1.

Test cases:

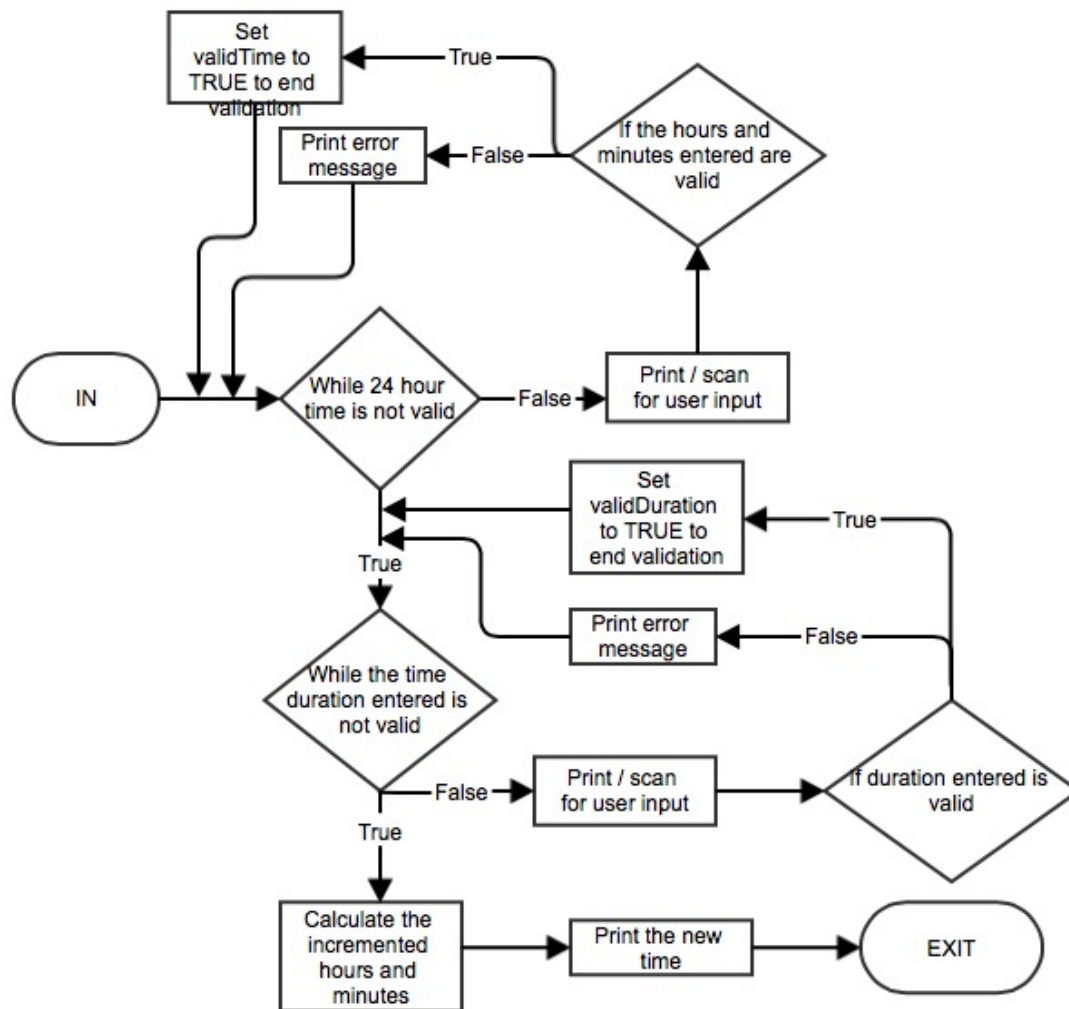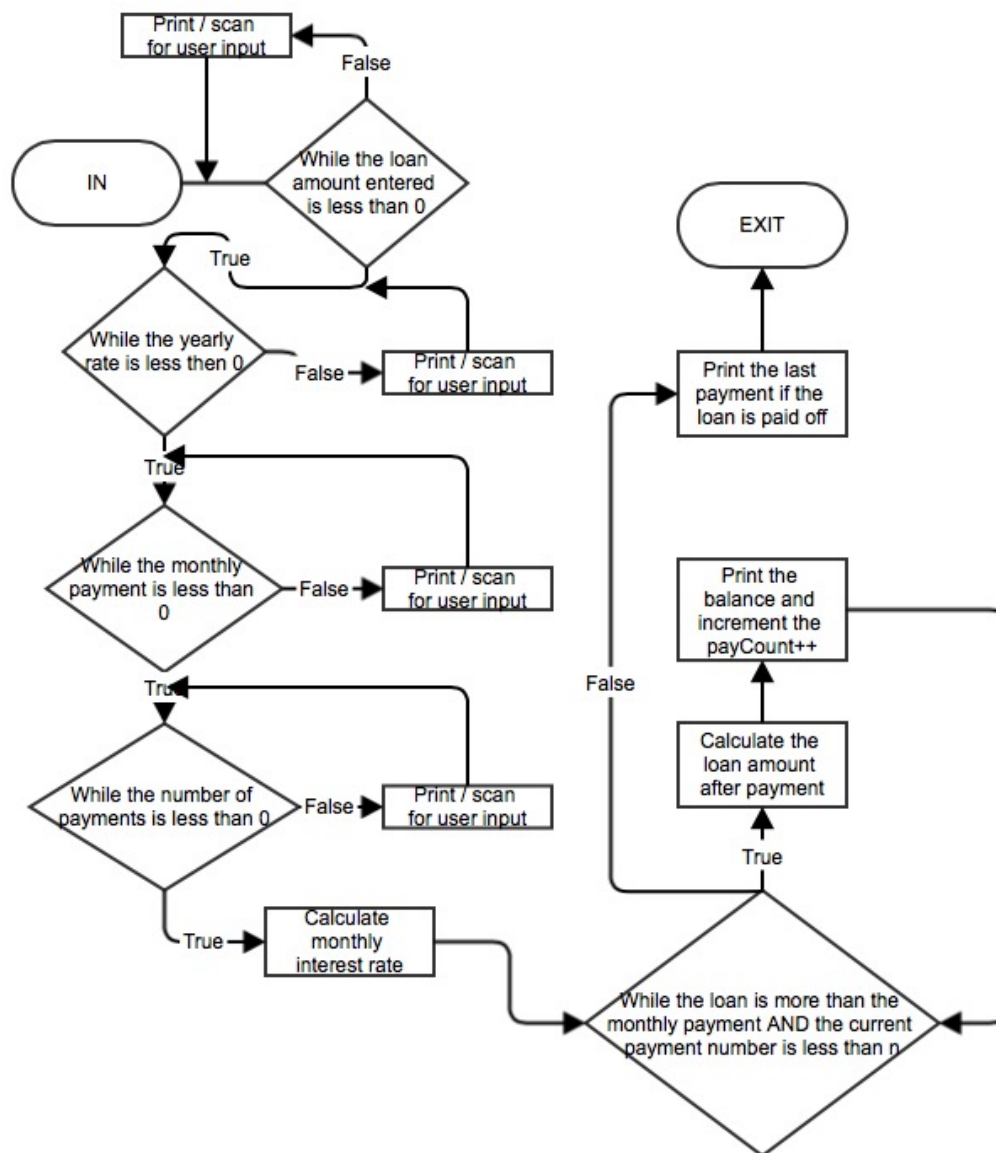| Input	Output
6420 - 456	Enter a valid day time in 24-hour format: 6420 Please enter a VALID 24-hour time. Enter a valid day time in 24-hour format:
2064 + 456	Enter a valid day time in 24-hour format: 2064 Please enter a VALID 24-hour time. Enter a valid day time in 24-hour format:
456 + 2064	Enter a valid day time in 24-hour format: 456 Enter a valid time duration: 2064 Please enter a VALID time duration. Enter a valid time duration:
456 + 500	Enter a valid day time in 24-hour format: 456 Enter a valid time duration: 500 The new time is: 0956

