Test.java:

```
* date is a error exception class exrends Exception class
* @author Peng Gao (pgaooscar@gmail.com)
* @version 0.1 November 11 2020
class Error extends Exception {
 private static final long serialVersionUID = 1L;
  * code is error code
 private int code;
  * constructor
  * @param c is error code
 public Error(int c) {
   code = c;
  * get error code function
  * @return error code
 public int getCode() {
   return code;
// To handle a date whose month is illegal
* ErrorMonth is a error exception class exrends Error class
* ErrorMonth e1 = new ErrorMonth(1998, 4, 27);
*
```

```
class ErrorMonth extends Error {
  private static final long serialVersionUID = 1L;
  private int m;
  * constructor
  * @param month is the month of date
  public ErrorMonth(int month) {
   super(3);
   m = month;
 // Call the getMonth(int) function defined in Question 1
  // to convert a numerical month into a string month
  * get month of date function
  * @return month
 public int getMonth() {
   return m;
// To handle a date whose year is illegal
* ErrorYear is a error exception class exrends Error class
* 
* ErrorYear e1 = new ErrorYear(1998, 4, 27);
 * 
class ErrorYear extends Error {
  * java 11 defualt serial version ID
```

```
private static final long serialVersionUID = 1L;
  * y is the year of date
  private int y;
  * constructor
  * @param year is the year of date
 public ErrorYear(int year) {
   super(1);
   y = year;
  * get year of date function
  * @return y is the year of date
 public int getYear() {
   return y;
// Base class to handle illegal day
* ErrorDay is a error exception class exrends Error class
* 
* ErrorDay e1 = new ErrorDay(1998, 4, 27);
* 
class ErrorDay extends Error {
  * java 11 defualt serial version ID
 private static final long serialVersionUID = 1L;
  * m is the month of date
 private int m;
```

```
* d is the day of date
 private int d;
  * constructor
  * @param month is the month of date
  * @param day is the day of the date
 public ErrorDay(int month, int day) {
   super(2);
   m = month;
   d = day;
 // Call the global function getMonth(int) defined in Question 1 to re
turn
 // the string representing the month
  * get month of date function
  * @return month
 public int getMonth() {
   return m;
  * @return day
 public int getDay() {
   return d;
// To handle a date whose year is a leap year,
* Error29Day is a error exception class exrends ErrorDay class
```

```
* 
 * Error29Day e1 = new Error29Day(1996, 4, 19);
 * 
 * @author Weijian Xiong (im.xwjian@gmail.com)
 * @version 0.1.1 March 13 2020
class Error29Day extends ErrorDay {
  * java 11 defualt serial version ID
  private static final long serialVersionUID = 1L;
  * y is the year of date
  private int y;
  * constructor
  * @param month is the month of date
  * @param day is the day of date
  * @param year is the year of date
  public Error29Day(int month, int day, int year) {
   super(month, day);
   y = year;
  * get year of date function
  * @return year of date
 public int getYear() {
   return y;
// To handle a date whose month is 1, or 3, or 7,
* Error31Day is a error exception class exrends ErrorDay class
```

```
* 
 * Error31Day e1 = new Error31Day(1998, 4, 27);
class Error31Day extends ErrorDay {
  * java 11 defualt serial version ID
 private static final long serialVersionUID = 1L;
  * y is the year
  private int y;
  * class constructor
  * @param month is the month of date
  * @param day is the day of date
  * @param year is the year of date
  public Error31Day(int month, int day, int year) {
   super(month, day);
   y = year;
  * get year of date function
  * @return y is the year of date
 public int getYear() {
   return y;
// To handle a date whose year is not a leap year,
// month is Feburay, but the day is greater than 28
 * Error28Day is a error exception class exrends ErrorDay class
* 
* Error28Day e1 = new Error31Day(1998, 4, 27);
```

```
class Error28Day extends ErrorDay {
