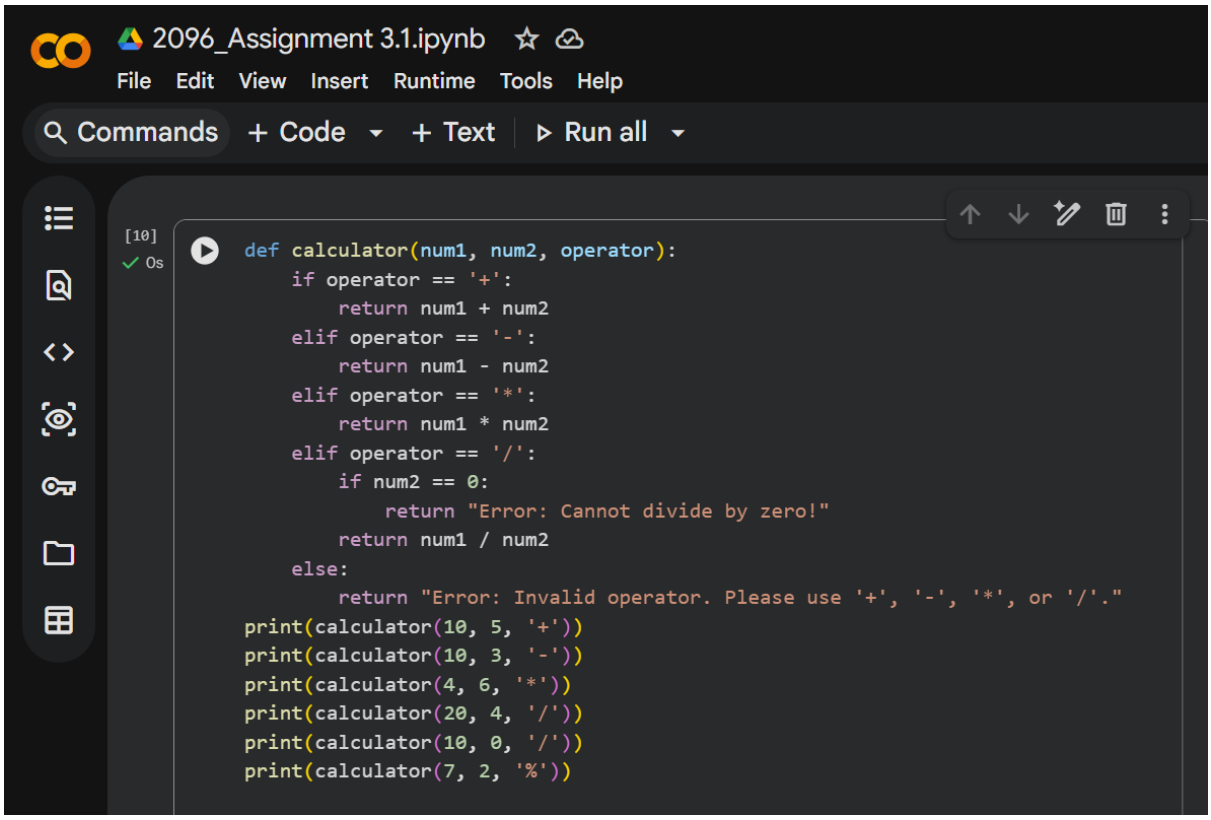
TASK_01: Progressive Prompting (Calculator)

STAGE 1

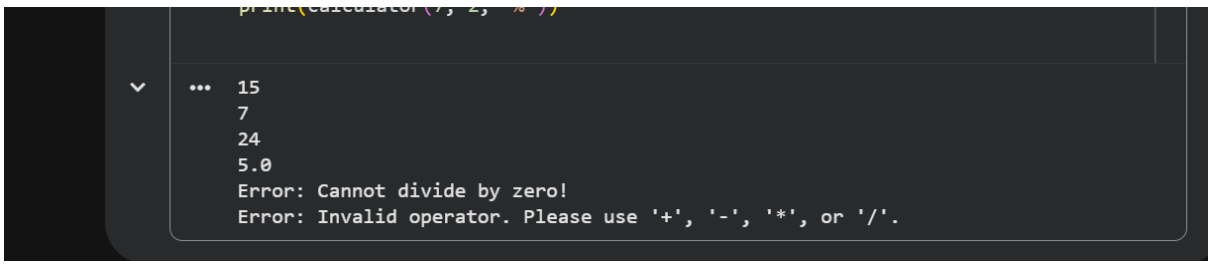
Prompt:



Code:

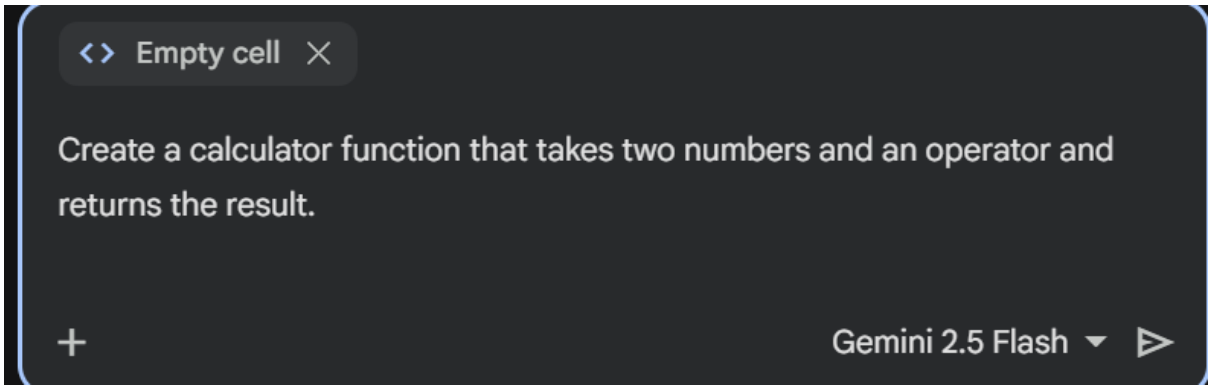


Output:



STAGE2:

Prompt:



Code:

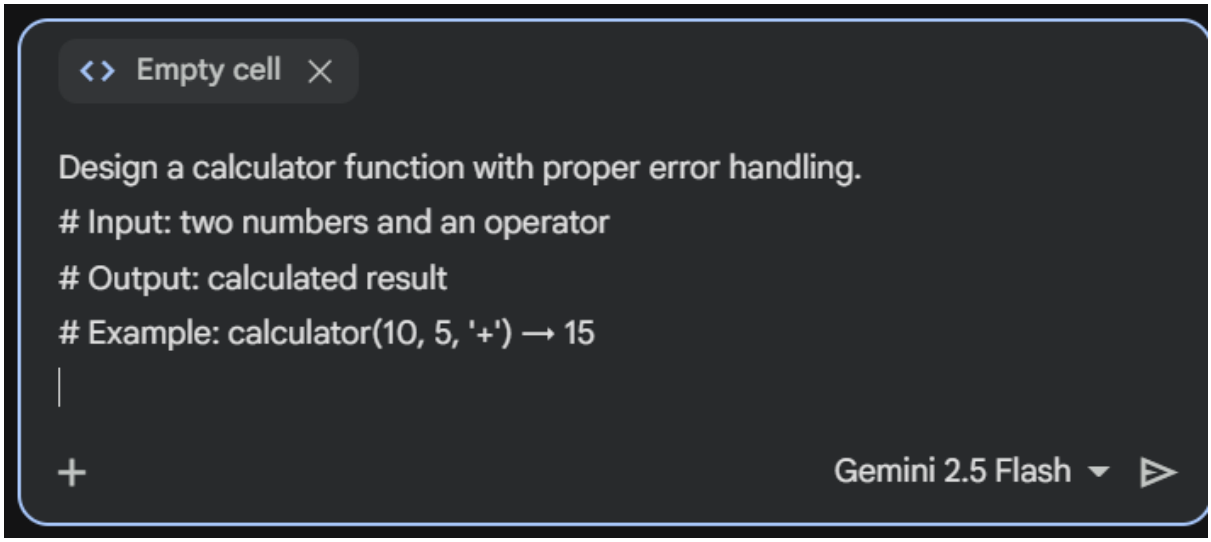
```python
def calculator(num1, num2, operator):
    operations = {
        '+': lambda a, b: a + b,
        '-': lambda a, b: a - b,
        '*': lambda a, b: a * b,
        '/': lambda a, b: a / b,
        '%': lambda a, b: a % b
    }

    if operator == '/' and num2 == 0:
        return "Error: Cannot divide by zero!"

    if operator not in operations:
        return "Error: Invalid operator. Please use '+', '-', '*', '/', or '%'."

    return operations[operator](num1, num2)

# Example usage with improved function:
print(f"10 + 5 = {calculator(10, 5, '+')}")
print(f"10 - 3 = {calculator(10, 3, '-')}")
print(f"4 * 6 = {calculator(4, 6, '*')}")
print(f"20 / 4 = {calculator(20, 4, '/')}")
print(f"10 % 3 = {calculator(10, 3, '%')}")
print(f"10 / 0 = {calculator(10, 0, '/')}")
print(f"7 ^ 2 = {calculator(7, 2, '^')}")
```

