Week 6 Tutorial

3. Mortgage calculations

```
def get_input():
    annual_rate = float(input("Enter annual rate of interest: "))
    monthly_payment = float(input("Enter monthly payment: "))
    beginning_balance = float(input("Enter beginning of month balance: "))
    return annual_rate, monthly_payment, beginning_balance


def calculate_values(annual_rate, monthly_payment, beginning_balance):
    monthly_rate = annual_rate / 12 / 100
    interest_paid = monthly_rate * beginning_balance
    reduction_of_principal = monthly_payment - interest_paid
    end_balance = beginning_balance - reduction_of_principal
    return interest_paid, reduction_of_principal, end_balance


def display_output(interest_paid, reduction_of_principal, end_balance):
    print(f"Interest paid for the month: ${interest_paid:,.2f}")
    print(f"Reduction of principal: ${reduction_of_principal:,.2f}")
    print(f"End of month balance: ${end_balance:,.2f}")


def main():
     Step 1: Get inputs
    annual_rate, monthly_payment, beginning_balance = get_input()

    Step 2: Perform calculations
    interest_paid, reduction_of_principal, end_balance = calculate_values(
        annual_rate, monthly_payment, beginning_balance
    )
```

```
    display_output(interest_paid, reduction_of_principal, end_balance)
```

Run the program

```
main()
```

written python code

```
 Function to get user input (multi-valued)
def get_input():
    annual_rate = float(input("Enter annual rate of interest: "))
    monthly_payment = float(input("Enter monthly payment: "))
    beginning_balance = float(input("Enter beginning of month balance: "))
    return annual_rate, monthly_payment, beginning_balance

Function to calculate interest, reduction of principal, and end balance (multi-valued)
def calculate_values(annual_rate, monthly_payment, beginning_balance):
    monthly_rate = annual_rate / 12 / 100
    interest_paid = monthly_rate * beginning_balance
    reduction_of_principal = monthly_payment - interest_paid
    end_balance = beginning_balance - reduction_of_principal
    return interest_paid, reduction_of_principal, end_balance

 Function to display the results
def display_output(interest_paid, reduction_of_principal, end_balance):
    print(f"Interest paid for the month: ${interest_paid:,.2f}")
    print(f"Reduction of principal: ${reduction_of_principal:,.2f}")
    print(f"End of month balance: ${end_balance:,.2f}")
```

```
 Main function
def main():
    # Step 1: Get inputs
    annual_rate, monthly_payment, beginning_balance = get_input()

    Step 2: Perform calculations
    interest_paid, reduction_of_principal, end_balance = calculate_values(
        annual_rate, monthly_payment, beginning_balance
    )

    Step 3: Display results
    display_output(interest_paid, reduction_of_principal, end_balance)

 Run the program
main()
```