  * java 11 defualt serial version ID
  private static final long serialVersionUID = 1L;
  * y is the year
  private int y;
  * class constructor
  * @param month is the month of date
  * @param day is the day of date
  * @param year is the year of date
  public Error28Day(int month, int day, int year) {
   super(month, day);
   y = year;
  * get year of date function
  * @return y is the year of date
 public int getYear() {
   return y;
// or 11, but the day is greater than 30
* Error30Day is a error exception class exrends ErrorDay class
* 
* Error30Day e1 = new Error31Day(1998, 4, 27);
 * 
class Error30Day extends ErrorDay {
```

```
* serial
 private static final long serialVersionUID = 1L;
  * y is the year
 private int y;
  * constructor
  * @param month is the month of date
  * @param day is the day of date
  * @param year is the year of date
 public Error30Day(int month, int day, int year) {
   super(month, day);
   y = year;
  * get year of date function
  * @return y is the year of date
 public int getYear() {
   return y;
* Test is a class use to run date class
* Date d1 = new Date(1998, 4, 27);
* 
* @author Peng Gao (pgaooscar@gmail.com)
* @version 0.1 November 11 2020
public class Test {
```

```
* main class use to run the program
  * @param args arguments
 public static void main(String[] args) {
   // Error 21: Illegal day 34 for March
   System.out.println("-----Test:: 1993, 3, 34--
  -----");
   try {
    Date d1 = new Date(1993, 3, 34);
   } catch (Error29Day e3) {
     System.out.println("\nError " + e3.getCode() + ": 29th error " +
"\nIllegal:
              Day: " + e3.getDay()
         + " Month: " + e3.getMonth() + " Year: " + e3.getYear());
   } catch (Error31Day e4) {
     System.out.println("\nError " + e4.getCode() + ": 31th error " +
'\nIllegal: Day: " + e4.getDay() + " Month: "
         + e4.getMonth() + " Year: " + e4.getYear());
   } catch (Error28Day e5) {
     System.out.println("\nError " + e5.getCode() + ": 28th error " +
"\nIllegal: Day: " + e5.getDay() + " Month: "
         + e5.getMonth() + " Year: " + e5.getYear());
   } catch (Error30Day e6) {
     System.out.println("\nError " + e6.getCode() + ": 30th error " +
'\nIllegal: Day: " + e6.getDay() + " Month: "
         + e6.getMonth() + " Year: " + e6.getYear());
   } catch (ErrorYear e) {
     System.out.println("\nError " + e.getCode() + ": year error" + "\
nIllegal: Year: " + e.getYear());
   } catch (ErrorDay e1) {
     System.out.println("\nError " + e1.getCode() + ": day error" + "\
nIllegal: Day: " + e1.getDay() + " Month: "
         + e1.getMonth());
   } catch (ErrorMonth e2) {
     System.out.println("\nError " + e2.getCode() + ": month error" +
"\nIllegal: Month: " + e2.getMonth());
   System.out.println("\n-----
   try {
     Date d2 = new Date(1993, -1, 34);
   } catch (Error29Day e3) {
```

```
System.out.println("\nError " + e3.getCode() + ": 29th error " +
              Day: " + e3.getDay()
"\nIllegal:
         + " Month: " + e3.getMonth() + " Year: " + e3.getYear());
    } catch (Error31Day e4) {
     System.out.println("\nError " + e4.getCode() + ": 31th error " +
"\nIllegal:
              Day: " + e4.getDay() + " Month: "
         + e4.getMonth() + " Year: " + e4.getYear());
    } catch (Error28Day e5) {
     System.out.println("\nError " + e5.getCode() + ": 28th error " +
              Day: " + e5.getDay() + " Month: "
"\nIllegal:
         + e5.getMonth() + " Year: " + e5.getYear());
    } catch (Error30Day e6) {
     System.out.println("\nError " + e6.getCode() + ": 30th error " +
              Day: " + e6.getDay() + " Month: "
         + e6.getMonth() + " Year: " + e6.getYear());
    } catch (ErrorYear e) {
      System.out.println("\nError " + e.getCode() + ": year error" + "\
nIllegal:
            Year: " + e.getYear());
    } catch (ErrorDay e1) {
     System.out.println("\nError " + e1.getCode() + ": day error" + "\
nIllegal: Day: " + e1.getDay() + " Month: "