Output:

```
10 + 5 = 15
10 - 3 = 7
4 * 6 = 24
20 / 4 = 5.0
10 % 3 = 1
10 / 0 = Error: Cannot divide by zero!
7 ^ 2 = Error: Invalid operator. Please use '+', '-', '*', '/', or '%'.
```

STAGE 3:

Prompt:



Code:

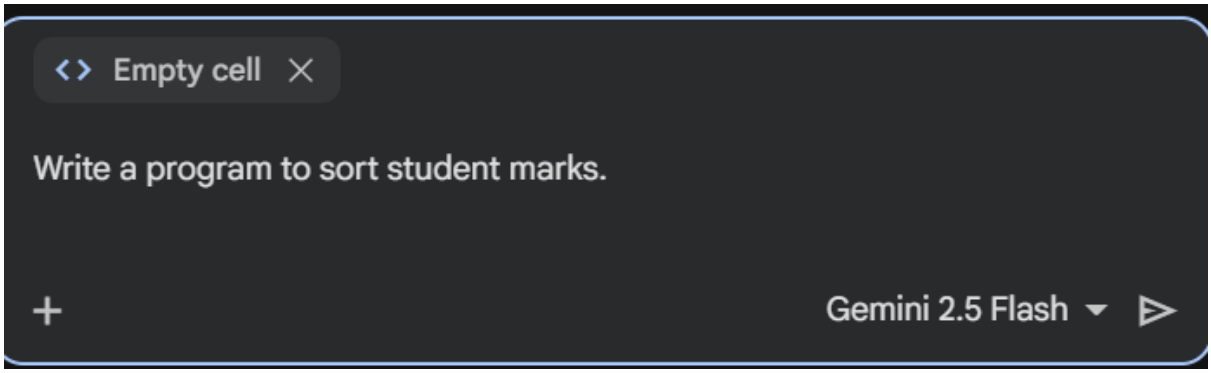
```
[14]
✓ 0s
def calculator(num1, num2, operator):
    operations = {
        '+': lambda a, b: a + b,
        '-': lambda a, b: a - b,
        '*': lambda a, b: a * b,
        '/': lambda a, b: a / b,
        '%': lambda a, b: a % b
    }

    if operator == '/' and num2 == 0:
        return "Error: Cannot divide by zero!"

    if operator not in operations:
        return "Error: Invalid operator. Please use '+', '-', '*', '/', or '%'."

    return operations[operator](num1, num2)

# Example usage:
print(f"calculator(10, 5, '+') -> {calculator(10, 5, '+')}")
print(f"calculator(10, 3, '-') -> {calculator(10, 3, '-')}")
print(f"calculator(4, 6, '*') -> {calculator(4, 6, '*')}")
print(f"calculator(20, 4, '/') -> {calculator(20, 4, '/')}")
print(f"calculator(10, 3, '%') -> {calculator(10, 3, '%')}")
print(f"calculator(10, 0, '/') -> {calculator(10, 0, '/')}")
print(f"calculator(7, 2, '^') -> {calculator(7, 2, '^')}")
```

