Interest_calculator.py - C:/Users/matth/AppData/Local/Programs/Python/Python313/Interest...

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```
"""
interest_calculation.py

Validates user inputs, then calculates a monthly-compounded investment with
monthly contributions. Prints "Year X: $amount" each year and a final summary.

Completed by, Matthew Valadez
"""

def get_valid_int(prompt: str, min_val: int = None, max_val: int = None) -> int:
    """Ask until the user enters an integer within optional bounds."""
    while True:
        raw = input(prompt).strip()
        try:
            val = int(raw)
        except ValueError:
            print("Invalid entry. Please enter a whole number.")
            continue

        if min_val is not None and val <= min_val:
            print(f"Value must be greater than {min_val}.")
            continue
        if max_val is not None and val >= max_val:
            print(f"Value must be less than {max_val}.")
            continue
        return val

def main() -> None:
    # Inputs with the exact prompts from your example
    investment = get_valid_int(
        "Enter the investment amount (greater than 0 and less than 50000): ",
        min_val=0, max_val=50000
    )
    rate = get_valid_int(
        "Enter the interest rate (greater than 0 and less than 15): ",
        min_val=0, max_val=15
    )
    years = get_valid_int(
        "Enter the investment duration in years (greater than 0): ",
        min_val=0
```

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```
    rate = get_valid_int(
        "Enter the interest rate (greater than 0 and less than 15): ",
        min_val=0, max_val=15
    )
    years = get_valid_int(
        "Enter the investment duration in years (greater than 0): ",
        min_val=0
    )

    # Convert yearly percent to monthly decimal; years -> months
    monthly_rate = rate / 12 / 100
    months = years * 12

    total = 0.0

    # Monthly compounding with monthly contributions
    for month in range(1, months + 1):
        total += investment                          # add this month's contrib
        interest = round(total * monthly_rate, 2)    # round interest to curren
        total += interest                            # add the interest

        # Yearly printout exactly like your screenshot
        if month % 12 == 0:
            year_num = month // 12
            # No thousands separators, 2 decimals
            print(f"Year {year_num}: ${total:.2f}")

    # Final summary block exactly like your screenshot
    print(f"\nInvestment Duration: {years} years")
    print(f"Yearly Interest Rate: {rate:.1f}%")
    print(f"Monthly Investment Amount: ${investment}")
    print(f"Total Amount of Investment After Compounding: ${total:.2f}")

    # Attribution line for the assignment
    print("\nCompleted by, Matthew Valadez")

if __name__ == "__main__":
    main()
```

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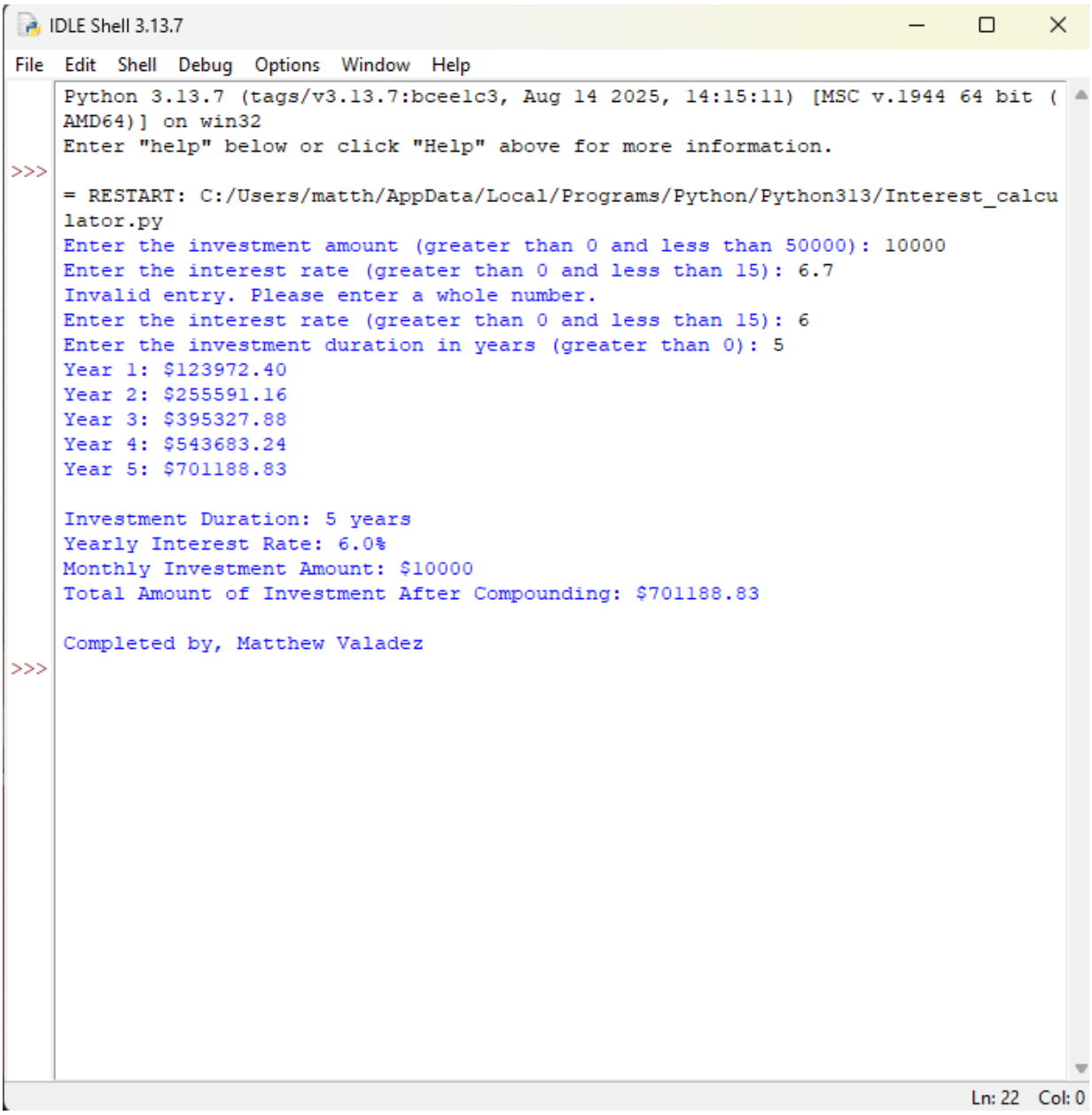
IDLE Shell 3.13.7
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Python 3.13.7 (tags/v3.13.7:bceelc3, Aug 14 2025, 14:15:11) [MSC v.1944 64 bit (AMD64)] on win32
Enter "help" below or click "Help" above for more information.
>>>
= RESTART: C:/Users/matth/AppData/Local/Programs/Python/Python313/Interest_calculator.py
Enter the investment amount (greater than 0 and less than 50000): 10000
Enter the interest rate (greater than 0 and less than 15): 6.7
Invalid entry. Please enter a whole number.
Enter the interest rate (greater than 0 and less than 15): 6
Enter the investment duration in years (greater than 0): 5
Year 1: $123972.40
Year 2: $255591.16
Year 3: $395327.88
Year 4: $543683.24
Year 5: $701188.83
Investment Duration: 5 years
Yearly Interest Rate: 6.0%
Monthly Investment Amount: $10000
Total Amount of Investment After Compounding: $701188.83
Completed by, Matthew Valadez
>>>
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