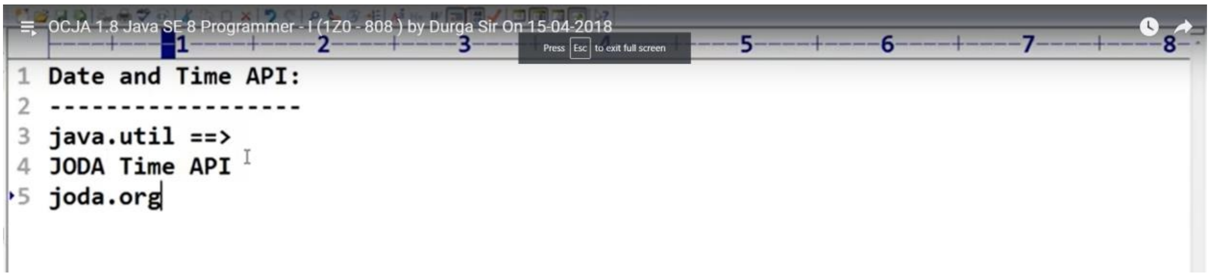
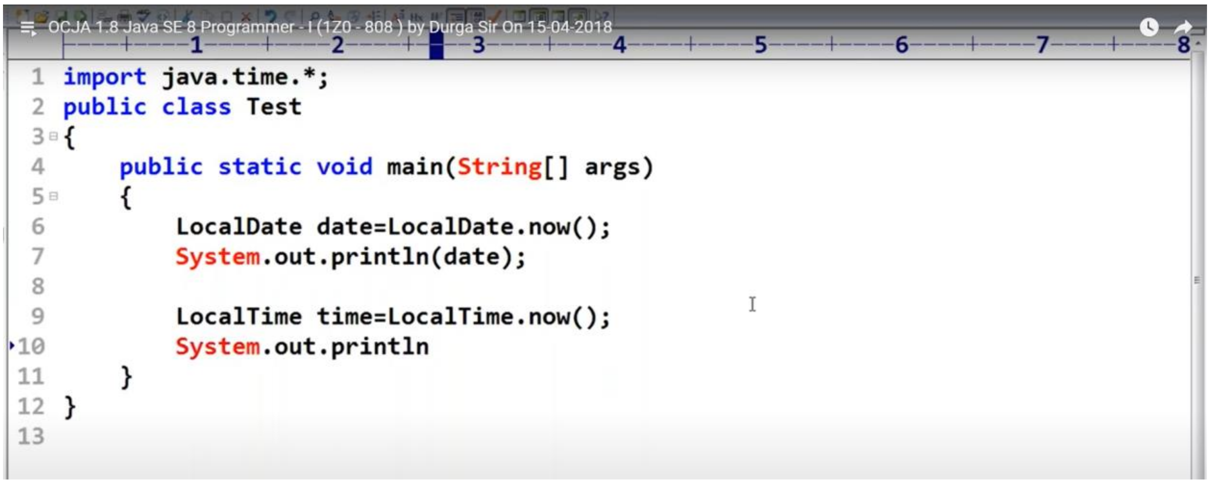
JAVA JODA API has developed Date and Time API,

java.time package

Java util date and time has been deprecated, now JODA api is being used. JAVA 8


OCJA 1.8 Java SE 8 Programmer - I (1Z0 - 808) by Durga Sir On 15-04-2018
Press Esc to exit full screen

```
Date and Time API:
------------------
java.util ==>
JODA Time API
joda.org
```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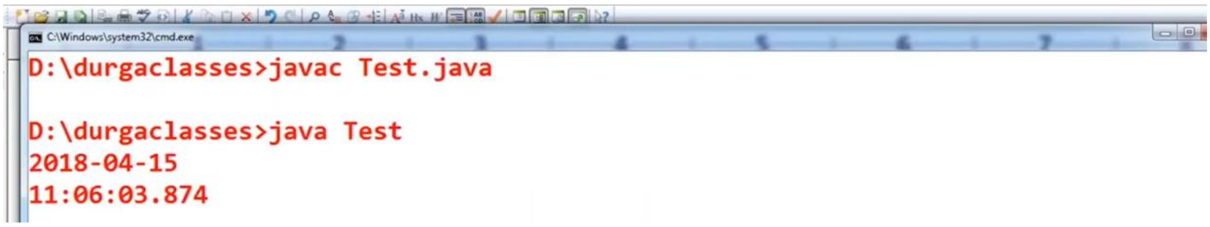
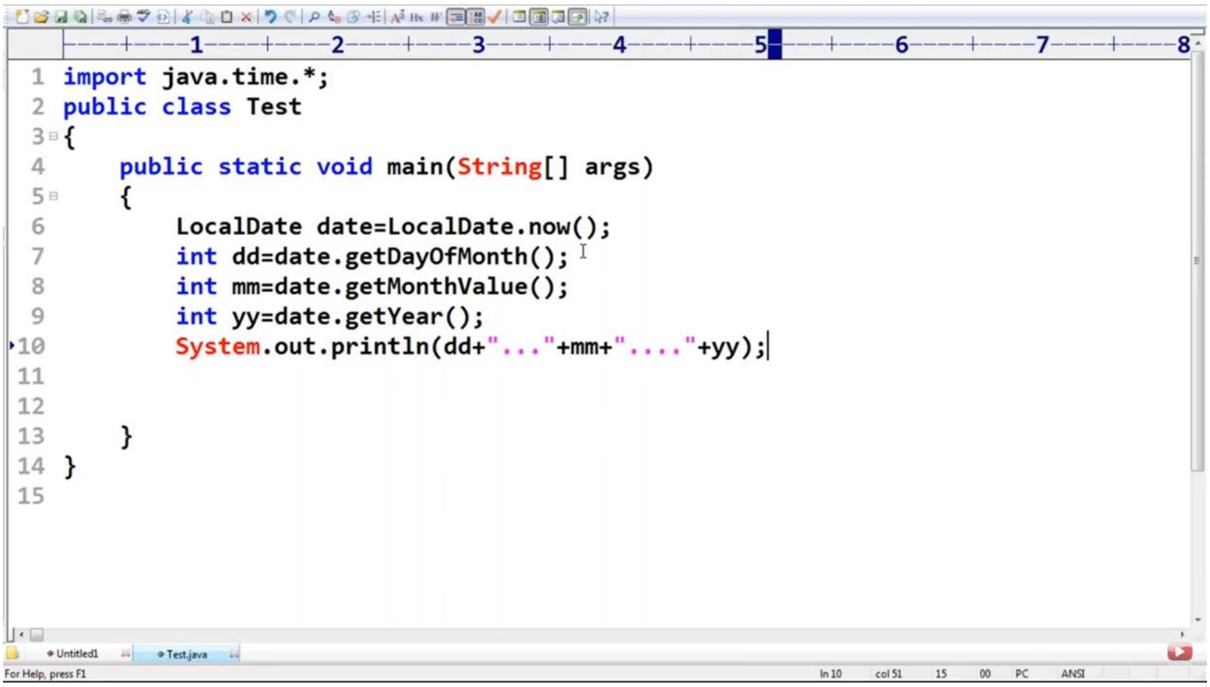
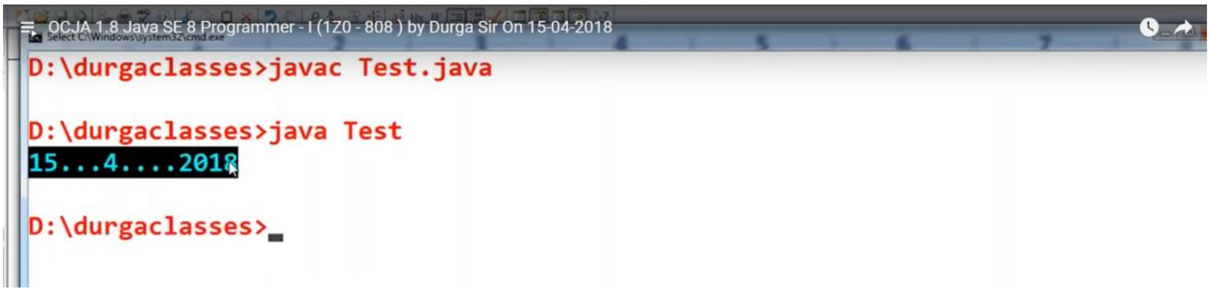
```java
import java.time.*;
public class Test
{
    public static void main(String[] args)
    {
        LocalDate date=LocalDate.now();
        System.out.println(date);

        LocalTime time=LocalTime.now();
        System.out.println
    }
}

```



```
D:\durgaclasses>javac Test.java

D:\durgaclasses>java Test
2018-04-15
11:06:03.874
```



```
import java.time.*;
public class Test
{
    public static void main(String[] args)
    {
        LocalDate date=LocalDate.now();
        int dd=date.getDayOfMonth();
        int mm=date.getMonthValue();
        int yy=date.getYear();
        System.out.println(dd+"..."+mm+"...."+yy);


    }
}
```



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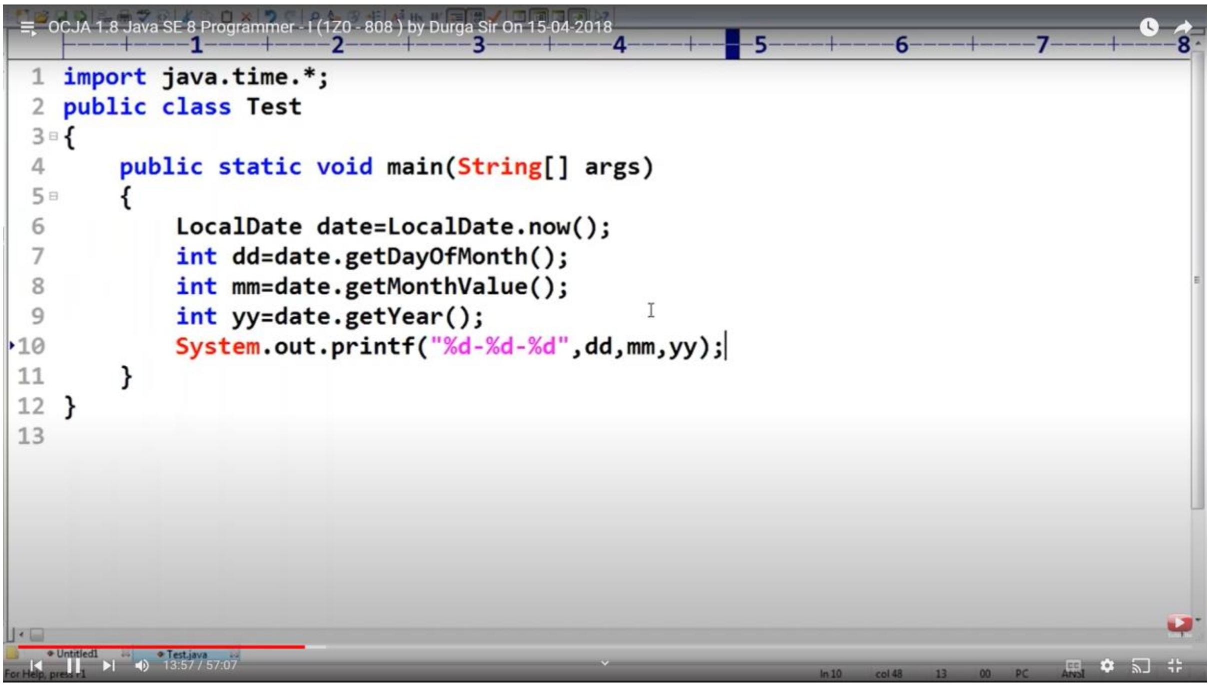
Select C:\Windows\system32\cmd.exe

```
D:\durgaclasses>javac Test.java

D:\durgaclasses>java Test
15...4....2018

D:\durgaclasses>_
```



