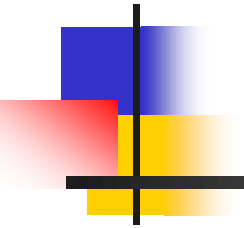


Java Dates

Using Dates in Java

- Working with dates and time in Java is surprisingly complicated.

- In Project 15, we will use the built-in Calendar class to represent an animal's date of birth.
  - (vs. "age" which keeps changing.)
  - https://docs.oracle.com/javase/7/docs/api/java/util/Calendar.html

- You do not need to understand the Calendar class (or the Date class) in detail.
  - Just how to get and set Date values for day, month, and year as show on the following slides.

Creating a Calendar Object

```
import java.util.Calendar;
...
```

Note factory method.

```
Calendar cal = Calendar.getInstance();
```

The object is initialized set to the current day.

Class Calendar Methods

void	**set**(int year, int month, int date) Sets the values for the calendar fields YEAR, MONTH, and DAY_OF_MONTH.
int	**get**(int field) Returns the value of the given calendar field.

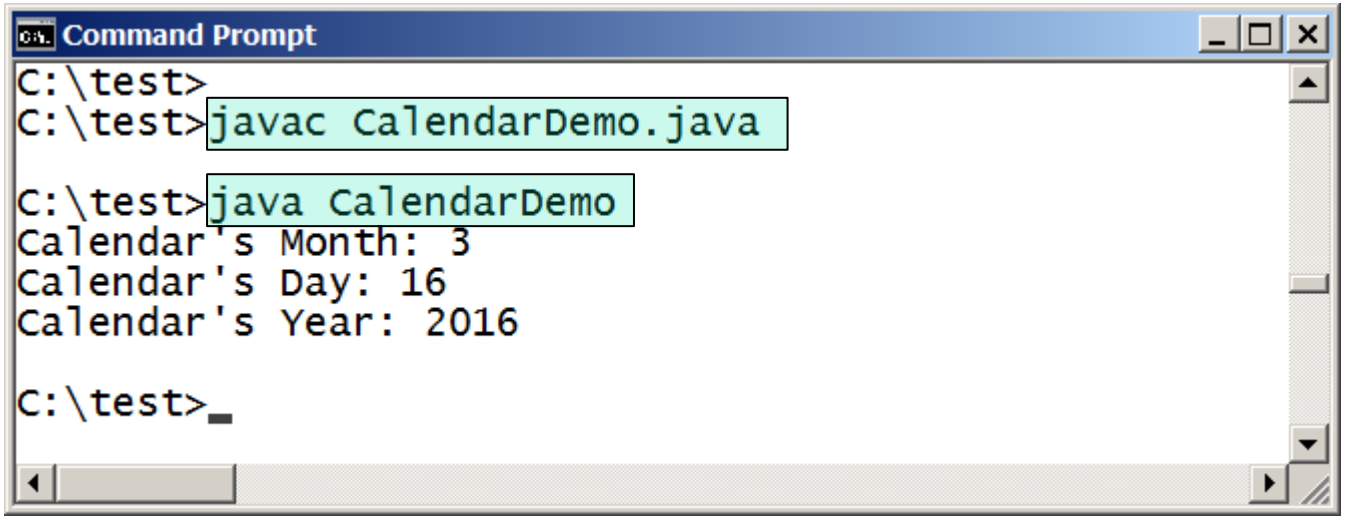
- Numerical values for month start with 0.
  - 0 means January
  - 1 means February ...
  - 11 means December
- Numerical values for year and date (day of month) are normal.
- Go figure!

CalendarDemo.java

```
import java.util.Calendar;

public class CalendarDemo
{
   public static void main(String[] args)
   {
       // Create a calendar.
       Calendar cal = Calendar.getInstance();

       // Get the values of the calendar date fields.
       System.out.println("Calendar's Month: " + cal.get(Calendar.MONTH));
       System.out.println("Calendar's Day: " + cal.get(Calendar.DATE));
       System.out.println("Calendar's Year: " + cal.get(Calendar.YEAR));
   }
}
```

Calendar.getInstance returns a Calendar object set to the current date.

Test Run



Output is the current date when the program was run.

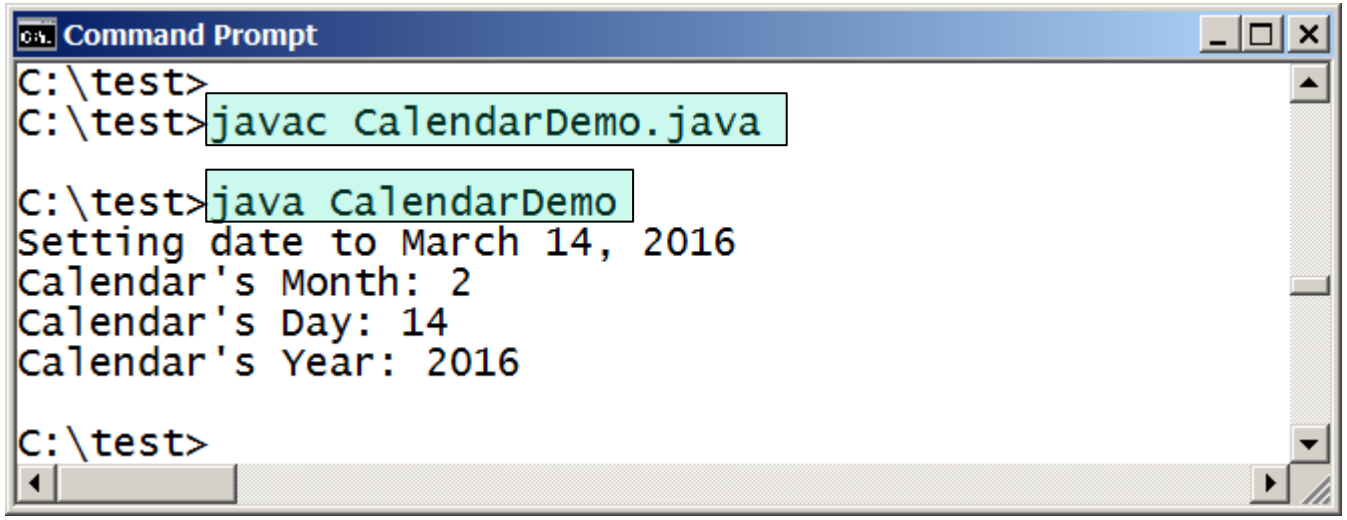
It was actually April 16, 2016 or 4/16/2016

Setting the Date in a Calendar

```
import java.util.Calendar;

public class CalendarDemo
{
   public static void main(String[] args)
   {
        // Create a calendar.
        Calendar cal = Calendar.getInstance();

        // Set the date to PI day  3/14/16
        System.out.println("Setting date to March 14, 2016");
        cal.set(2016, 2, 14);

        // Get the values of the calendar date fields.
        System.out.println("Calendar's Month: " + cal.get(Calendar.MONTH));
        System.out.println("Calendar's Day: " + cal.get(Calendar.DATE));
        System.out.println("Calendar's Year: " + cal.get(Calendar.YEAR));
   }
}
```

Add to CalendarDemo.java

Modified CalendarDemo



Output is the date that we set.

Using Class Calendar

- When setting a numerical value for month, subtract 1 from the normal value.
- When displaying a Calendar date, add 1 to the numerical value of month returned by the Calendar object.