

#Compound Interest with loops

```
def get_positive_numeric_input(prompt):
    while True:
        try:
            value = float(input(prompt))
            if value > 0:
                return value
            else:
                print("Error: The value must be a positive number greater than 0.")
        except ValueError:
            print("Error: Please enter a valid number.")

def get_non_negative_numeric_input(prompt):
    while True:
        try:
            value = float(input(prompt))
            if value >= 0:
                return value
            else:
                print("Error: The value cannot be negative.")
        except ValueError:
            print("Error: Please enter a valid number.")

# Ask for user input for validation
deposit = get_positive_numeric_input("Enter the initial deposit amount: ")
interest_rate_percentage = get_positive_numeric_input("Enter the annual interest rate (as a percentage): ")
number_of_months = get_positive_numeric_input("Enter the number of months: ")
goal = get_non_negative_numeric_input("Enter your financial goal (can be 0): ")

# Convert interest rate from percentage to decimal
interest_rate_decimal = interest_rate_percentage / 100
# Convert annual interest rate to monthly interest rate
monthly_interest_rate = interest_rate_decimal / 12

# Calculate final value using the formula  $FV = PV(1 + r/m)^{mt}$ 
# where PV is the deposit, r is the interest rate, m is the compounding frequency, and t is the time in years
compounding_frequency = 12 # Monthly compounding
time_years = number_of_months / 12

# Calculate the future value
future_value = deposit * (1 + monthly_interest_rate) ** (compounding_frequency * time_years)

# Output the results
print(f"\nInitial Deposit: ${deposit:.2f}")
print(f"Annual Interest Rate: {interest_rate_percentage:.2f}%")
print(f"Number of Months: {number_of_months}")
print(f"Financial Goal: ${goal:.2f}")
print(f"Monthly Interest Rate: {monthly_interest_rate:.4f}")
print(f"Future Value after {number_of_months} months: ${future_value:.2f}")

# Check if goal is reached
if future_value >= goal:
    print("Congratulations! Your goal is achievable with the current investment.")
else:
    print("You may need to increase your deposit or interest rate to reach the goal.")
```