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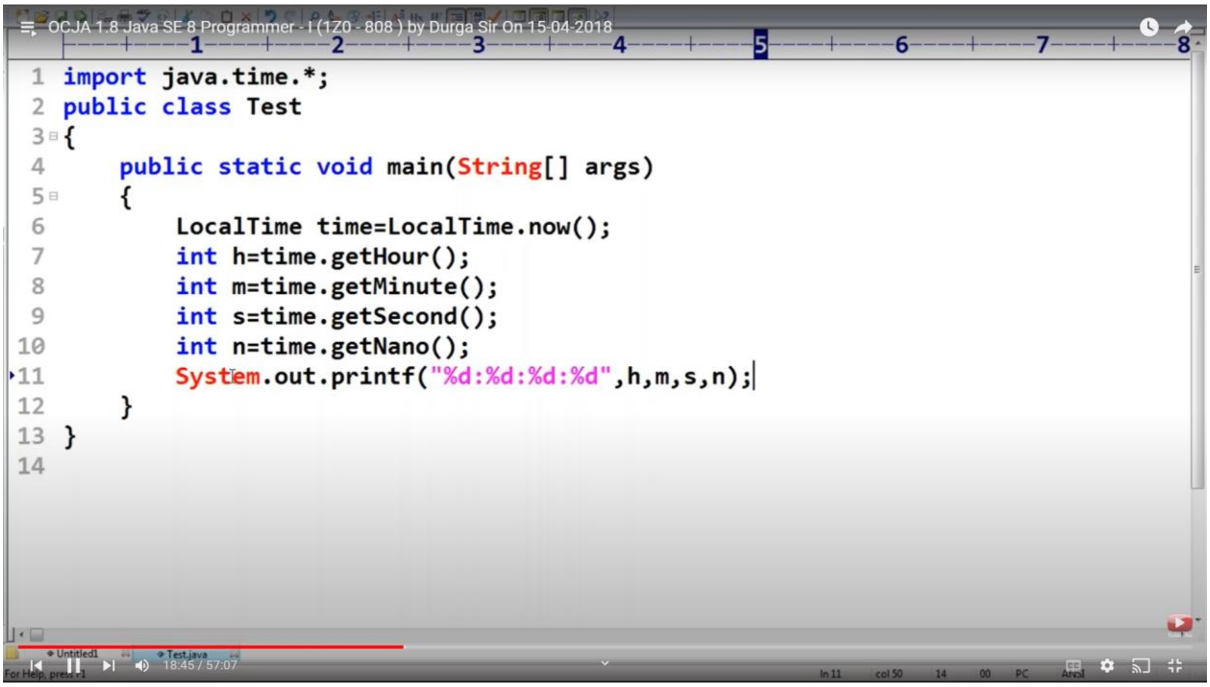
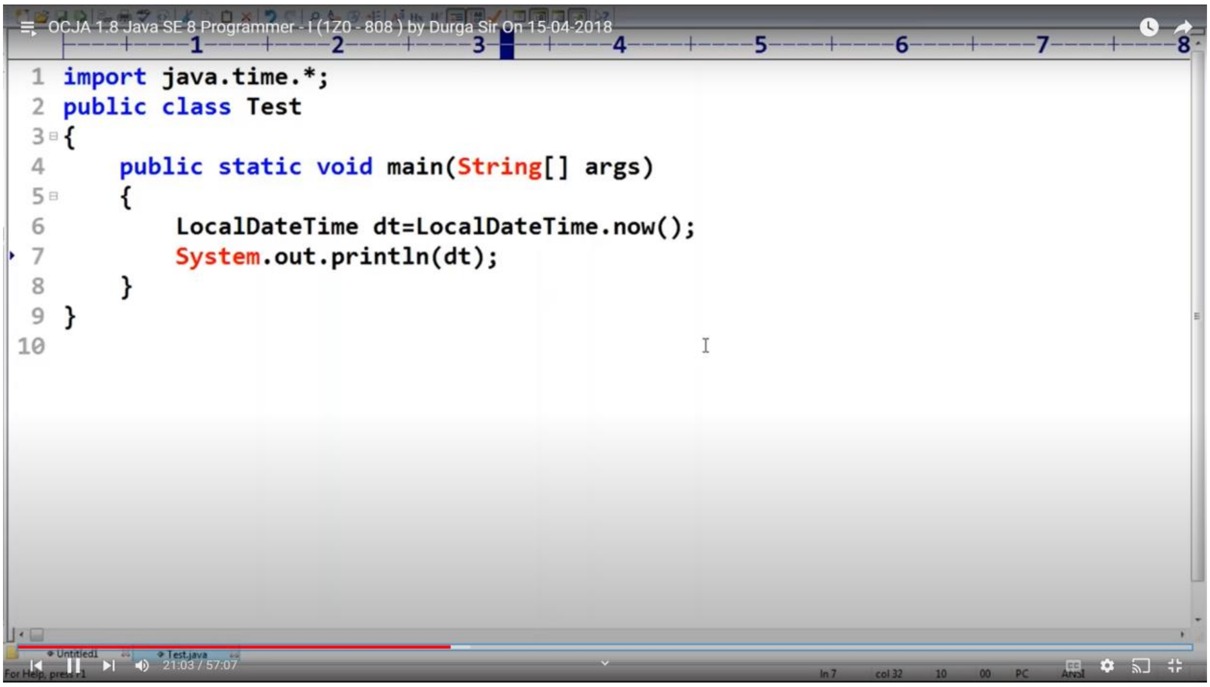
```
import java.time.*;
public class Test
{
    public static void main(String[] args)
    {
        LocalDate date=LocalDate.now();
        int dd=date.getDayOfMonth();
        int mm=date.getMonthValue();
        int yy=date.getYear();
        System.out.printf("%d-%d-%d",dd,mm,yy);
    }
}
```

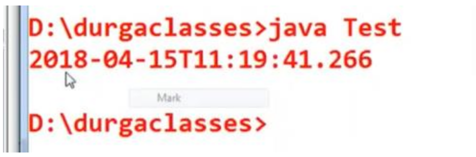
Untitled1
Test.java
13:57 / 57:07
For Help, press F1
ln 10
col 48
13
00
PC
ANSI


OCJA 1.8 Java SE 8 Programmer - I (1Z0 - 808) by Durga Sir On 15-04-2018
18:45 / 57:07

```java
import java.time.*;
public class Test
{
    public static void main(String[] args)
    {
        LocalTime time=LocalTime.now();
        int h=time.getHour();
        int m=time.getMinute();
        int s=time.getSecond();
        int n=time.getNano();
        System.out.printf("%d:%d:%d:%d",h,m,s,n);
    }
}
```

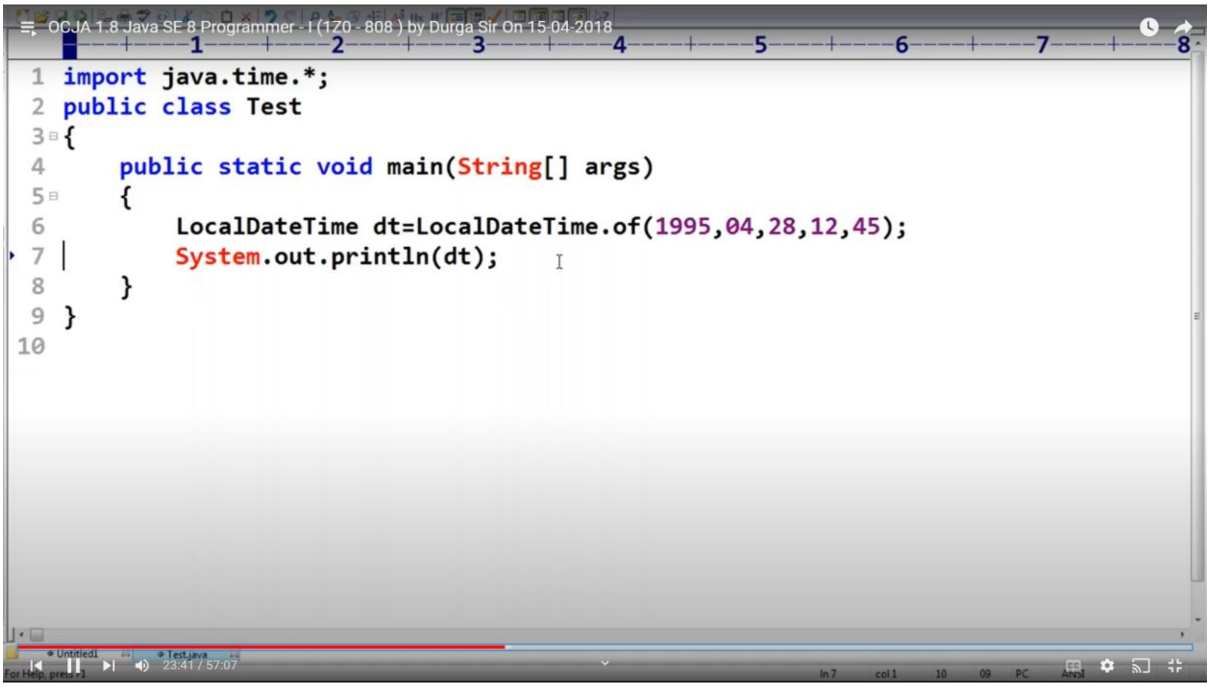

OCJA 1.8 Java SE 8 Programmer - I (1Z0 - 808) by Durga Sir On 15-04-2018
21:03 / 57:07

```java
import java.time.*;
public class Test
{
    public static void main(String[] args)
    {
        LocalDateTime dt=LocalDateTime.now();
        System.out.println(dt);
    }
}
```



