

```

from typing import Union
from math import floor

class Date():
    """Represents a year, month, and day"""
    def __init__(self, year, month, day) -> None:

        #Doing this the way that the problem asks, then being a try-hard after.
        self.year = year
        self.month = month
        self.day = day

        # Flag to identify if the year is BC
        self.bc = False

        # Dictionary to indicate allowable months and their number of days
        self.MONTH_MAPPING = {
            "January":31,
            "February":28,
            "March":31,
            "April":30,
            "May":31,
            "June":30,
            "July":31,
            "August":31,
            "September":30,
            "October":31,
            "November":30,
            "December":31
        }

        # Call the make date function to construct the date attributes
        self.make_date(year, month, day)

    def __str__(self) -> None:
        """
        Take in a date object and print the date. If the self.bc flag is set,
        append a BC tag to the date.
        """
        if self.bc:
            return f"{self.year}-{self.month}-{self.day} BC"
        else:
            return f"{self.year}-{self.month}-{self.day}"

    def _validate_year(self, year) -> None:
        """
        Validate the year input.

        This function will assign the self.year attribute and identify if the
        year is a leap year.

        Additionally, it will set the self.bc flag if the year is less than 0
        """

        # Per the article, below, the first time a leap year was instituted was
        # 46 B.C.
        # https://billpetro.com/history-of-leap-year/

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if int(year) < -46:
    #This is a BC year
    self.bc = True
    #Get the absolute value of the year. For example, the year will be
    # represented as 500 B.C. instead of -500
    self.year=abs(year)
elif int(year) < 0:
    self.bc = True
    #Get the absolute value to remove error in leap year calculation
    self.year=abs(year)
    self._is_leap(self.year)
else:
    self.bc = False
    #assign the year
    self.year=year
    # Check to see if the year is a leap year. This will reassign the
    # number of days in February
    self._is_leap(year)

def _validate_month(self, month) -> None:
    """
    Validate the month based on the rules defined in make_date().

    This function will perform the self.month attribute assignment if the
    month is valid.
    """
    try:
        # Use the month type to determine how to process it...
        if type(month)==int:
            # Error handling for invalid months
            if month > 12 or month < 1:
                raise Exception("ERROR: Invalid Month.")
            # The dictionary will retain it's insertion order, so index
            # into it and get the key where month = index+1
            else:
                for index, key in enumerate(self.MONTH_MAPPING.keys()):
                    if month == index+1:
                        self.month=key
                        break

            # Raise an exception if the month key does not return a value,
            # otherwise assign it to the month attribute
        elif type(month)==str:
            if not self.MONTH_MAPPING[f"{month}"]:
                raise Exception("ERROR: Invalid Month.")
            else:
                self.month=month

    except Exception as e:
        print(f"{e}")

def _validate_day(self, day) -> None:
    """
    Validate the day input.

    This function will perform the self.day attribute assignment if the

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    day is valid.
    """
    try:
        if day > self.MONTH_MAPPING[self.month] or day < 1:
            raise Exception("ERROR: Invalid Day.")
        else:
            self.day = day

    except Exception as e:
        print(f"{e}")

def _is_leap(self, year) -> None:
    """
    Verify whether the year is a leap year.
    """

    # No year that is not divisible by 4 can be a leap year
    if year%4:
        self.MONTH_MAPPING["February"] = 28
    # If the year is divisible by 4, it could still not be a leap year
    # because of the turn of the century
    elif not year%4:
        # Every 4 centuries will be a leap year
        if not year%400:
            self.MONTH_MAPPING["February"] = 29
        # If the year is divisible by 100, and not 400, it is not a leap year
        elif not year%100:
            self.MONTH_MAPPING["February"] = 28
        # All other cases where not year%4 are leap years
        else:
            self.MONTH_MAPPING["February"] = 29

def date_to_int(self) -> int:
    """
    Convert the current date to an integer that represents the number of
    days since day 0 for date comparison.
    """
    if self.bc:
        year_to_days = (self.year*365)-floor(self.year/4)
        month_to_days = self._get_days_from_month()
        return -year_to_days-month_to_days-self.day
    else:
        year_to_days = (self.year*365)+floor(self.year/4)
        month_to_days = self._get_days_from_month()
        return year_to_days+month_to_days+self.day

def _get_days_from_month(self):
    days=0
    for key, value in self.MONTH_MAPPING.items():
        days+=value
    if key==self.month:
        return days

def make_date(self, year:int, month:Union[int, str], day:int) -> str:
    """
    Takes in a year, month, and day and produces an equivalent date string.

```

Month supports both integer and string inputs.

Strings must be the full month name with the first letter capitalized.
For example: February

NOTE:

The validation order is critical, and must occur in year, month, day order.
Both the year and month must be valid before checking for leap year.
If it is a leap year, February will have an additional day, which will be
validated against the self.MONTH_MAPPING dictionary.

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"""
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# NOTE: This is how the question wants me to do this...
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```
self.year=year
```

```
self.month=month
```

```
self.day=day
```

```
"""
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```
NOTE: This is me being fancy, I apologize in advance. The validation  
functions are used to implement error checking for the respective inputs.  
Also, this allows for accurate date checking with leap years accounted  
for.
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"""
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```
# Validate the year input and assign it to the self.year attribute
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```
self._validate_year(year)
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```
# Validate the month input and assign it to the self.month attribute
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```
self._validate_month(month)
```

```
# Now that the self.MONTH_MAPPING dictionary contains the correct
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# number of days for February, validate the day input and assign the
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# self.day attribute
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self._validate_day(day)
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def is_after(self, date2) -> bool:
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"""
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```
Determine if the date contained in this instance comes after the input.
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"""
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```
if self.date_to_int() > date2.date_to_int():
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    return True
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else:
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```
    return False
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