Output:

```
calculator(10, 5, '+') -> 15
calculator(10, 3, '-') -> 7
calculator(4, 6, '*') -> 24
calculator(20, 4, '/') -> 5.0
calculator(10, 3, '%') -> 1
calculator(10, 0, '/') -> Error: Cannot divide by zero!
calculator(7, 2, '^') -> Error: Invalid operator. Please use '+', '-', '*', '/', or '%'.
```

TASK_02: Sorting Student Marks

Initial prompt:



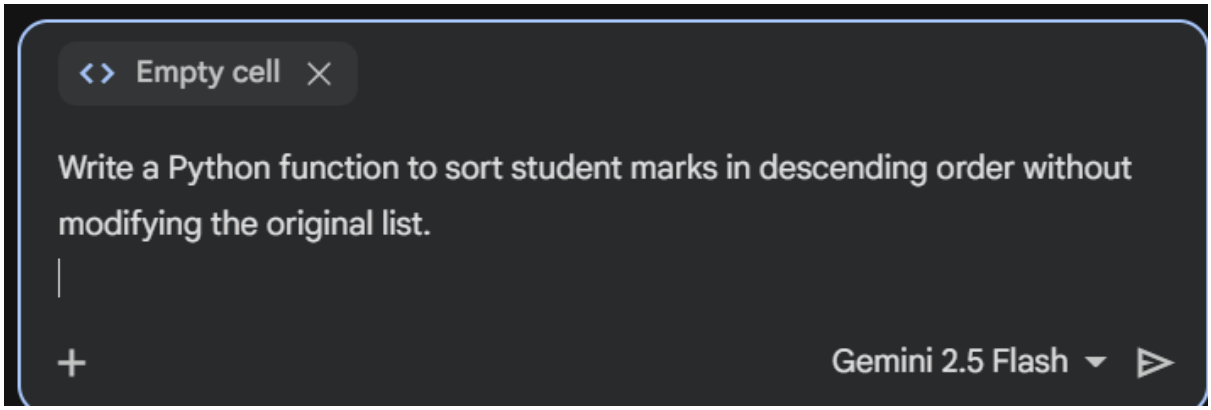
Code:

```python
# Define a list of student marks
student_marks = [85, 92, 78, 65, 95, 88, 70, 81]

print("Original student marks:", student_marks)

# Sort the student marks in ascending order
student_marks.sort()

print("Sorted student marks (ascending):", student_marks)

# To sort in descending order, you can use:
# student_marks.sort(reverse=True)
# print("Sorted student marks (descending):", student_marks)
```

Output:

```
Original student marks: [85, 92, 78, 65, 95, 88, 70, 81]
Sorted student marks (ascending): [65, 70, 78, 81, 85, 88, 92, 95]
```

Refined prompt:



Code:

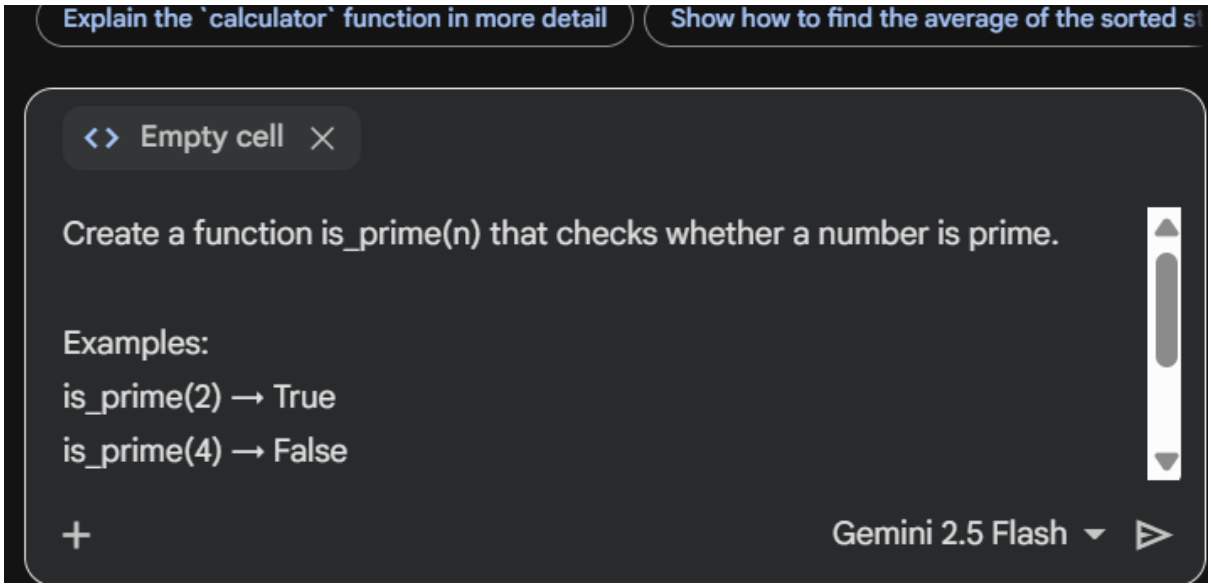
```python
def sort_student_marks_descending(marks_list):
    # Create a copy of the original list to avoid modifying it
    sorted_marks = sorted(marks_list, reverse=True)
    return sorted_marks

# Define a list of student marks (using the existing student_marks for demonstration)
# student_marks = [85, 92, 78, 65, 95, 88, 70, 81] # If starting fresh

print("Original student marks:", student_marks)

# Sort the student marks in descending order using the new function
descending_marks = sort_student_marks_descending(student_marks)

print("Sorted student marks (descending, new list):", descending_marks)
print("Original list after sorting function call:", student_marks)
```

Output:

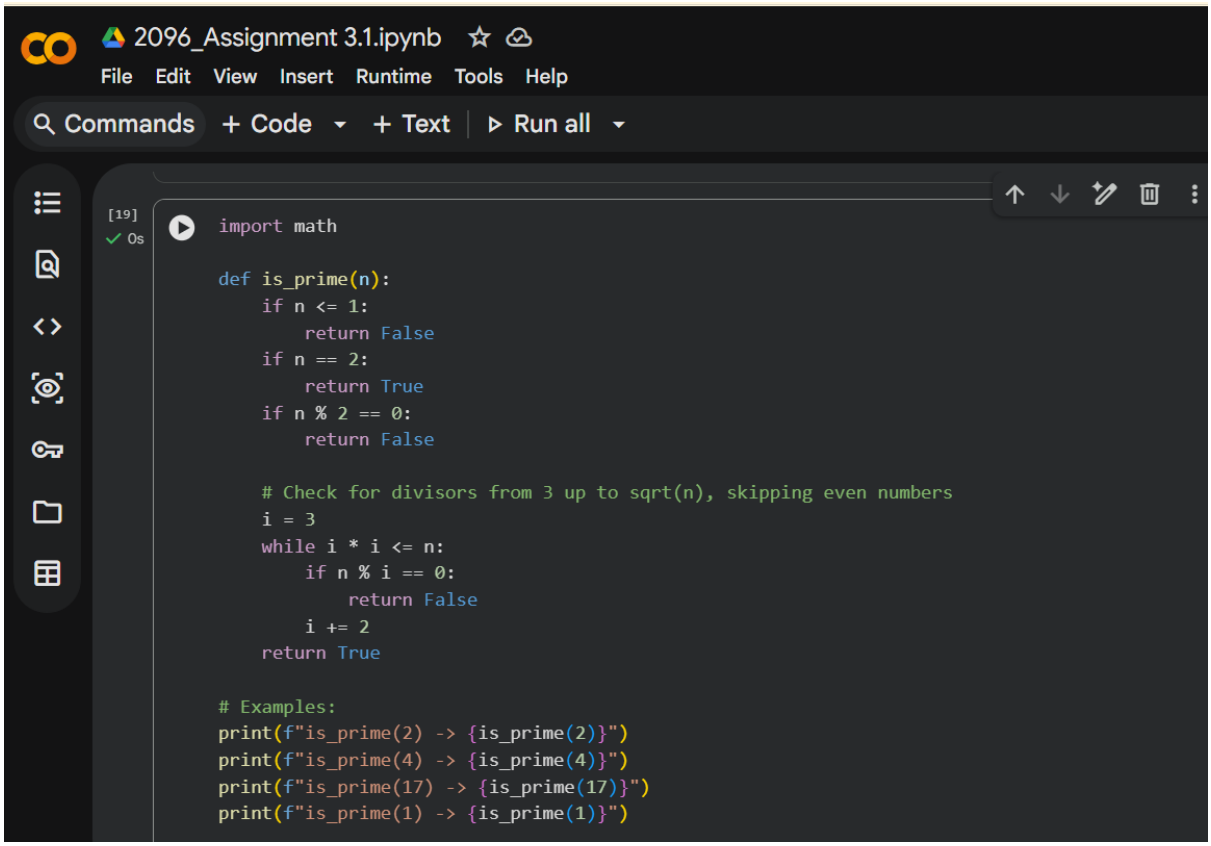
```
Original student marks: [65, 70, 78, 81, 85, 88, 92, 95]
Sorted student marks (descending, new list): [95, 92, 88, 85, 81, 78, 70, 65]
Original list after sorting function call: [65, 70, 78, 81, 85, 88, 92, 95]
```

TASK_03: Few-Shot Prompting (Prime Number)

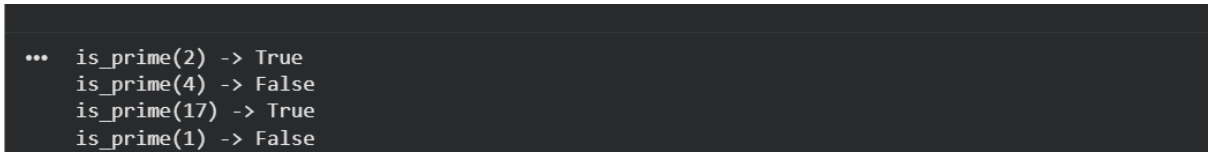
Prompt:



Code:

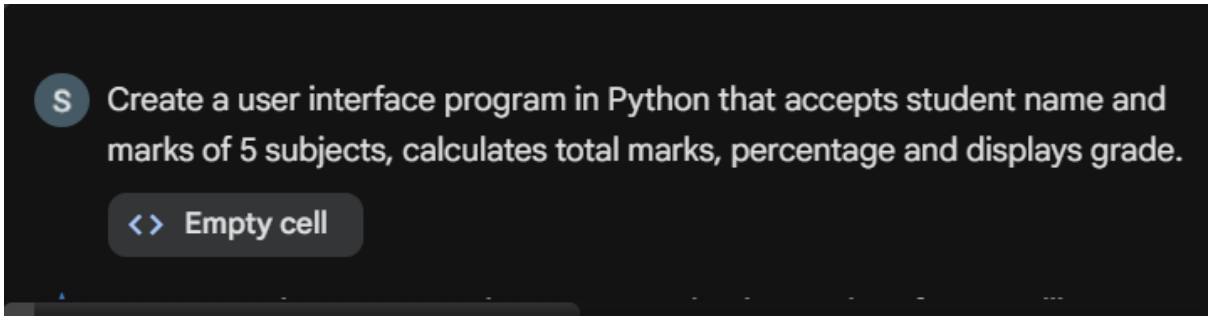


Output:



TASK_04: Prompt-Guided UI Design

Prompt:



Code:

```python
def student_grade_calculator_ui():
    print("--- Student Marksheet and Grade Calculator ---")

    # 1. Accept student name
    student_name = input("Enter student name: ")

    marks = []
    num_subjects = 5
    for i in range(num_subjects):
        while True:
            try:
                mark = float(input(f"Enter marks for subject {i + 1} (out of 100): "))
                if 0 <= mark <= 100:
                    marks.append(mark)
                    break
                else:
                    print("Marks must be between 0 and 100.")
            except ValueError:
                print("Invalid input. Please enter a number for marks.")

    # 2. Calculate total marks
    total_marks = sum(marks)

    # 3. Calculate percentage
    max_total_marks = num_subjects * 100 # Assuming each subject is out of 100
    percentage = (total_marks / max_total_marks) * 100
```

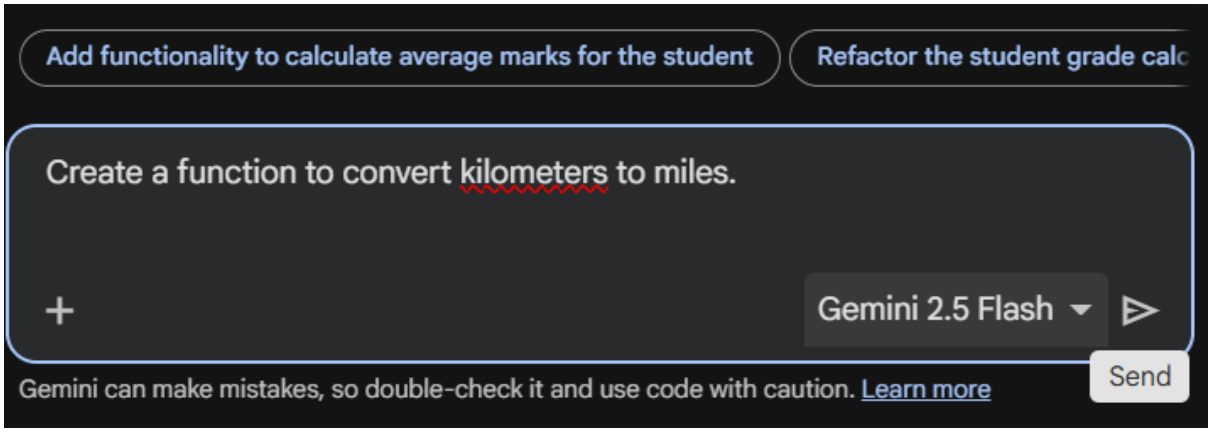
```python
    # 4. Determine grade
    grade = ''
    if percentage >= 90:
        grade = 'A+'
    elif percentage >= 80:
        grade = 'A'
    elif percentage >= 70:
        grade = 'B'
    elif percentage >= 60:
        grade = 'C'
    elif percentage >= 50:
        grade = 'D'
    else:
        grade = 'F'

    # 5. Display results
    print("\n--- Results ---")
    print(f"Student Name: {student_name}")
    print(f"Marks Obtained: {', '.join(map(str, marks))}")
    print(f"Total Marks: {total_marks}/{max_total_marks}")
    print(f"Percentage: {percentage:.2f}%")
    print(f"Grade: {grade}")
    print("-----------------")

# Call the function to run the UI program
student_grade_calculator_ui()
```

Output:

```
--- Student Marksheet and Grade Calculator ---
Enter student name: sathwika
Enter marks for subject 1 (out of 100): 96
Enter marks for subject 2 (out of 100): 83
Enter marks for subject 3 (out of 100): 99
Enter marks for subject 4 (out of 100): 78
Enter marks for subject 5 (out of 100): 65

--- Results ---
Student Name: sathwika
Marks Obtained: 96.0, 83.0, 99.0, 78.0, 65.0
Total Marks: 421.0/500
Percentage: 84.20%
Grade: A
-----------------
```