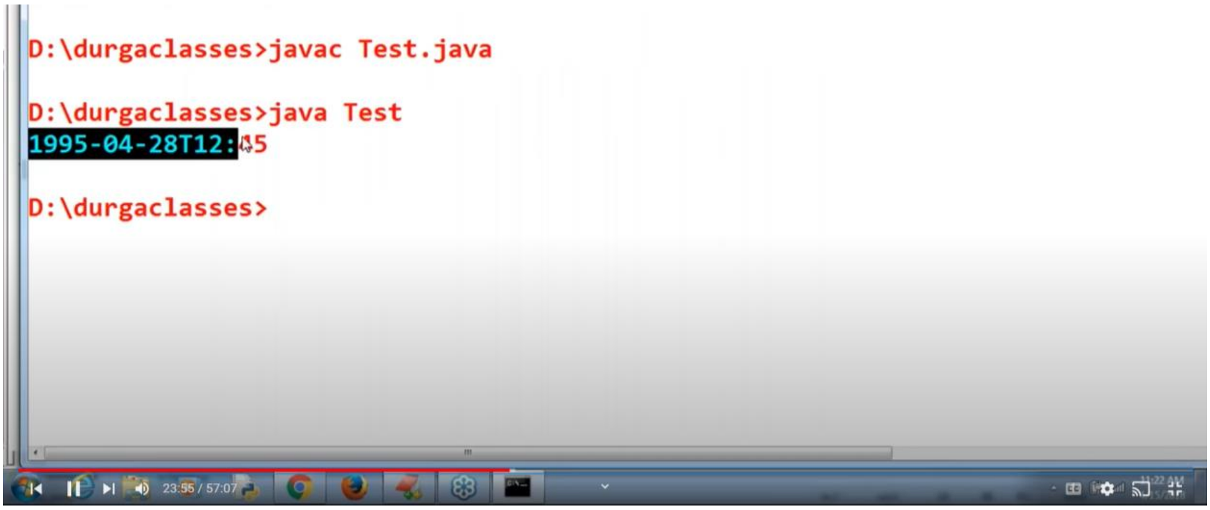
```
D:\durgaclasses>java Test
2018-04-15T11:19:41.266

D:\durgaclasses>
```



OCJA 1.8 Java SE 8 Programmer - I (1Z0 - 808) by Durga Sir On 15-04-2018
Untitled1
Test.java
23:41 / 57:07
For Help, press F1
ln 7
col 1
10
09
PC
ANSI

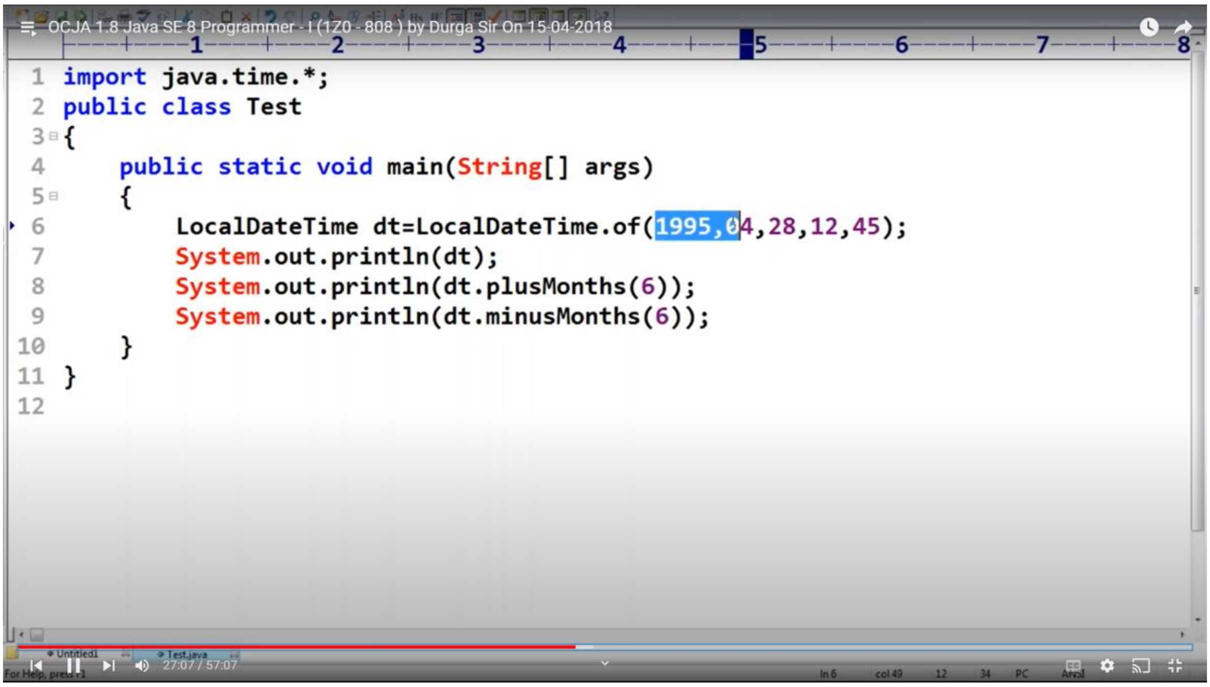
```java
import java.time.*;
public class Test
{
    public static void main(String[] args)
    {
        LocalDateTime dt=LocalDateTime.of(1995,04,28,12,45);
        System.out.println(dt);
    }
}
```



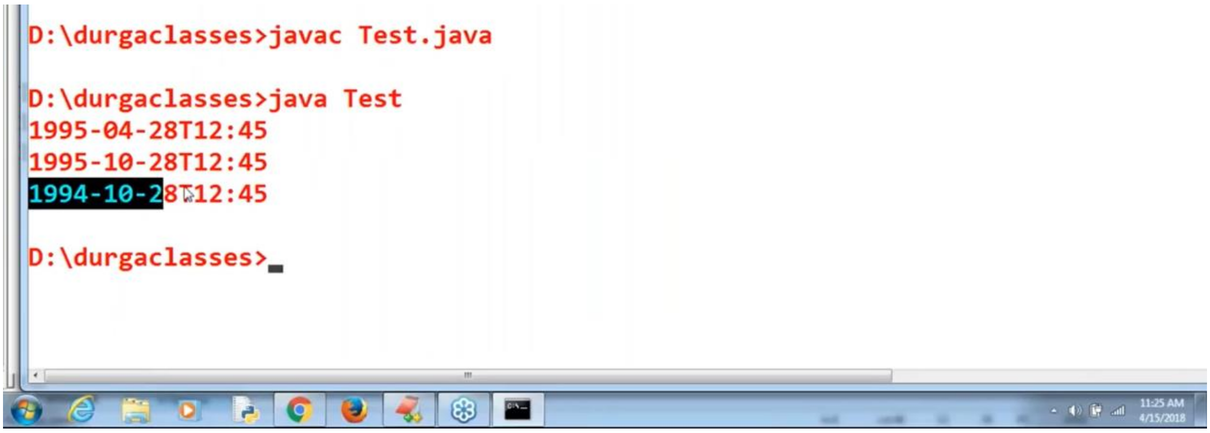
```
D:\durgaclasses>javac Test.java

D:\durgaclasses>java Test
1995-04-28T12:45

D:\durgaclasses>
```


OCJA 1.8 Java SE 8 Programmer - I (1Z0 - 808) by Durga Sir On 15-04-2018
Untitled1
Test.java
27:07 / 57:07
For Help, press F1
ln 6
col 49

```java
import java.time.*;
public class Test
{
    public static void main(String[] args)
    {
        LocalDateTime dt=LocalDateTime.of(1995,04,28,12,45);
        System.out.println(dt);
        System.out.println(dt.plusMonths(6));
        System.out.println(dt.minusMonths(6));
    }
}
```

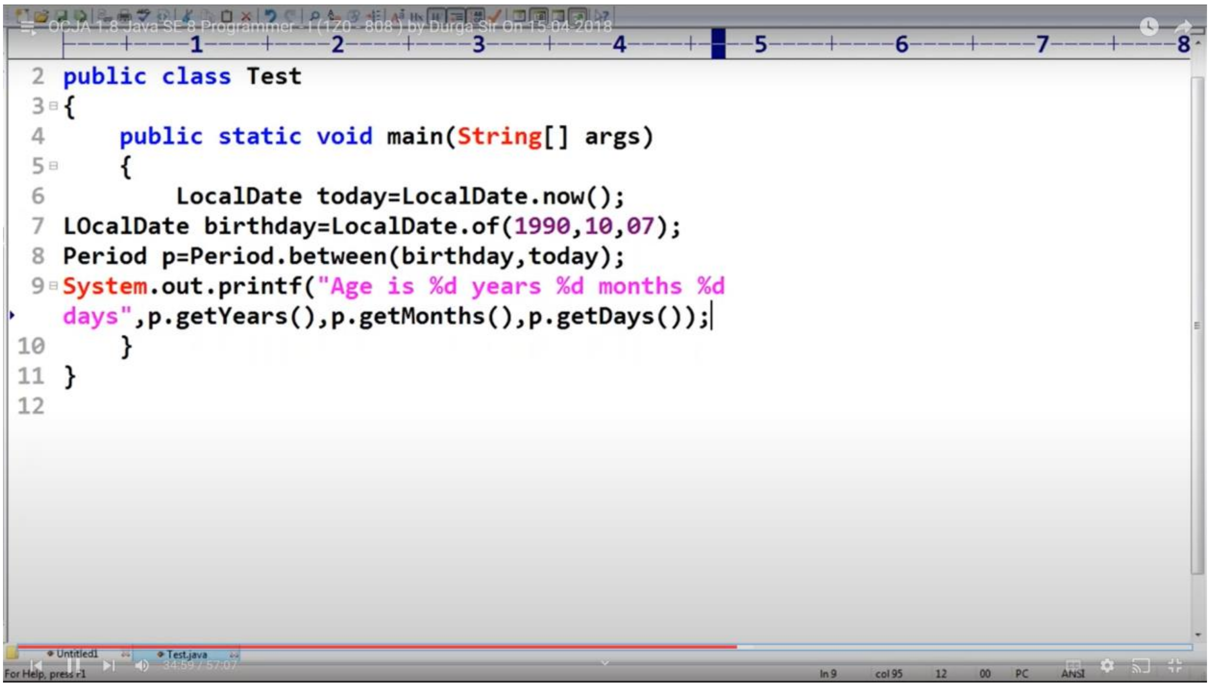


```
D:\durgaclasses>javac Test.java

D:\durgaclasses>java Test
1995-04-28T12:45
1995-10-28T12:45
1994-10-28T12:45

D:\durgaclasses>
```

