**Lesson 3 Assignment**

**Source Code:**

# Step 1: Get the investment amount and validate it

investment = int(input("Enter the investment amount (between 0 and 50,000): "))

while investment <= 0 or investment >= 50000:

print("Invalid amount. Please enter a value greater than 0 but less than 50,000.")

investment = int(input("Enter the investment amount (between 0 and 50,000): "))

# Step 2: Get the interest rate and validate it

interest\_rate = int(input("Enter the yearly interest rate (between 0% and 15%): "))

while interest\_rate <= 0 or interest\_rate >= 15:

print("Invalid rate. Please enter a rate greater than 0 but less than 15%.")

interest\_rate = int(input("Enter the yearly interest rate (between 0% and 15%): "))

# Step 3: Get the investment duration in years and validate it

years = int(input("Enter the duration of the investment in years: "))

while years <= 0:

print("Invalid duration. Please enter a value greater than 0.")

years = int(input("Enter the duration of the investment in years: "))

# Step 4: Perform compound interest calculations

months = years \* 12 # Convert years to months

monthly\_rate = interest\_rate / 12 / 100 # Convert yearly interest rate to monthly decimal

total = investment # Initialize total with the investment amount

# Step 5: Loop through each month and calculate the total with monthly compound interest

for year in range(1, years + 1):

for month in range(12):

interest = round(total \* monthly\_rate, 2) # Calculate and round the interest

total += interest # Add the interest to the total

# Print the investment value at the end of each year

print(f"After year {year}, the investment value is: ${round(total, 2)}")

# Step 6: Final output of the total investment after compounding

print(f"\nFinal Results:")

print(f"Years: {years}")

print(f"Yearly interest rate: {interest\_rate}%")

print(f"Initial investment amount: ${investment}")

print(f"Final investment amount after {years} years: ${round(total, 2)}")

# Include the completion statement

print("\nCompleted by, Yashoda Dhital")

**Output:**