1234 + 3750	Enter a valid day time in 24-hour format: 1234 Enter a valid time duration: 3750 The new time is: 0224
1234 – 3750	Enter a valid day time in 24-hour format: 1234 Enter a valid time duration: -3750 The new time is: 2244
1234 – 1250	Enter a valid day time in 24-hour format: 1234 Enter a valid time duration: -1250 The new time is: 2344
123 + 456	Enter a valid day time in 24-hour format: 123 Enter a valid time duration: 456 The new time is: 0619
3 + 4	Enter a valid day time in 24-hour format: 3 Enter a valid time duration: 4 The new time is: 0007

2.

Flowchart:
- Print / scan for user input
- IN
- While the loan amount entered is less than 0
  - False → Print / scan for user input (loops back)
  - True → While the yearly rate is less then 0
    - False → Print / scan for user input
    - True → While the monthly payment is less than 0
      - False → Print / scan for user input
      - True → While the number of payments is less than 0
        - False → Print / scan for user input
        - True → Calculate monthly interest rate
          → While the loan is more than the monthly payment AND the current payment number is less than n
            - True → Calculate the loan amount after payment → Print the balance and increment the payCount++
            - False → Print the last payment if the loan is paid off → EXIT

Test cases:

Input	Output
Negative loan value	Enter the amount of the loan: -1 Enter the amount of the loan:
Negative interest rate	Enter the amount of the loan: 1234 Enter the yearly interest rate: -1 Enter the yearly interest rate:
Negative monthly payment	Enter the amount of the loan: 1234 Enter the yearly interest rate: 0.12 Enter the monthly payment amount: -1