PeriodClass – Duration btw two dates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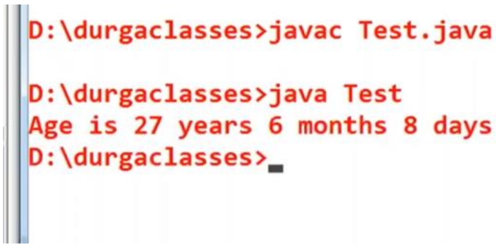
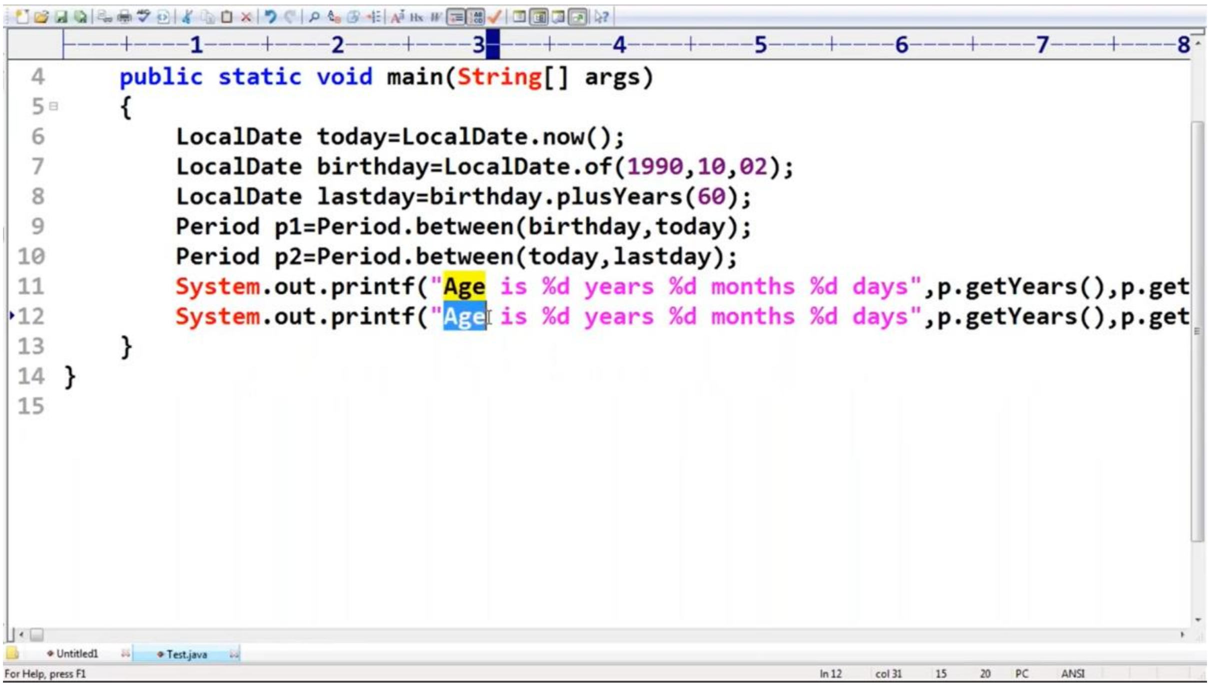
Untitled1
Test.java
For Help, press F1
ln 9
col 95

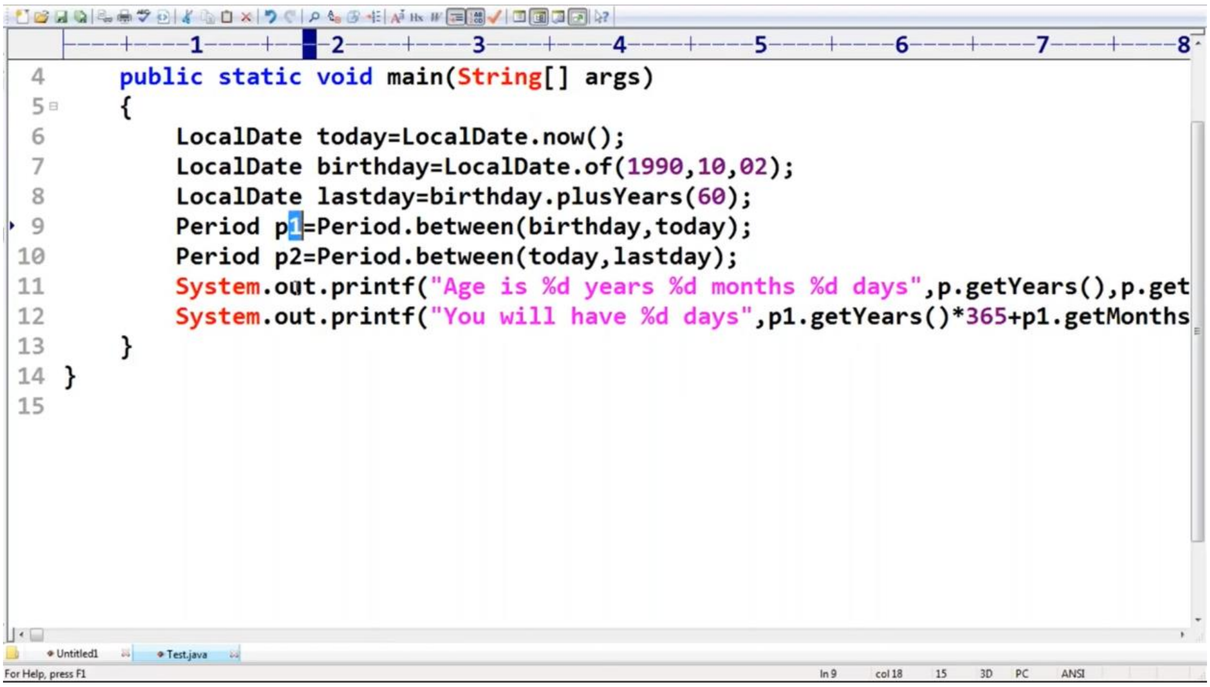
```
public class Test
{
    public static void main(String[] args)
    {
        LocalDate today=LocalDate.now();
LOcalDate birthday=LocalDate.of(1990,10,07);
Period p=Period.between(birthday,today);
System.out.printf("Age is %d years %d months %d
days",p.getYears(),p.getMonths(),p.getDays());
    }
}
```



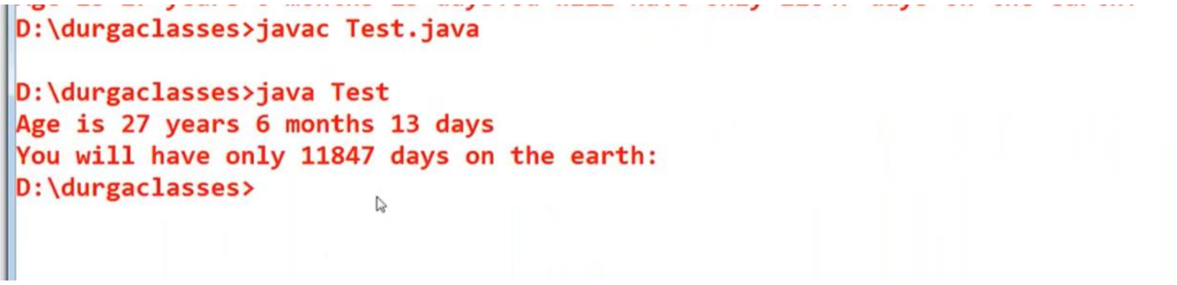
```
D:\durgaclasses>javac Test.java

D:\durgaclasses>java Test
Age is 27 years 6 months 8 days
D:\durgaclasses>_
```



```java
    public static void main(String[] args)
    {
        LocalDate today=LocalDate.now();
        LocalDate birthday=LocalDate.of(1990,10,02);
        LocalDate lastday=birthday.plusYears(60);
        Period p1=Period.between(birthday,today);
        Period p2=Period.between(today,lastday);
        System.out.printf("Age is %d years %d months %d days",p.getYears(),p.get
        System.out.printf("Age is %d years %d months %d days",p.getYears(),p.get
    }
}
```