         + e1.getMonth());
   } catch (ErrorMonth e2) {
     System.out.println("\nError " + e2.getCode() + ": month error" +
'\nIllegal: Month: " + e2.getMonth());
   // Error 22: Illegal day 29 for Feburary in 1993
   System.out.println("\n-----
Test:: 1993, 2, 29-----");
   try {
     Date d3 = new Date(1993, 2, 29);
    } catch (Error29Day e3) {
     System.out.println("\nError " + e3.getCode() + ": 29th error " +
              Day: " + e3.getDay()
'\nIllegal:
         + " Month: " + e3.getMonth() + " Year: " + e3.getYear());
    } catch (Error31Day e4) {
     System.out.println("\nError " + e4.getCode() + ": 31th error " +
"\nIllegal: Day: " + e4.getDay() + " Month: "
         + e4.getMonth() + " Year: " + e4.getYear());
    } catch (Error28Day e5) {
     System.out.println("\nError " + e5.getCode() + ": 28th error " +
"\nIllegal: Day: " + e5.getDay() + " Month: "
        + e5.getMonth() + " Year: " + e5.getYear());
```

```
} catch (Error30Day e6) {
     System.out.println("\nError " + e6.getCode() + ": 30th error " +
               Day: " + e6.getDay() + " Month: "
"\nIllegal:
         + e6.getMonth() + " Year: " + e6.getYear());
    } catch (ErrorYear e) {
     System.out.println("\nError " + e.getCode() + ": year error" + "\
nIllegal:
             Year: " + e.getYear());
   } catch (ErrorDay e1) {
     System.out.println("\nError " + e1.getCode() + ": day error" + "\
             Day: " + e1.getDay() + " Month: "
         + e1.getMonth());
    } catch (ErrorMonth e2) {
     System.out.println("\nError " + e2.getCode() + ": month error" +
              Month: " + e2.getMonth());
'\nIllegal:
   System.out.println("\n-----
Test:: 1993, 13, 25----");
   try {
     Date d4 = new Date(1993, 13, 25);
   } catch (Error29Day e3) {
     System.out.println("\nError " + e3.getCode() + ": 29th error " +
              Day: " + e3.getDay()
'\nIllegal:
         + " Month: " + e3.getMonth() + " Year: " + e3.getYear());
   } catch (Error31Day e4) {
     System.out.println("\nError " + e4.getCode() + ": 31th error " +
'\nIllegal: Day: " + e4.getDay() + " Month: "
         + e4.getMonth() + " Year: " + e4.getYear());
    } catch (Error28Day e5) {
     System.out.println("\nError " + e5.getCode() + ": 28th error " +
'\nIllegal: Day: " + e5.getDay() + " Month: "
         + e5.getMonth() + " Year: " + e5.getYear());
   } catch (Error30Day e6) {
     System.out.println("\nError " + e6.getCode() + ": 30th error " +
"\nIllegal:
              Day: " + e6.getDay() + " Month: "
         + e6.getMonth() + " Year: " + e6.getYear());
   } catch (ErrorYear e) {
     System.out.println("\nError " + e.getCode() + ": year error" + "\
            Year: " + e.getYear());
nIllegal:
   } catch (ErrorDay e1) {
     System.out.println("\nError " + e1.getCode() + ": day error" + "\
             Day: " + e1.getDay() + " Month: "
nIllegal:
         + e1.getMonth());
```

```
} catch (ErrorMonth e2) {
     System.out.println("\nError " + e2.getCode() + ": month error" +
"\nIllegal: Month: " + e2.getMonth());
   // Error 21: Illegal day 32 for December
   System.out.println("\n-----
Test:: 1988, 12, 32----");
   try {
     Date d5 = new Date(1988, 12, 32);
   } catch (Error29Day e3) {
     System.out.println("\nError " + e3.getCode() + ": 29th error " +
"\nIllegal:
              Day: " + e3.getDay()
         + " Month: " + e3.getMonth() + " Year: " + e3.getYear());
   } catch (Error31Day e4) {
     System.out.println("\nError " + e4.getCode() + ": 31th error " +
'\nIllegal: Day: " + e4.getDay() + " Month: "
         + e4.getMonth() + " Year: " + e4.getYear());
   } catch (Error28Day e5) {
     System.out.println("\nError " + e5.getCode() + ": 28th error " +
"\nIllegal: Day: " + e5.getDay() + " Month: "
         + e5.getMonth() + " Year: " + e5.getYear());
   } catch (Error30Day e6) {
     System.out.println("\nError " + e6.getCode() + ": 30th error " +
'\nIllegal: Day: " + e6.getDay() + " Month: "
