

Program Description

This program calculates the simple interest and mortgage payment up to user's choice or quit.

Program Source Code

```
lab4 > lab4.py
1  #-----
2  # Program Name: lab4.py
3  # Program Description:
4  #
5  # This program asks users to select one of the 3 items
6  # 1. To calculate the simple interest
7  # 2. To calculate Mortgage Payment.
8  # 99. To quit the program
9  #
10 #
11 # @Author: Sheng Lim
12 # @Date: 7/9/2023
13 #-----
14 from datetime import datetime
15
16 def Calculate_Simple_Interest():
17     while True:
18         p = float(input("Enter the starting principal, 0 to quit: "))
19         if p <= 0:
20             print("OK, you've decided to quit the program.")
21             break
22         r = float(input("Enter the annual interest rate: "))
23         n = int(input("How many times per year is the interest compounded? "))
24         t = int(input("For how many years will the account earn interest? "))
25
26         total = p * (1 + (r / 100) / n) ** (n * t)
27         total_1 = round(total, 2)
28         interest = total - p
29         interest_1 = round(interest, 2)
30
31         print("At the end of", t, "years you will have $", total_1, "with interest earned $", interest_1)
32
33 def Calculate_Mortgage_Payment():
34     while True:
35         p = float(input("Enter the loan amount, 0 to quit: "))
36         if p <= 0:
37             print("OK, you've decided to quit the program.")
38             break
39         r = float(input("Enter the loan interest rate: "))
40         n = int(input("Enter the loan term (number of years): "))
```

```

41
42     monthlyRate = (r / 100) / 12
43     numPayments = n * 12
44     monthlyPayment = p * (monthlyRate / (1 - (1 + monthlyRate) ** numPayments))
45     rounded_monthlyPayment = round(monthlyPayment, 2)
46     totalAmount = monthlyPayment * 12 * n
47     rounded_totalAmount = round(totalAmount, 2)
48     interestPaid = totalAmount - p
49     rounded_interestPaid = round(interestPaid, 2)
50
51     print(f"For the loan Amount of ${p} for {n} years with interest rate of {r}%")
52     print(f"The monthly payment is ${rounded_monthlyPayment}")
53     print(f"Total amount paid for this loan is ${rounded_totalAmount}")
54     print(f"Total interest paid for this loan is ${rounded_interestPaid}")
55
56
57 def main():
58     name = "Sheng Lim"
59     lab_name = "Lab 4 - Functions"
60     current_time = datetime.now()
61     current_time_in_request_format = current_time.strftime("%b-%d-%Y %a (%I:%M:%S%p)")
62
63     print("{:16}".format("Name"), ":", "CNET-142", name)
64     print("{:16}".format("Lab"), ":", lab_name)
65     print("{:16}".format("Current Time"), ":", current_time_in_request_format)
66
67     print("-----")
68     print("1    Calculate Simple Interest")
69     print("2    Calculate Mortgage Payment")
70     print("99   Quit the program")
71     print("-----")
72
73     try:
74         n = int(input("Select one of the command numbers above: "))
75     except ValueError:
76         print("Invalid input. Please enter a valid command number.")
77         return
78
79     while True:
80
81         if n == 1:
82             Calculate_Simple_Interest()
83             break
84         elif n == 2:
85             Calculate_Mortgage_Payment()
86             break
87         elif n == 99:
88             print("You've decided to quit the program.")
89             break
90         else:
91             print("Error: command not recognized")
92             break
93
94 if __name__ == "__main__":
95     main()

```

```

Name       : CNET-142 Sheng Lim
Lab        : Lab 4 - Functions
Current Time : Jul-09-2023 Sun (10:56:10PM)
-----
1    Calculate Simple Interest
2    Calculate Mortgage Payment
99   Quit the program
-----
Select one of the command numbers above: 10
Error: command not recognized
fiber@Mac-mini CNET-142-04 %

```

```
Select one of the command numbers above: 1
Enter the starting principal, 0 to quit: 1000
Enter the annual interest rate: 3.5
How many times per year is the interest compounded? 365
For how many years will the account earn interest? 1
At the end of 1 years you will have $ 1035.62 with interest earned $ 35.62
```

Below is WRONG. Need help.....

```
Name       : CNET-142 Sheng Lim
Lab        : Lab 4 - Functions
Current Time : Jul-09-2023 Sun (10:58:32PM)
-----
1  Calculate Simple Interest
2  Calculate Mortgage Payment
99 Quit the program
-----
Select one of the command numbers above: 2
Enter the loan amount, 0 to quit: 150000
Enter the loan interest rate: 2.85
Enter the loan term (number of years): 30
For the loan Amount of $150000.0 for 30 years with interest rate of 2.85%
The monthly payment is $-264.09
Total amount paid for this loan is $-95070.99
Total interest paid for this loan is $-245070.99
```