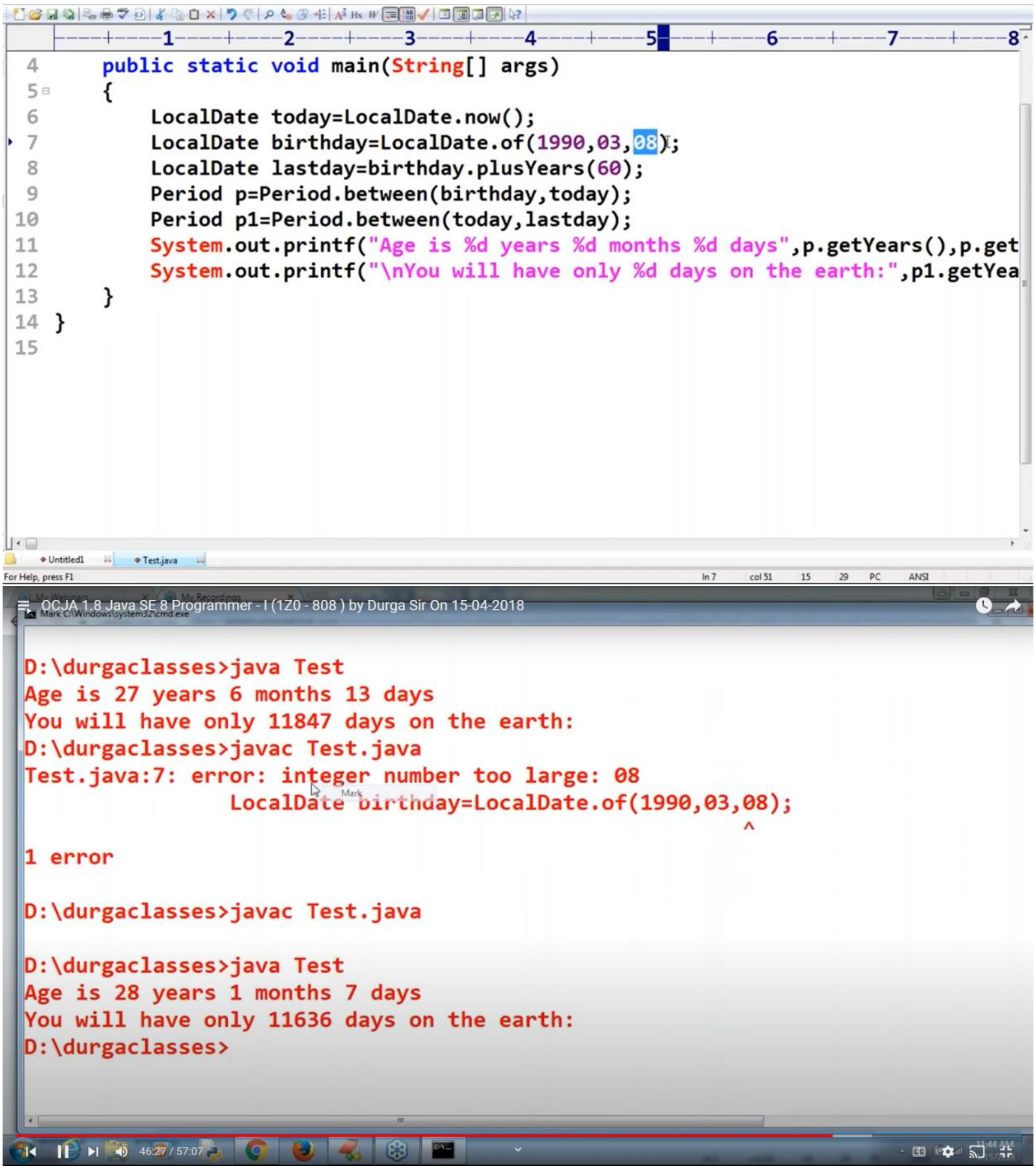
```java
    public static void main(String[] args)
    {
        LocalDate today=LocalDate.now();
        LocalDate birthday=LocalDate.of(1990,10,02);
        LocalDate lastday=birthday.plusYears(60);
        Period p1=Period.between(birthday,today);
        Period p2=Period.between(today,lastday);
        System.out.printf("Age is %d years %d months %d days",p.getYears(),p.get
        System.out.printf("You will have %d days",p1.getYears()*365+p1.getMonths
    }
}
```



```
D:\durgaclasses>javac Test.java

D:\durgaclasses>java Test
Age is 27 years 6 months 13 days
You will have only 11847 days on the earth:
D:\durgaclasses>
```

When we use 08 ->its treating it as octal , 0-7 and 8 not allowed so compilation error.

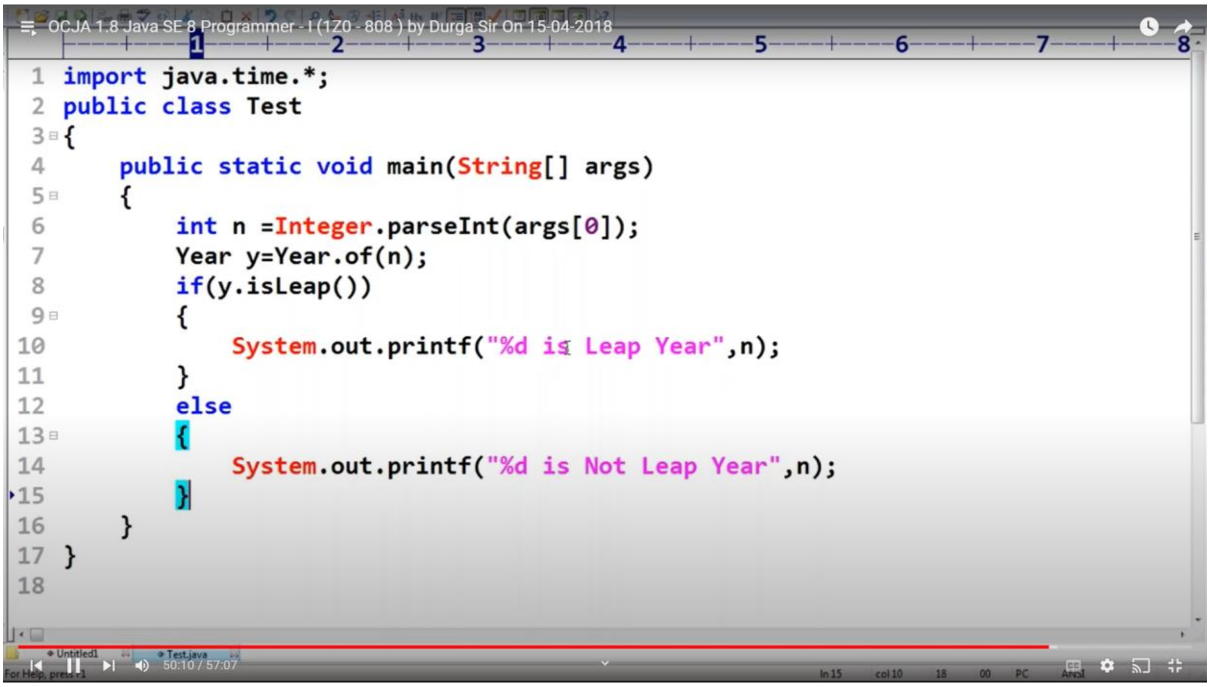
02 07 05 allowed 08 and > throws CE


Untitled1
Test.java
For Help, press F1
ln 7
col 51
15
29
PC
ANSI
OCJA 1.8 Java SE 8 Programmer - I (1Z0 - 808) by Durga Sir On 15-04-2018
Mark C:\Windows\system32\cmd.exe
46:27 / 57:07

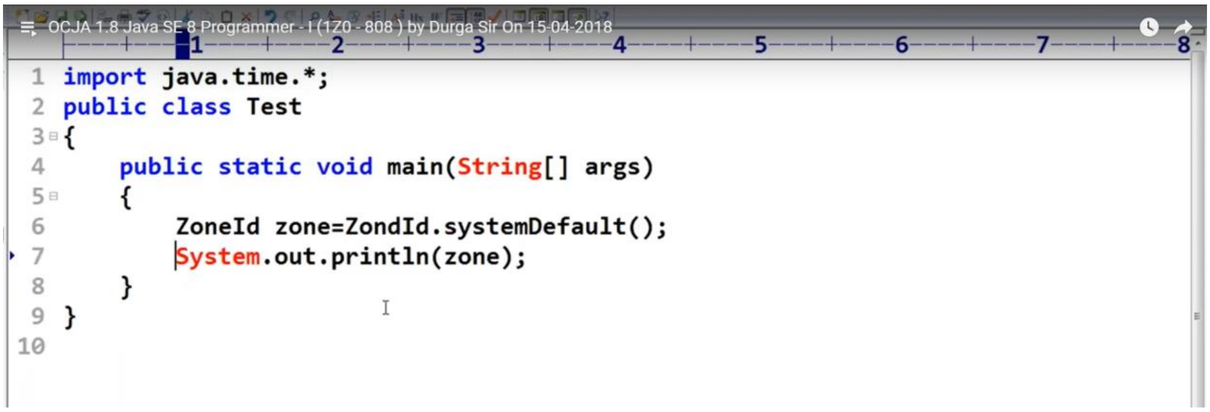
```
    public static void main(String[] args)
    {
        LocalDate today=LocalDate.now();
        LocalDate birthday=LocalDate.of(1990,03,08);
        LocalDate lastday=birthday.plusYears(60);
        Period p=Period.between(birthday,today);
        Period p1=Period.between(today,lastday);
        System.out.printf("Age is %d years %d months %d days",p.getYears(),p.get
        System.out.printf("\nYou will have only %d days on the earth:",p1.getYea
    }
}
```

```
D:\durgaclasses>java Test
Age is 27 years 6 months 13 days
You will have only 11847 days on the earth:
D:\durgaclasses>javac Test.java
Test.java:7: error: integer number too large: 08
                LocalDate birthday=LocalDate.of(1990,03,08);
                                                         ^

1 error

D:\durgaclasses>javac Test.java

D:\durgaclasses>java Test
Age is 28 years 1 months 7 days
You will have only 11636 days on the earth:
D:\durgaclasses>
```