	Enter the monthly payment amount:
Negative number of payments	Enter the amount of the loan: 1234
	Enter the yearly interest rate: 0.12
	Enter the monthly payment amount: 122
	Enter the number of monthly payments: -1
	Enter the number of monthly payments:
A loan that pays off in less payments	Enter the amount of the loan: 1234
	Enter the yearly interest rate as a decimal: 0.12
	Enter the monthly payment amount: 500
	Enter the number of monthly payments: 10
	The balance on the loan is: $746.34
	The balance on the loan is: $253.80
	The balance on the loan is: $0
	The last payment is: $256.34
A loan that doesn't get fully paid off	Enter the amount of the loan: 10000
	Enter the yearly interest rate as a decimal: 0.30
	Enter the monthly payment amount: 100
	Enter the number of monthly payments: 2
	The balance on the loan is: $10150.00
	The balance on the loan is: $10303.75
	The loan is not yet paid off

Questions:

i. Loan amount $12345, yearly rate 12%, monthly payment $1234, n = 15

Enter the amount of the loan: 12345
Enter the yearly interest rate as a decimal: 0.12
Enter the monthly payment amount: 1234
Enter the number of monthly payments: 15
The balance on the loan is: $11234.45
The balance on the loan is: $10112.79
The balance on the loan is: $8979.92
The balance on the loan is: $7835.72
The balance on the loan is: $6680.08
The balance on the loan is: $5512.88
The balance on the loan is: $4334.01
The balance on the loan is: $3143.35
The balance on the loan is: $1940.78
The balance on the loan is: $726.19
The balance on the loan is: $0
The last payment is: $733.45

ii. Loan amount $12345, yearly rate 12%, monthly payment $543.21, n = 15

Enter the amount of the loan: 12345
Enter the yearly interest rate as a decimal: 0.12
Enter the monthly payment amount: 543.21
Enter the number of monthly payments: 15

```
        The balance on the loan is: $11925.24
        The balance on the loan is: $11501.28
        The balance on the loan is: $11073.08
        The balance on the loan is: $10640.61
        The balance on the loan is: $10203.80
        The balance on the loan is: $9762.63
        The balance on the loan is: $9317.05
        The balance on the loan is: $8867.01
        The balance on the loan is: $8412.47
        The balance on the loan is: $7953.38
        The balance on the loan is: $7489.70
        The balance on the loan is: $7021.39
        The balance on the loan is: $6548.40
        The balance on the loan is: $6070.67
        The balance on the loan is: $5588.17
        The balance is not yet paid off
```

iii.   Loan amount $54321, yearly rate 12%, monthly payment
 $543.21, n = 15

```
        Enter the amount of the loan: 54321
        Enter the yearly interest rate as a decimal: 0.12
        Enter the monthly payment amount: 543.21
        Enter the number of monthly payments: 15
        The balance on the loan is: $54321.00
        The balance on the loan is: $54321.00
        The balance on the loan is: $54321.00
        The balance on the loan is: $54321.00
        The balance on the loan is: $54321.00
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        The balance on the loan is: $54321.00
        The balance on the loan is: $54321.00
        The balance on the loan is: $54321.00
        The balance on the loan is: $54321.00
        The balance is not yet paid off
```

iv.   Loan amount $54321, yearly rate 12%, monthly payment $321,
        n = 15

```
        Enter the amount of the loan: 54321
        Enter the yearly interest rate as a decimal: 0.12
        Enter the monthly payment amount: 321
        Enter the number of monthly payments: 15
        The balance on the loan is: $54543.21
        The balance on the loan is: $54767.64
        The balance on the loan is: $54994.32
        The balance on the loan is: $55223.26
```

```
The balance on the loan is: $55454.49
The balance on the loan is: $55688.03
The balance on the loan is: $55923.91
The balance on the loan is: $56162.15
The balance on the loan is: $56402.77
The balance on the loan is: $56645.80
The balance on the loan is: $56891.25
The balance on the loan is: $57139.16
The balance on the loan is: $57389.55
The balance on the loan is: $57642.45
The balance on the loan is: $57897.88
The balance is not yet paid off
```

