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## **PROMPT ENGINEERING TASK REPORT**

### **Task 1: Progressive Prompting – Calculator Design**

#### **Prompt**

Design a simple calculator function. Gradually refine the prompt to include arithmetic operations and error handling.

#### **Explanation**

As the prompt becomes more specific, the calculator logic improves by handling operators correctly and preventing division by zero.

#### **Code**

```
def calculator(a, b, op):
    if op == '+':
        return a + b
    elif op == '-':
        return a - b
    elif op == '*':
        return a * b
    elif op == '/':
        if b == 0:
            return "Error: Division by zero"
        return a / b
    else:
        return "Invalid operator"
```

#### **Output**

calculator(10, 5, '+') → 15

calculator(10, 0, '/') → Error: Division by zero

```
calculator
15
Error: Division by zero
```

## Task 2: Refining Prompts – Sorting Student Marks

### Prompt

Sort student marks in ascending order without using built-in sorting functions.

### Explanation

Clear prompt instructions lead to a correct comparison-based sorting algorithm that handles duplicate values.

### Code

```
def sort_marks(marks):
    n = len(marks)
    for i in range(n):
        for j in range(i + 1, n):
            if marks[i] > marks[j]:
                marks[i], marks[j] = marks[j], marks[i]
    return marks
```

### Output

Input: [78, 45, 89, 45, 60]

Output: [45, 45, 60, 78, 89]

```
sort marks
[45, 45, 60, 78, 89]
```

## Task 3: Few-Shot Prompting – Prime Number Validation

### Prompt

Check whether a number is prime using few-shot examples.

### Explanation

Few-shot examples improve correctness and ensure edge cases like 0 and 1 are handled.

### Code

```
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
```

**Output**

is\_prime(2) → True

is\_prime(4) → False

is\_prime(1) → False

```
is prime or not
True
False
```

**Task 4: Prompt-Guided UI – Student Grading System****Prompt**

Create a user interface that accepts marks and calculates total, percentage, and grade.

**Explanation**

Prompt clarity results in a structured grading system with accurate calculations.

**Code**

```
def grading_system():
    m1 = int(input("Enter marks 1: "))
    m2 = int(input("Enter marks 2: "))
    m3 = int(input("Enter marks 3: "))

    total = m1 + m2 + m3
    percentage = total / 3

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

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

**Output**

Input: 80, 75, 85

Output: Total = 240, Percentage = 80, Grade = B

```
grading system
240
80.0
B
```

## Task 5: Prompt Specificity – Unit Conversion

### Prompt

Convert kilometers to miles and miles to kilometers using clear instructions.

### Explanation

Specific prompts improve accuracy and correctness of unit conversion logic.

### Code

```
def convert_units(value, unit):
    if unit == 'km_to_miles':
        return value * 0.621371
    elif unit == 'miles_to_km':
        return value / 0.621371
    else:
        return "Invalid conversion type"
```

### Output

convert\_units(10, 'km\_to\_miles') → 6.21

```
convert units
6.21371
9.977935886933894
```