Year class


OCJA 1.8 Java SE 8 Programmer - I (1Z0 - 808) by Durga Sir On 15-04-2018
50:10 / 57:07

```java
import java.time.*;
public class Test
{
    public static void main(String[] args)
    {
        int n =Integer.parseInt(args[0]);
        Year y=Year.of(n);
        if(y.isLeap())
        {
            System.out.printf("%d is Leap Year",n);
        }
        else
        {
            System.out.printf("%d is Not Leap Year",n);
        }
    }
}
```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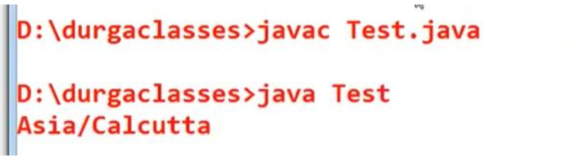
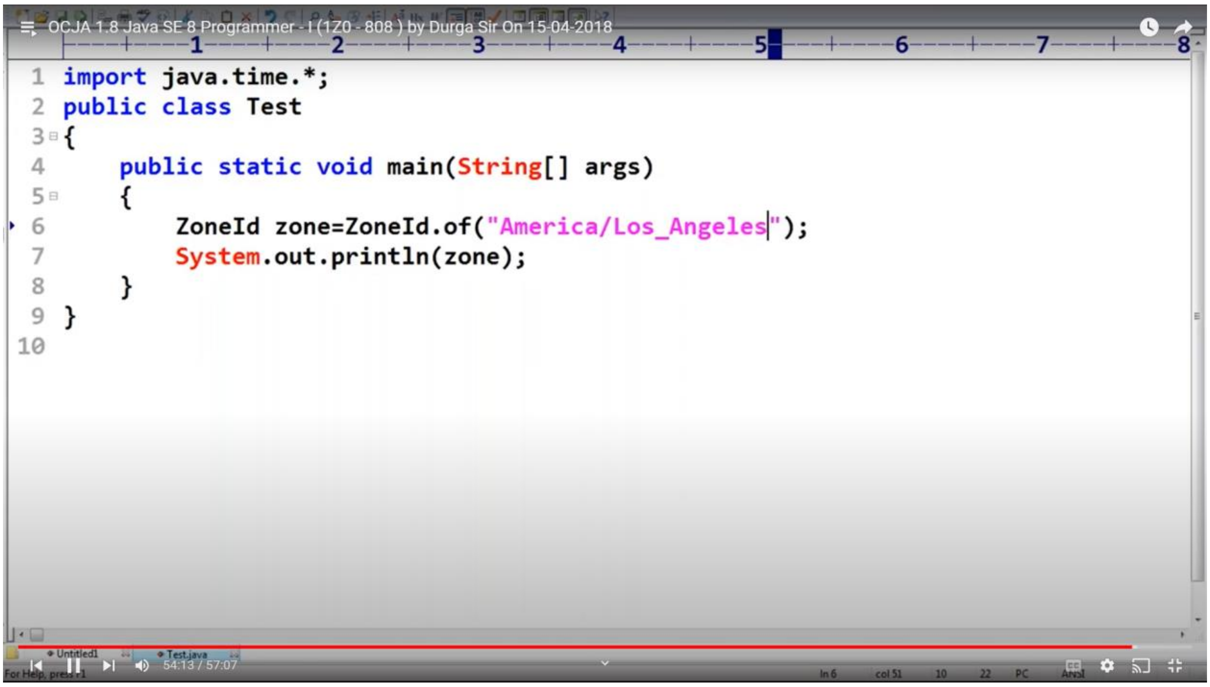
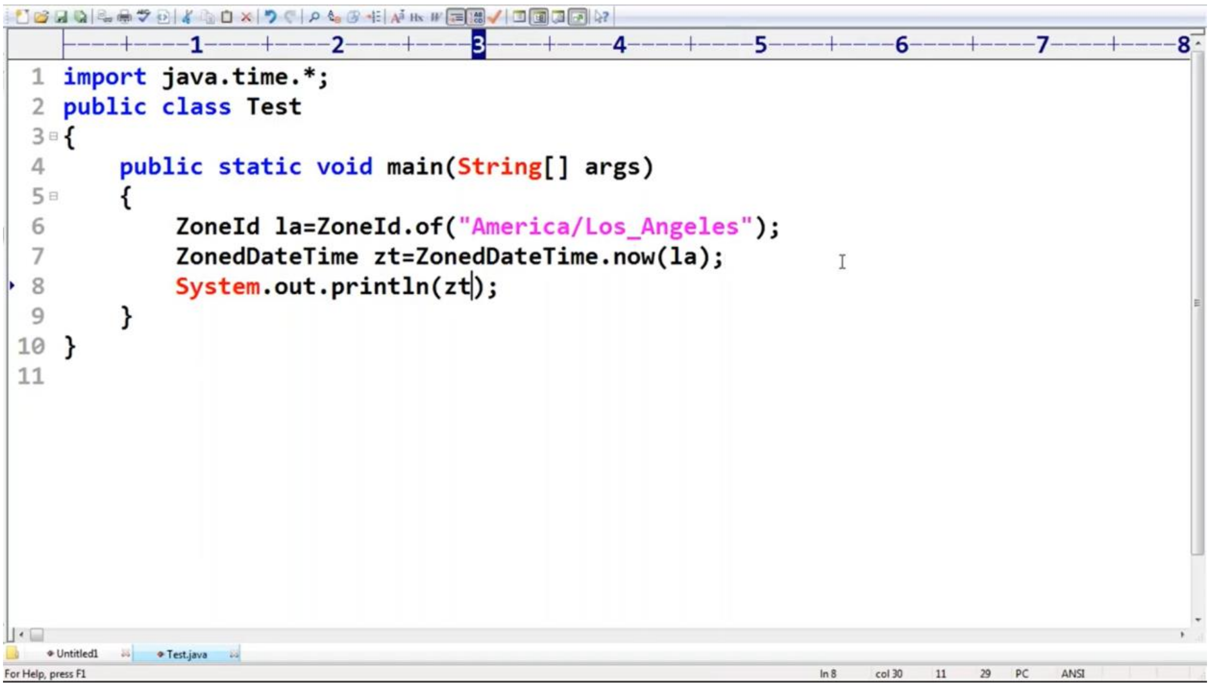
```java
import java.time.*;
public class Test
{
    public static void main(String[] args)
    {
        ZoneId zone=ZondId.systemDefault();
        System.out.println(zone);
    }
}
```



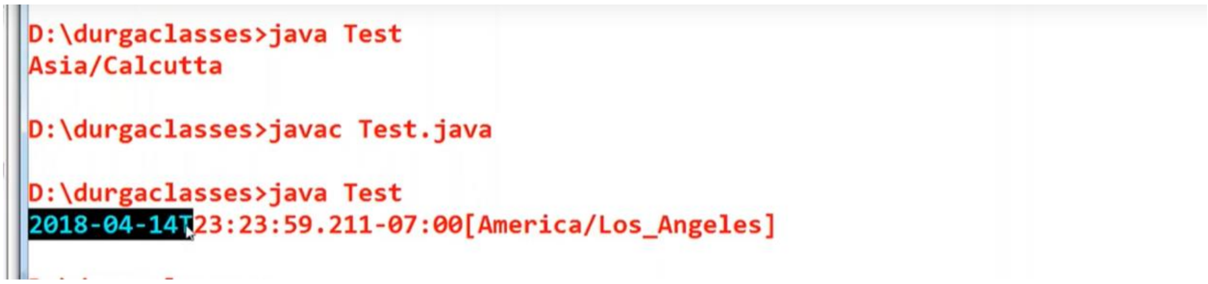
```
D:\durgaclasses>javac Test.java

D:\durgaclasses>java Test
Asia/Calcutta
```


OCJA 1.8 Java SE 8 Programmer - I (1Z0 - 808) by Durga Sir On 15-04-2018
Untitled1
Test.java
54:13 / 57:07
For Help, press F1
ln 6
col 51
10
22
PC
ANSI

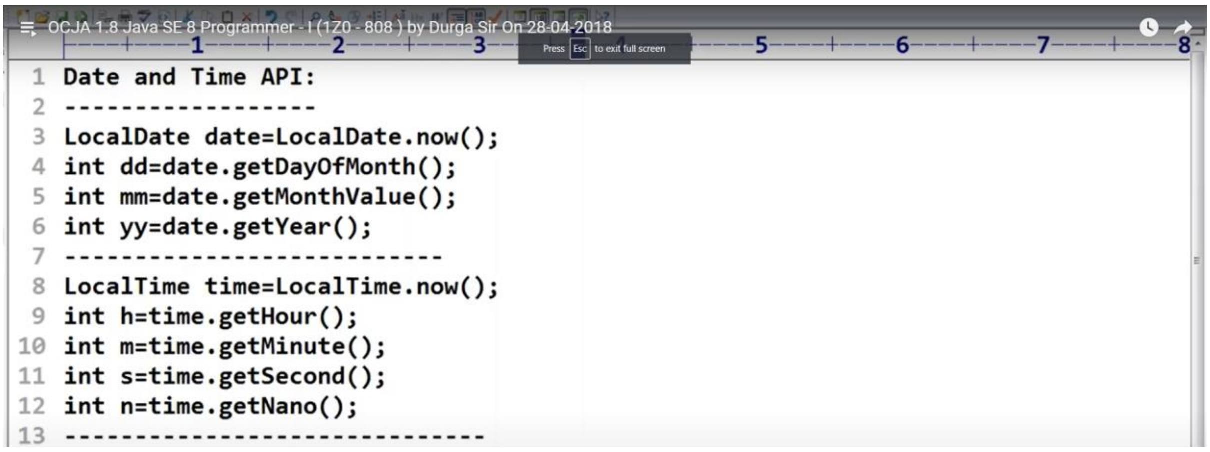
```java
import java.time.*;
public class Test
{
    public static void main(String[] args)
    {
        ZoneId zone=ZoneId.of("America/Los_Angeles");
        System.out.println(zone);
    }
}
```



```java
import java.time.*;
public class Test
{
    public static void main(String[] args)
    {
        ZoneId la=ZoneId.of("America/Los_Angeles");
        ZonedDateTime zt=ZonedDateTime.now(la);
        System.out.println(zt);
    }
}
```



```
D:\durgaclasses>java Test
Asia/Calcutta

D:\durgaclasses>javac Test.java

D:\durgaclasses>java Test
2018-04-14T23:23:59.211-07:00[America/Los_Angeles]
```



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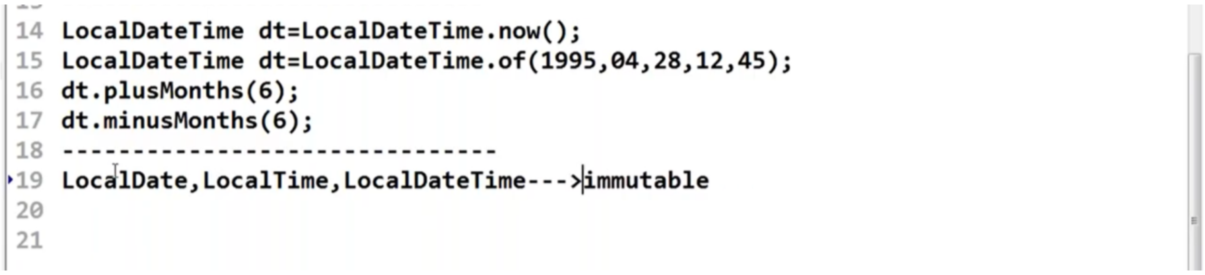
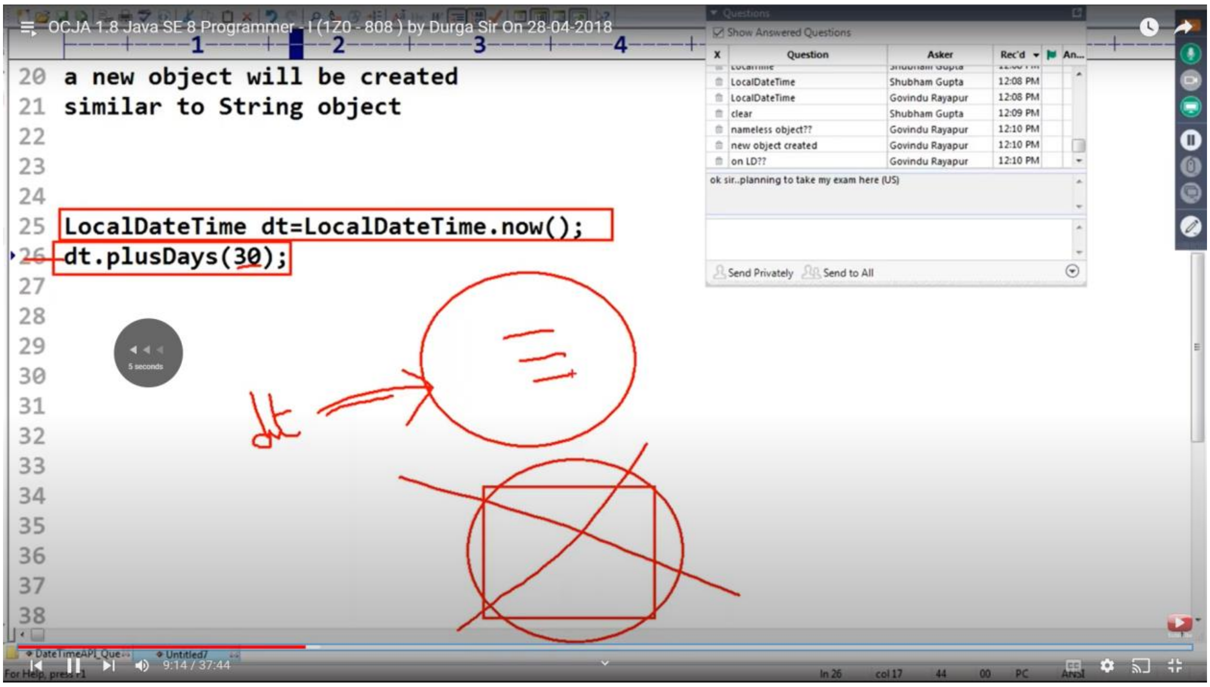
Press Esc to exit full screen

```
Date and Time API:
------------------
LocalDate date=LocalDate.now();
int dd=date.getDayOfMonth();
int mm=date.getMonthValue();
int yy=date.getYear();
---------------------------
LocalTime time=LocalTime.now();
int h=time.getHour();
int m=time.getMinute();
int s=time.getSecond();
int n=time.getNano();
-----------------------------
```



```
LocalDateTime dt=LocalDateTime.now();
LocalDateTime dt=LocalDateTime.of(1995,04,28,12,45);
dt.plusMonths(6);
dt.minusMonths(6);
-------------------------------
LocalDate,LocalTime,LocalDateTime--->immutable
```