3.
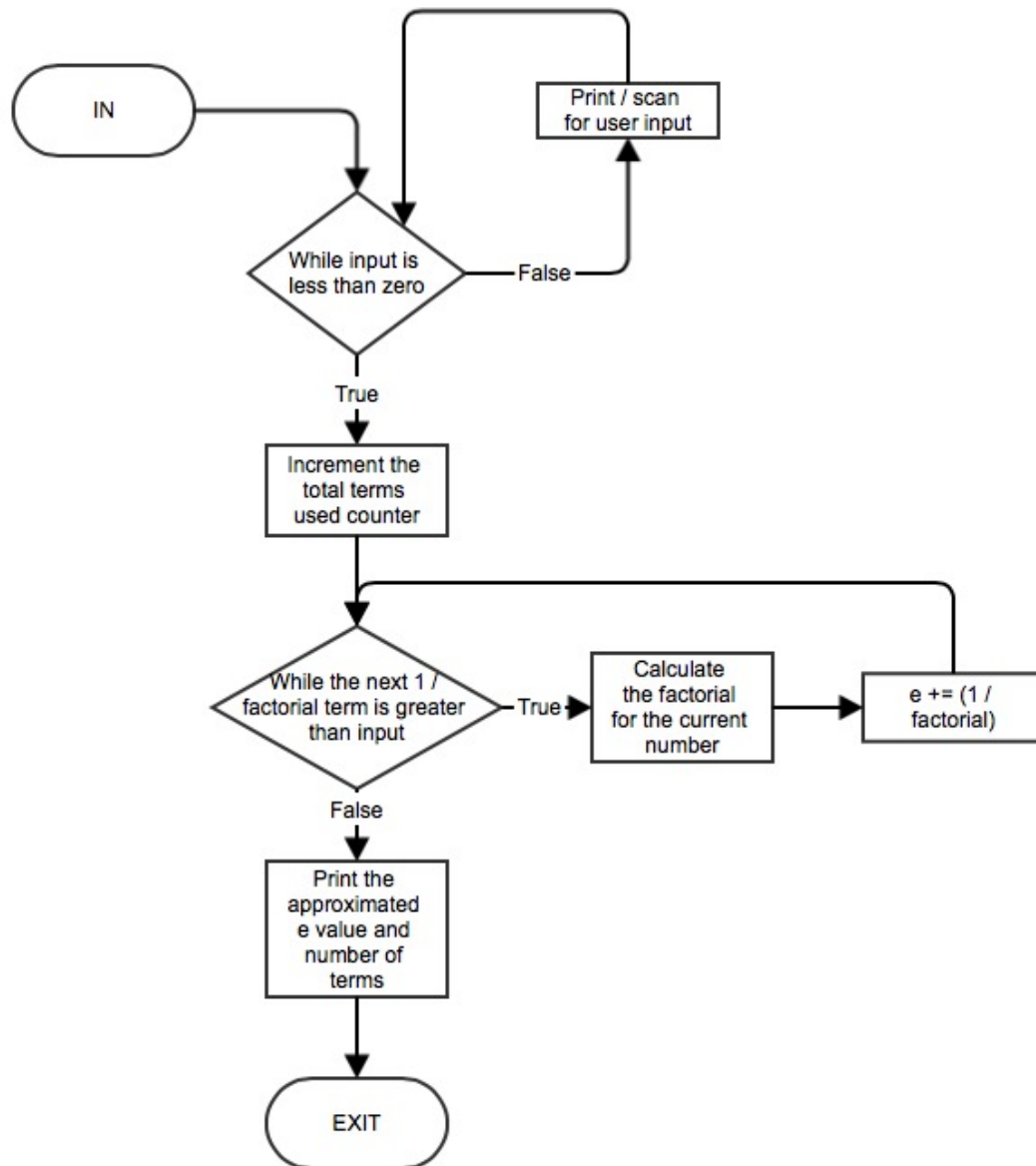
Test cases:

Input	Output
0.01	Enter a positive floating-point number: 0.01 The approximated value of e is: 2.716666666666666 The number of terms required to generate e was 5
0.001	Enter a positive floating-point number: 0.001 The approximated value of e is: 2.718253968253968 The number of terms required to generate e was 7
0.0001	Enter a positive floating-point number: 0.0001 The approximated value of e is: 2.718278769841270 The number of terms required to generate e was 8
0.00001	Enter a positive floating-point number: 0.00001

	The approximated value of e is: 2.718281525573192 The number of terms required to generate e was 9
0.000001	Enter a positive floating-point number: 0.000001 The approximated value of e is: 2.718281801146385 The number of terms required to generate e was 10
0.0000001	Enter a positive floating-point number: 0.0000001 The approximated value of e is: 2.718281826198493 The number of terms required to generate e was 11
0.00000001	Enter a positive floating-point number: 0.00000001 The approximated value of e is: 2.718281828286169 The number of terms required to generate e was 12
0.000000001	Enter a positive floating-point number: 0.000000001 The approximated value of e is: 2.718281828446759 The number of terms required to generate e was 13
0.0000000001	Enter a positive floating-point number: 0.0000000001 The approximated value of e is: 2.718281828458230 The number of terms required to generate e was 14
0.00000000001	Enter a positive floating-point number: 0.00000000001 The approximated value of e is: 2.718281828458995 The number of terms required to generate e was 15