# User Input Investment amount 0 - 50000, convert to a float for $ currency

monthly\_deposit = float(input("Enter your investment amount here: $"))

while monthly\_deposit not in range(0,50000):

    print("Investment amount must be between 0 and 50000. Please try again")

    break

# User Input Interest Rate represented as interger, 6% = 6

interest\_rate = int(input("Enter your interest rate here: "))

while interest\_rate not in range (0,15):

    print("Investment rate must be between 0 and 15.  Please try again")

    break

# User Input Duration represented as interger in years, must be greater than 0

investment\_duration = int(input("Enter your amount of years to invest: "))

while investment\_duration <= 0:

    print("Investment duration must be greater than 0")

    break

print()

months\_in\_year = 12 # Year = 12 months

total\_months = investment\_duration \* months\_in\_year # Total amount of months using math.  for example:  total\_months == 120 = 10 \* 12

monthly\_rate = (interest\_rate / months\_in\_year) / 100  # Monthly interest rate converted to decimal for mathing... for example: (6/12) / 100 = .005

total = 0.0 # Sets total to 0 so that it is declared, otherwise cant do +=

# LOOP TIME

# sets month as a variable starting at month 1 and going to 119 + 1, so 120. ignores month 0 due to computer logic

# iterates through each month, then divides by 12 to determine that it calculated a year.

for month in range(1, total\_months + 1):

    # Basically a counter, makes total add 1500 per month every itereation of the loop until successful 1500 + 1500 + 1500.. so on and so forth.

    total += monthly\_deposit # Example, total started at 0, user input adds 1500 each loop

    # monthly interest, rounds to 2 decimal places for currency

        # Defines the variable 'interest' and expresses it by:

            # Rounding the total(1500) times monthly\_rate (.005) to two decimal places for $ Currency

    interest = total \* monthly\_rate

    # Finally updates the total + interest defined above every loop

    total += interest

    # this prints each year, checks if there is a remainder from the years = 12 months

    # Prints each year boundry and continues to next month

    if month % 12 == 0:

        # Prints every time loop runs until condition returns false, then loop stops.. for example 120 / 10 == 12, if it no longer can loop, it doesn't. (I THINK)

        # Prints the format 'Year #: $#'

        # Ensures its a float for $ Currency by 2 decimal places

        print(f"Year {int(month) // 12}: ${float(round((total), 2))}")

print("")

print("Investment Duration:", investment\_duration, "years")

print(f"Yearly Interest Rate: {float(interest\_rate)}%")

print(f"Monthly Investment Amount: ${float(monthly\_deposit)}")

print(f"Total Amount of Investment After Compounding: ${float(round((total), 2))}")

print()

print("Completed by, Peter Gage Allen")