These classes are immutable if you make changes will create a new Object

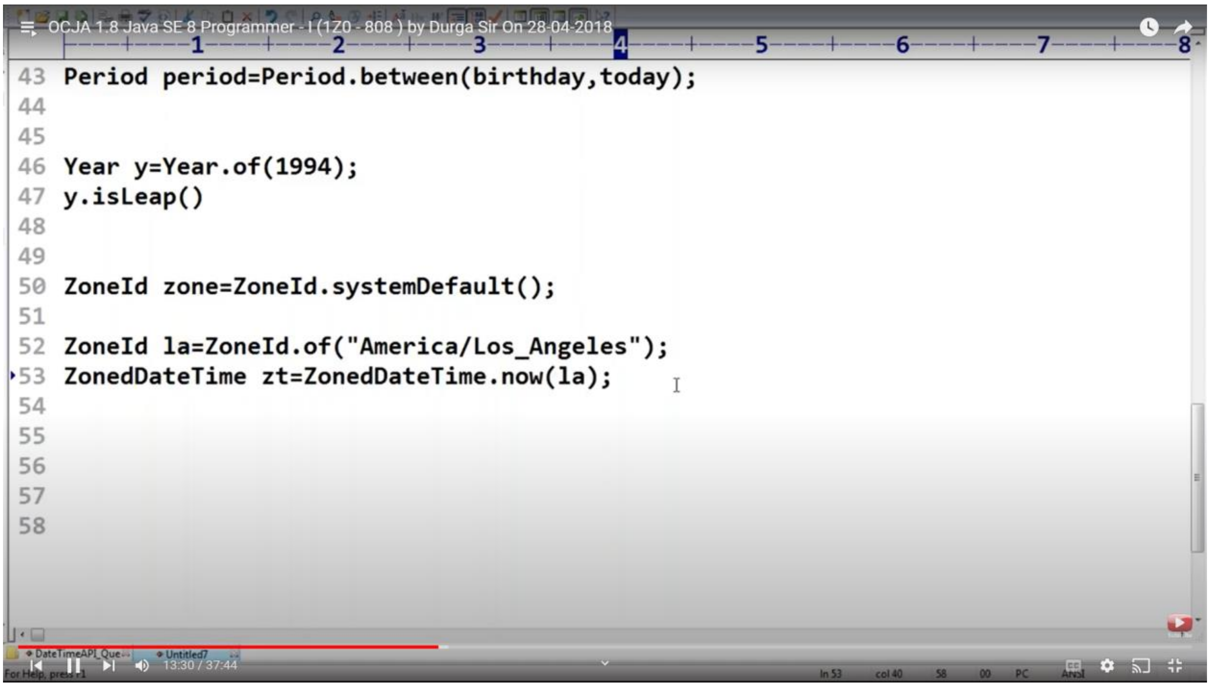


```
a new object will be created
similar to String object


LocalDateTime dt=LocalDateTime.now();
dt.plusDays(30);
```

X	Question	Asker	Rec'd		An...
	LocalDateTime	Shubham Gupta	12:08 PM		
	LocalDateTime	Govindu Rayapur	12:08 PM		
	clear	Shubham Gupta	12:09 PM		
	nameless object??	Govindu Rayapur	12:10 PM		
	new object created	Govindu Rayapur	12:10 PM		
	on LD??	Govindu Rayapur	12:10 PM		

ok sir..planning to take my exam here (US)



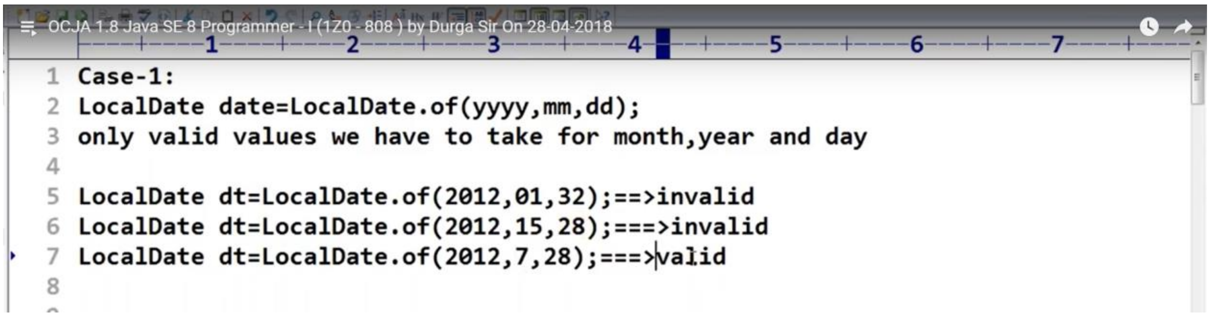
```
Period period=Period.between(birthday,today);


Year y=Year.of(1994);
y.isLeap()


ZoneId zone=ZoneId.systemDefault();

ZoneId la=ZoneId.of("America/Los_Angeles");
ZonedDateTime zt=ZonedDateTime.now(la);
```

Make sure valid values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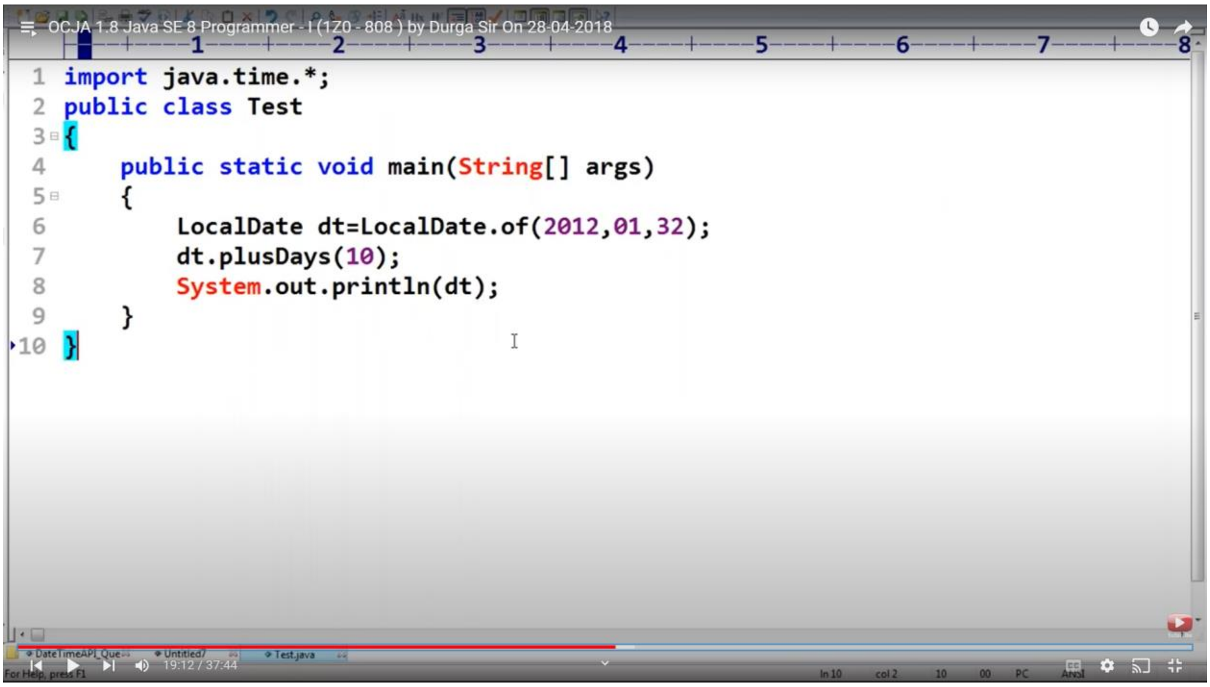
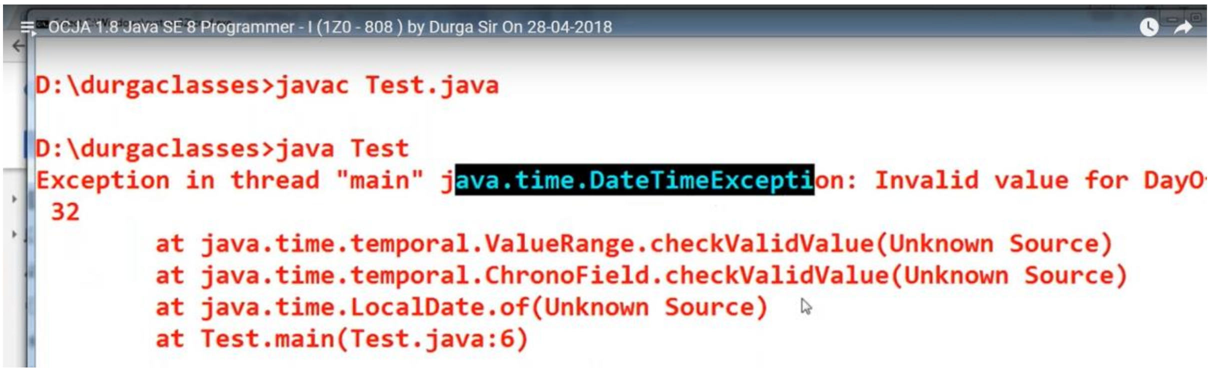
```
Case-1:
LocalDate date=LocalDate.of(yyyy,mm,dd);
only valid values we have to take for month,year and day

LocalDate dt=LocalDate.of(2012,01,32);==>invalid
LocalDate dt=LocalDate.of(2012,15,28);===>invalid
LocalDate dt=LocalDate.of(2012,7,28);===>valid
```

