LAB 09

CODE:

```
def NextDate():
    year = int(input("Input a year: "))
    month = int(input("Input a month [1-12]: "))
    day = int(input("Input a day [1-31]: "))
    if year > 40000 or year <= 0 or month < 1 or month > 12 or day < 1 or day > 31 or (month == 2 and day > 29):
        print("Invalid input")
        NextDate()
    else:
        if (year % 400 == 0):
            leap_year = True
        elif (year % 100 == 0):
            leap_year = False
        elif (year % 4 == 0):
            leap_year = True
        else:
            leap_year = False
    if month in (1, 3, 5, 7, 8, 10, 12):
        month_length = 31
    elif month == 2:
        if leap_year:
            month_length = 29
        elif not leap_year:
            month_length = 28
        else:
            month_length = 30
    else:
        month_length = 30
    if day < month_length:
        day += 1
```

```
    elif month in (4, 6, 9, 11) and day > 30 or month_length == 28:
        print("Invalid input")
        NextDate()
    else:
        day = 1
        if month == 12:
            month = 1
            year += 1
        else:
            month += 1
    print("The next date is [yyyy-mm-dd]:  %d-%d-%d." % (year, month, day))
NextDate()
```

METHOD FOR TESTING:

Equivalence class partitioning is used for testing the NextDate function

Test Cases:

1. **Valid Class 1 =** Year: 2022
   Month: 7
   Day: 9
   Output: “The next date is [yyyy-mm-dd]: 2022-7-10”

2. **Valid Class 2 =** Year: 2016
   Month: 2
   Day: 29
   Output: “The next date is [yyyy-mm-dd]: 2016-3-1.”

3. **Invalid Class 1 =** Year: 2021
   Month: 2
   Day: 29
   Output: “Invalid input”. (Because it is not a leap year and according to logic used in the code it will give an error)

4. **Invalid Class 2 =** Year: 50000
   Month: 3
   Day: 2
   Output: “Invalid input”. (Because the year is out of the given range.)
5. **Invalid Class 3 =** Year: 2022
   Month: 13
   Day: 2
   Output: “Invalid input”. (Because the month is out of range.)
6. **Invalid Class 4 =** Year: 2022
   Month: 6
   Day: 33
   Output: “Invalid input”. (Because the number of days is more than the given range)

INPUT CLASSES:

Classes for “year” input:

Invalid Value < 1	Valid Value => 1-40000	Invalid Value > 40000
-10	2022	50000

Test cases for “year” input:

Case ID	Test Steps / Description	Test Data			Expected Output	Actual Output	Status
		Year	Month	Day			
1	Input value of year, month, day	-10	1	1	Invalid Input	Invalid Input	Pass
2	Input value of year, month, day	2022	7	9	2022-7-10	2022-7-10	Pass
3	Input value of year, month, day	50000	1	1	Invalid Input	Invalid Input	Pass

```
Input a year: -10
Input a month [1-12]: 1
Input a day [1-31]: 1
Invalid input
```

Fig 1

```
Input a year: 2022
Input a month [1-12]: 7
Input a day [1-31]: 9
The next date is [yyyy-mm-dd]:  2022-7-10.
```

Fig 2

```
Input a year: 50000
Input a month [1-12]: 1
Input a day [1-31]: 1
Invalid input
```

Fig 3

Classes for "month" input:

Invalid Value < 1	Valid Value => 1-12	Invalid Valid > 12
0	7	13

Test Cases for "month" input:

Case ID	Steps / Description	Test Data			Expected Output	Actual Output	Status
		Year	Month	Day			
4	Input value of year, month, day	2022	0	1	Invalid Input	Invalid Input	Pass
5	Input value of year, month, day	2022	7	1	2022-7-2	2022-7-2	Pass
6	Input value of year, month, day	2022	13	1	Invalid Input	Invalid Input	Pass

```
Input a year: 2022
Input a month [1-12]: 0
Input a day [1-31]: 1
Invalid input
```

Fig 4

```
Input a year: 2022
Input a month [1-12]: 7
Input a day [1-31]: 1
The next date is [yyyy-mm-dd]:  2022-7-2.
```

Fig 5

```
Input a year: 2022
Input a month [1-12]: 13
Input a day [1-31]: 1
Invalid input
```

Fig 6

Classes for "day" input (months having 31 days):

Invalid Valid < 1	Valid Value => 1-31	Invalid Valid > 31
0	9	32

Test Cases for "day" input (months having 31 days):