         + e6.getMonth() + " Year: " + e6.getYear());
   } catch (ErrorYear e) {
     System.out.println("\nError " + e.getCode() + ": year error" + "\
nIllegal: Year: " + e.getYear());
   } catch (ErrorDay e1) {
     System.out.println("\nError " + e1.getCode() + ": day error" + "\
nIllegal: Day: " + e1.getDay() + " Month: "
         + e1.getMonth());
   } catch (ErrorMonth e2) {
     System.out.println("\nError " + e2.getCode() + ": month error" +
"\nIllegal: Month: " + e2.getMonth());
   // Error 24: Illegal day 31 for April
   System.out.println("\n-----
Test:: 1993, 4, 31-----");
   try {
     Date d6 = new Date(1993, 4, 31);
   } catch (Error29Day e3) {
```

```
System.out.println("\nError " + e3.getCode() + ": 29th error " +
              Day: " + e3.getDay()
"\nIllegal:
         + " Month: " + e3.getMonth() + " Year: " + e3.getYear());
    } catch (Error31Day e4) {
     System.out.println("\nError " + e4.getCode() + ": 31th error " +
"\nIllegal:
              Day: " + e4.getDay() + " Month: "
         + e4.getMonth() + " Year: " + e4.getYear());
    } catch (Error28Day e5) {
     System.out.println("\nError " + e5.getCode() + ": 28th error " +
               Day: " + e5.getDay() + " Month: "
"\nIllegal:
         + e5.getMonth() + " Year: " + e5.getYear());
    } catch (Error30Day e6) {
     System.out.println("\nError " + e6.getCode() + ": 30th error " +
              Day: " + e6.getDay() + " Month: "
         + e6.getMonth() + " Year: " + e6.getYear());
    } catch (ErrorYear e) {
      System.out.println("\nError " + e.getCode() + ": year error" + "\
nIllegal:
            Year: " + e.getYear());
    } catch (ErrorDay e1) {
     System.out.println("\nError " + e1.getCode() + ": day error" + "\
            Day: " + e1.getDay() + " Month: "
nIllegal:
         + e1.getMonth());
   } catch (ErrorMonth e2) {
     System.out.println("\nError " + e2.getCode() + ": month error" +
'\nIllegal: Month: " + e2.getMonth());
   System.out.println("\n-----
Test:: 1993, 13, 25----");
   try {
     Date d7 = new Date(1993, 13, 25);
    } catch (Error29Day e3) {
     System.out.println("\nError " + e3.getCode() + ": 29th error " +
              Day: " + e3.getDay()
'\nIllegal:
         + " Month: " + e3.getMonth() + " Year: " + e3.getYear());
    } catch (Error31Day e4) {
     System.out.println("\nError " + e4.getCode() + ": 31th error " +
"\nIllegal: Day: " + e4.getDay() + " Month: "
         + e4.getMonth() + " Year: " + e4.getYear());
    } catch (Error28Day e5) {
      System.out.println("\nError " + e5.getCode() + ": 28th error " +
"\nIllegal: Day: " + e5.getDay() + " Month: "
         + e5.getMonth() + " Year: " + e5.getYear());
```

```
} catch (Error30Day e6) {
     System.out.println("\nError " + e6.getCode() + ": 30th error " +
               Day: " + e6.getDay() + " Month: "
"\nIllegal:
         + e6.getMonth() + " Year: " + e6.getYear());
    } catch (ErrorYear e) {
     System.out.println("\nError " + e.getCode() + ": year error" + "\
nIllegal:
             Year: " + e.getYear());
   } catch (ErrorDay e1) {
     System.out.println("\nError " + e1.getCode() + ": day error" + "\
             Day: " + e1.getDay() + " Month: "
         + e1.getMonth());
    } catch (ErrorMonth e2) {
     System.out.println("\nError " + e2.getCode() + ": month error" +
              Month: " + e2.getMonth());
'\nIllegal:
   // Error 24: Illegal day 31 for November
   System.out.println("\n-----
Test:: 1993, 11, 31-----");
   try {
     Date d8 = new Date(1993, 11, 31);
   } catch (Error29Day e3) {
     System.out.println("\nError " + e3.getCode() + ": 29th error " +
              Day: " + e3.getDay()
'\nIllegal:
         + " Month: " + e3.getMonth() + " Year: " + e3.getYear());
   } catch (Error31Day e4) {
     System.out.println("\nError " + e4.getCode() + ": 31th error " +
'\nIllegal: Day: " + e4.getDay() + " Month: "
         + e4.getMonth() + " Year: " + e4.getYear());
    } catch (Error28Day e5) {