TASK_05: Unit Conversion Analysis

Basic Prompt:



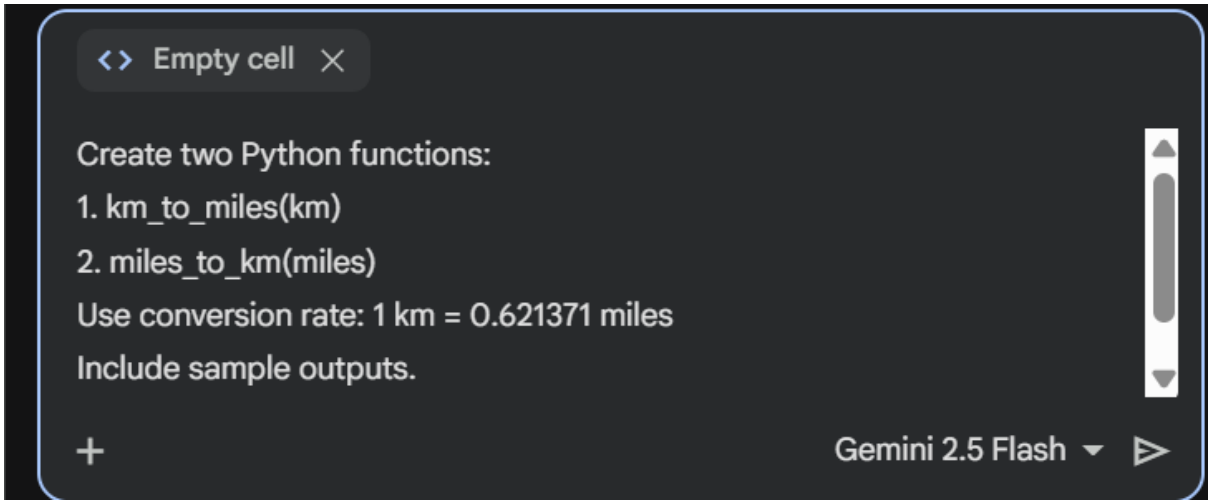
Code:

```
[21]
✓ 0s
def kilometers_to_miles(km):
    conversion_factor = 0.621371  # 1 kilometer = 0.621371 miles
    miles = km * conversion_factor
    return miles

# Example usage:
kilometers = 10
miles_converted = kilometers_to_miles(kilometers)
print(f"{kilometers} kilometers is equal to {miles_converted:.2f} miles")

kilometers = 50
miles_converted = kilometers_to_miles(kilometers)
print(f"{kilometers} kilometers is equal to {miles_converted:.2f} miles")
```

Output:

```
...  10 kilometers is equal to 6.21 miles
     50 kilometers is equal to 31.07 miles
```

Improved Prompt:



Code:

```python
def km_to_miles(km):
    conversion_factor = 0.621371  # 1 kilometer = 0.621371 miles
    miles = km * conversion_factor
    return miles

def miles_to_km(miles):
    conversion_factor = 0.621371  # 1 kilometer = 0.621371 miles
    km = miles / conversion_factor
    return km

# Sample outputs for km_to_miles:
print(f"10 kilometers is equal to {km_to_miles(10):.2f} miles")
print(f"50 kilometers is equal to {km_to_miles(50):.2f} miles")

# Sample outputs for miles_to_km:
print(f"10 miles is equal to {miles_to_km(10):.2f} kilometers")
print(f"31.07 miles is equal to {miles_to_km(31.07):.2f} kilometers")
```

Output:

```
10 kilometers is equal to 6.21 miles
50 kilometers is equal to 31.07 miles
10 miles is equal to 16.09 kilometers
31.07 miles is equal to 50.00 kilometers
```