Case ID	Steps / Description	Test Data			Expected Output	Actual Output	Status
		Year	Month	Day			
7	Input value of year, month, day	2022	1	0	Invalid Input	Invalid Input	Pass
8	Input value of year, month, day	2022	1	9	2022-1-10	2022-1-10	Pass
9	Input value of year, month, day	2022	1	32	Invalid Input	Invalid Input	Pass

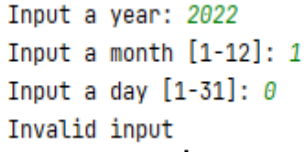

Fig 7

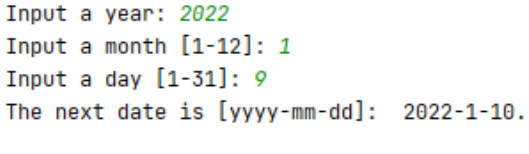

Fig 8

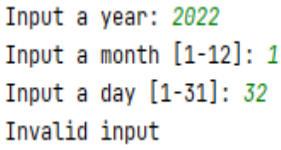

Fig 9

Classes for "day" input (months having 30 days):

Invalid Valid < 1	Valid Value => 1-30	Invalid Valid > 30
0	9	31

Test Cases for "day" input (months having 30 days):

Case ID	Steps / Description	Test Data			Expected Output	Actual Output	Status
		Year	Month	Day			
10	Input value of year, month, day	2022	4	0	Invalid Input	Invalid Input	Pass
11	Input value of year, month, day	2022	4	13	2022-4-14	2022-4-14	Pass
12	Input value of year, month, day	2022	4	31	Invalid Input	Invalid Input	Pass

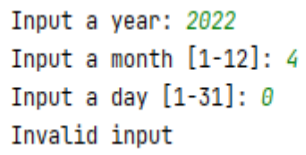

Fig 10

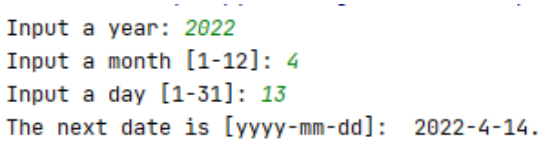

Fig 11

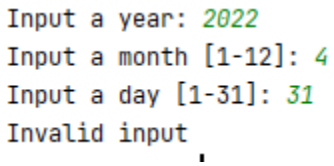

Fig 12

Classes for "day" input for February (leap years):

Invalid Value < 1	Valid Value => 1-29	Invalid Valid > 29
0	28	30

Test Cases for "day" input for February (leap years):

Case ID	Steps / Description	Test Data			Expected Output	Actual Output	Status
		Year	Month	Day			
13	Input value of year, month, day	2020	2	0	Invalid Input	Invalid Input	Pass
14	Input value of year, month, day	2020	2	28	2020-2-29	2020-2-29	Pass
15	Input value of year, month, day	2020	2	30	Invalid Input	Invalid Input	Pass

```
Input a year: 2020
Input a month [1-12]: 2
Input a day [1-31]: 0
Invalid input
```

Fig 13

```
Input a year: 2020
Input a month [1-12]: 2
Input a day [1-31]: 28
The next date is [yyyy-mm-dd]:  2020-2-29.
```

Fig 14

```
Input a year: 2020
Input a month [1-12]: 2
Input a day [1-31]: 30
Invalid input
```

Fig 15

Classes for "day" input for February (no leap years):

Invalid Value < 1	Valid Value => 1-28	Invalid Valid > 28
0	27	29

Test Cases for "day" input for February (no leap years):

Case ID	Steps / Description	Test Data			Expected Output	Actual Output	Status
		Year	Month	Day			
16	Input value of year, month, day	2022	2	0	Invalid Input	Invalid Input	Pass
17	Input value of year, month, day	2022	2	27	2022-2-28	2022-2-28	Pass
18	Input value of year, month, day	2022	2	29	Invalid Input	Invalid Input	Pass

```
Input a year: 2022
Input a month [1-12]: 2
Input a day [1-31]: 0
Invalid input
```

Fig 16

```
Input a year: 2022
Input a month [1-12]: 2
Input a day [1-31]: 27
The next date is [yyyy-mm-dd]: 2022-2-28.
```

Fig 17

```
Input a year: 2022
Input a month [1-12]: 2
Input a day [1-31]: 29
Invalid input
```

Fig 18