     System.out.println("\nError " + e5.getCode() + ": 28th error " +
'\nIllegal: Day: " + e5.getDay() + " Month: "
         + e5.getMonth() + " Year: " + e5.getYear());
   } catch (Error30Day e6) {
     System.out.println("\nError " + e6.getCode() + ": 30th error " +
"\nIllegal:
              Day: " + e6.getDay() + " Month: "
         + e6.getMonth() + " Year: " + e6.getYear());
   } catch (ErrorYear e) {
     System.out.println("\nError " + e.getCode() + ": year error" + "\
            Year: " + e.getYear());
nIllegal:
   } catch (ErrorDay e1) {
     System.out.println("\nError " + e1.getCode() + ": day error" + "\
             Day: " + e1.getDay() + " Month: "
nIllegal:
        + e1.getMonth());
```

```
} catch (ErrorMonth e2) {
    System.out.println("\nError " + e2.getCode() + ": month error" +
"\nIllegal: Month: " + e2.getMonth());
   }
}
```

Date.java:

```
Error
public
        |public | public
  | Error31Days | | Error29Day |
```

```
* 
 * Date d1 = new Date(1998, 4, 27);
 * 
 * @author Peng Gao (pgaooscar@gmail.com)
 * @version 0.1 November 11 2020
public class Date {
    * y is year of date
    private int y;
    * m is month of date
    private int m;
    * d is day of date
    private int d;
    * leap_yeay_flag is using to check does it is a leap year
    private int leap_year_flag;
    * date class constructor
    * @param y1 is the year of new date
    * @param m1 is the month of new date
    * @param d1 is the day of new date
    * @throws Error29Day error exception
     * @throws Error31Day error exception
    * @throws Error28Day error exception
    * @throws Error30Day error exception
    * @throws ErrorDay error exception
    * @throws ErrorMonth error exception
     * @throws ErrorYear error exception
    public Date(int y1, int m1, int d1)
           throws Error29Day, Error31Day, Error28Day, Error30Day, Erro
rDay, ErrorMonth, ErrorYear {
```

```
if (y1 > 9999 || y1 < 0) {
           throw new ErrorYear(y1);
       } else if (m1 < 0 \mid \mid m1 > 12) {
           throw new ErrorMonth(m1);
       } else if (d1 < 0 || d1 > 31) {
           throw new ErrorDay(m1, d1);
       } else if (y1 \% 4 != 0 \&\& m1 == 2 \&\& d1 > 28) {
           throw new Error28Day(m1, d1, y1);
       } else if (y1 \% 4 == 0 \&\& m1 == 2 \&\& d1 > 29) {
           throw new Error29Day(m1, d1, y1);
       } else if (m1 == 4 || m1 == 6 || m1 == 9 || m1 == 11) {
           if (d1 > 30) {
               throw new Error30Day(m1, d1, y1);
       } else if (m1 == 1 || m1 == 3 || m1 == 7 || m1 == 8 || m1 == 10
| | m1 == 12) {
           if (d1 > 31) {
               throw new Error31Day(m1, d1, y1);
       } else {
           y = y1;
           m = m1;
           d = d1;
           leap_year_flag = 1;
  // Call global function "isLeapYear(int)"
  // to check if it is a leap year
   * check if is leap year or not function
   * @param year is the year you want to check
   * @return 1 or 0
  public int isLeapYear(int year) {
       if (year % 4 == 0) {
           leap_year_flag = 1;
           return leap_year_flag;
       } else {
           leap_year_flag = 0;
           return leap_year_flag;
```

}

Output & Javadoc:

```
● Test.java X
1: Java Process Console × + 🗓 🛍 ^ ×
PROBLEMS (13 OUTPUT DEBUG CONSOLE TERMINAL
Error 2: day error
Illegal: Day: 34 Month: 3
 -----Test:: 1993, -1, 34------
Error 3: month error
Illegal: Month: -1
Error 2: 28th error
Illegal: Day: 29 Month: 2 Year: 1993
 -----Test:: 1993, 13, 25------
Error 3: month error Illegal: Month: 13
       -----Test:: 1988, 12, 32-----
Error 2: day error
Illegal: Day: 32 Month: 12
Error 2: 30th error
Illegal: Day: 31 Month: 4 Year: 1993
Error 3: month error Illegal: Month: 13
Error 2: 30th error
Illegal: Day: 31 Month: 11 Year: 1993
                                                  Ln 554, Col 6 Spaces: 2 UTF-8 CRLF Java 🖒 JavaSE-11 🛈 🔊 😃
13 🕁
                                                            6
                     📉 🧈 😱 🔀
```



