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#####  
"""Program that calculates mortgage monthly payment"""  
#####
```

```
def calculate_monthly_payment(principal, years, annual_rate):
```

```
    """  
    Calculate monthly mortgage payment
```

```
    Principal: Total loan amount
```

```
    Years: Loan duration in years
```

```
    Annual_rate: Annual interest rate (as percentage)  
    """
```

```
    # Convert annual rate to monthly rate and percentage to decimal
```

```
    monthly_rate = (annual_rate / 100) / 12
```

```
    # Total number of payments
```

```
    num_payments = years * 12
```

```
    if monthly_rate == 0:
```

```
        # If interest rate is 0, simply divide principal by number of payments
```

```
        monthly_payment = principal / num_payments
```

```
    else:
```

```
        # Calculate monthly payment using mortgage formula
```

```
        monthly_payment = principal * (monthly_rate * (1 + monthly_rate)**num_payments) / \  
            ((1 + monthly_rate)**num_payments - 1)
```

```
    return monthly_payment
```

```
def calculate_total_amount(monthly_payment, years):
```

```
    """Calculate total amount paid over the loan period"""
```

```
    total_amount = monthly_payment * years * 12
```

```
    return total_amount
```

```
#####
# Main interaction for mortgage calculation
#####
```

```
while True:
    print()
    print("*****")
    print("*      MORTGAGE PAYMENT CALCULATOR      *")
    print("*****")
    print()

    choice = input("Press C to Calculate, E to Exit ? ")
    print()

    if choice == "C" or choice == "c":
        try:
            principal = float(input("Enter loan amount (in euros) ? "))
            years = int(input("Enter loan duration (in years) ? "))
            annual_rate = float(input("Enter annual interest rate (%) ? "))

            if principal <= 0 or years <= 0 or annual_rate < 0:
                print()
                print("Error: Please enter valid positive values!")
                print()
            else:
                monthly_payment = calculate_monthly_payment(principal, years, annual_rate)
                total_amount = calculate_total_amount(monthly_payment, years)
                total_interest = total_amount - principal

                print()
                print("*****")
                print(f"Loan amount:      {principal:,.2f} euros")
                print(f"Duration:         {years} years")
                print(f"Annual interest rate: {annual_rate:.2f}%")
                print()
                print(f"Monthly payment:   {monthly_payment:,.2f}euros")
                print(f"Total amount paid: {total_amount:,.2f}euros")
                print(f"Total interest paid: {total_interest:,.2f}euros")
                print("*****")
                print()
            except ValueError:
                print()
                print("Error: Please enter valid numbers!")
                print()
        elif choice == "E" or choice == "e":
            break
        else:
            print()
            print("Error: Invalid request")
            print()

    print()
    print("Goodbye!")
    print()
```

