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Batch - 38

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.

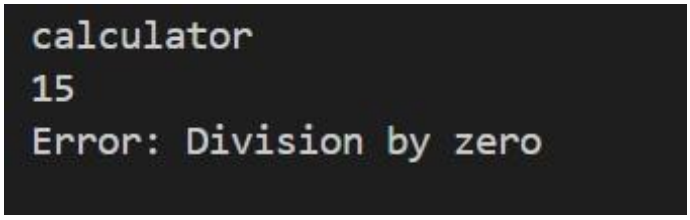
Code

```
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



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]

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

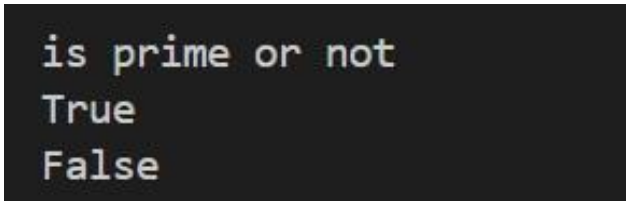
```
def
is_prime(n):

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



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

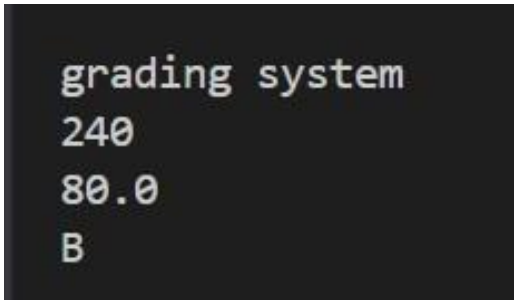
```
def grading_system():
    m1 = int(input("Enter marks 1: "))
    m2 = int(input("Enter marks 2: "))
    m3 = int(input("Enter marks 3: "))

    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



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