Invalid. Date is 32

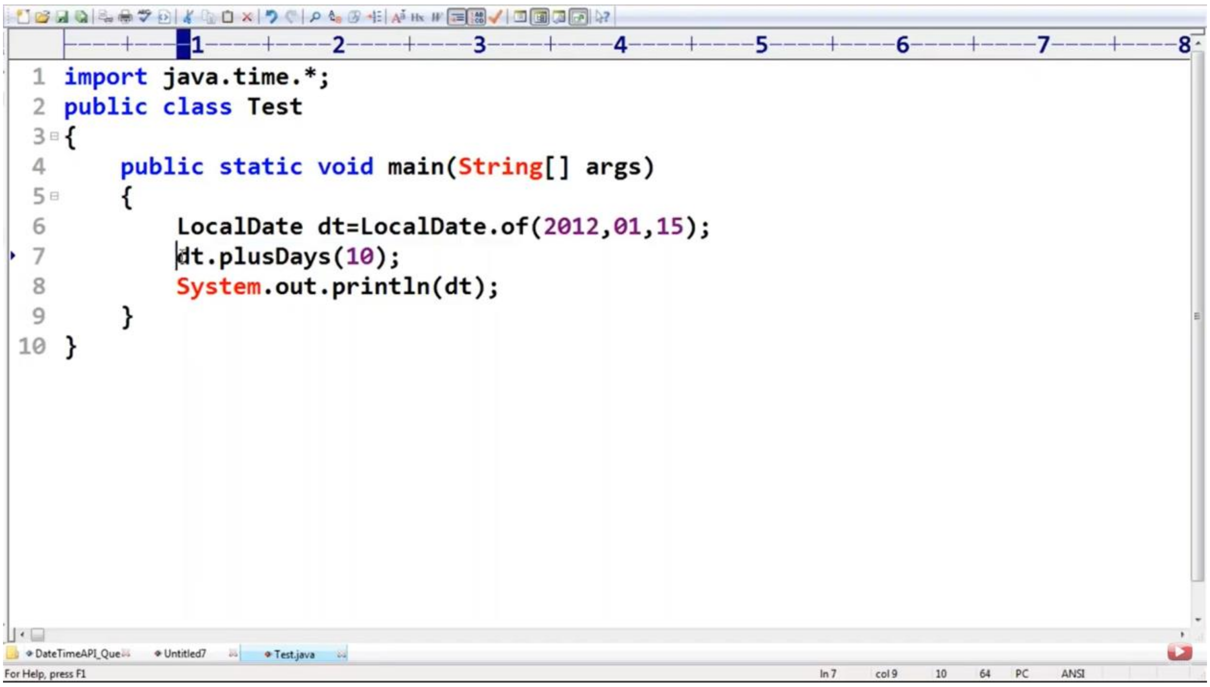

OCJA 1.8 Java SE 8 Programmer - I (1Z0 - 808) by Durga Sir On 28-04-2018
DateTimeAPI_Que...
Untitled7
Test.java
19:12 / 37:44
For Help, press F1

```java
import java.time.*;
public class Test
{
    public static void main(String[] args)
    {
        LocalDate dt=LocalDate.of(2012,01,32);
        dt.plusDays(10);
        System.out.println(dt);
    }
}
```


OCJA 1.8 Java SE 8 Programmer - I (1Z0 - 808) by Durga Sir On 28-04-2018

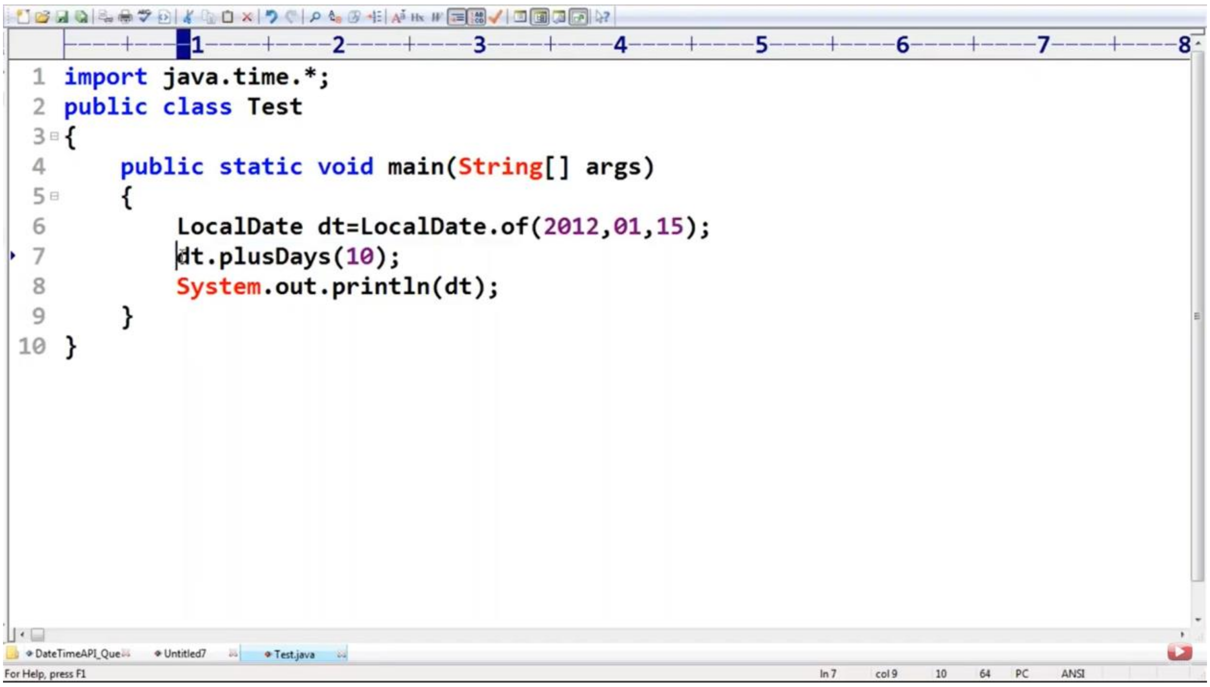
```
D:\durgaclasses>javac Test.java

D:\durgaclasses>java Test
Exception in thread "main" java.time.DateTimeException: Invalid value for DayO
 32
        at java.time.temporal.ValueRange.checkValidValue(Unknown Source)
        at java.time.temporal.ChronoField.checkValidValue(Unknown Source)
        at java.time.LocalDate.of(Unknown Source)
        at Test.main(Test.java:6)
```

Here dt.plusDays creates a new object and has no assignment and hence available for garbage collection. This does not change the value of dt

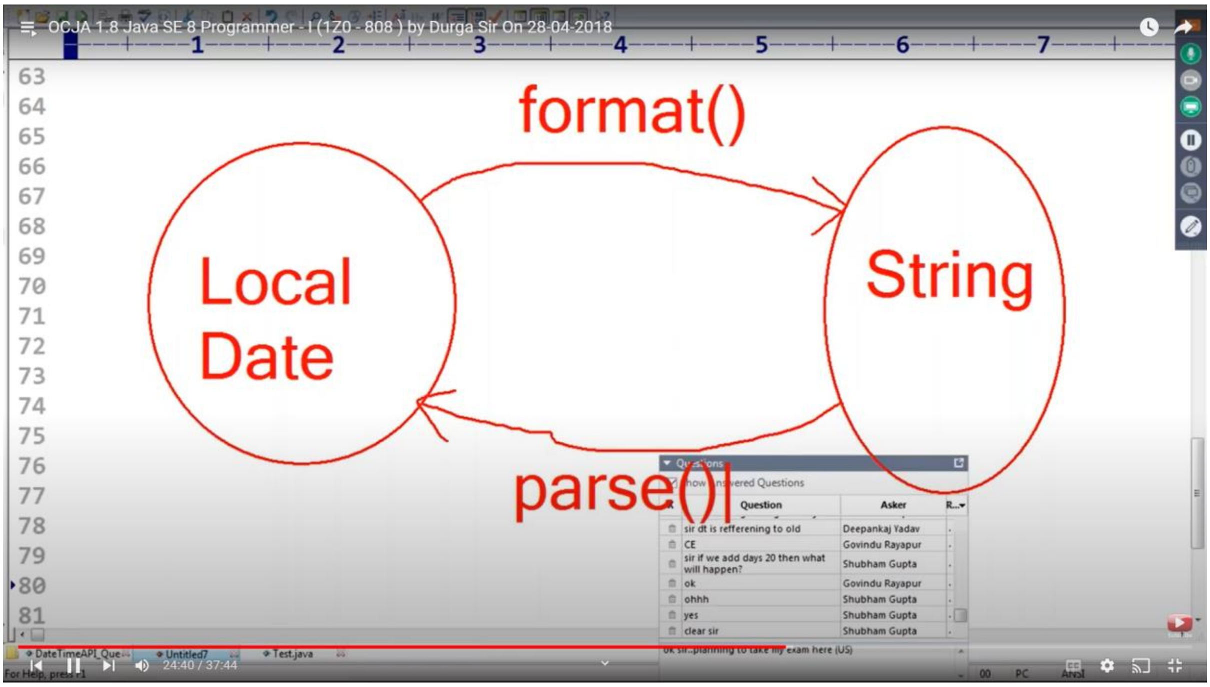


```
import java.time.*;
public class Test
{
    public static void main(String[] args)
    {
        LocalDate dt=LocalDate.of(2012,01,15);
        dt.plusDays(10);
        System.out.println(dt);
    }
}
```

Ref variable can be reassigned



```
import java.time.*;
public class Test
{
    public static void main(String[] args)
    {
        LocalDate dt=LocalDate.of(2012,01,15);
        dt.plusDays(10);
        System.out.println(dt);
    }
}
```



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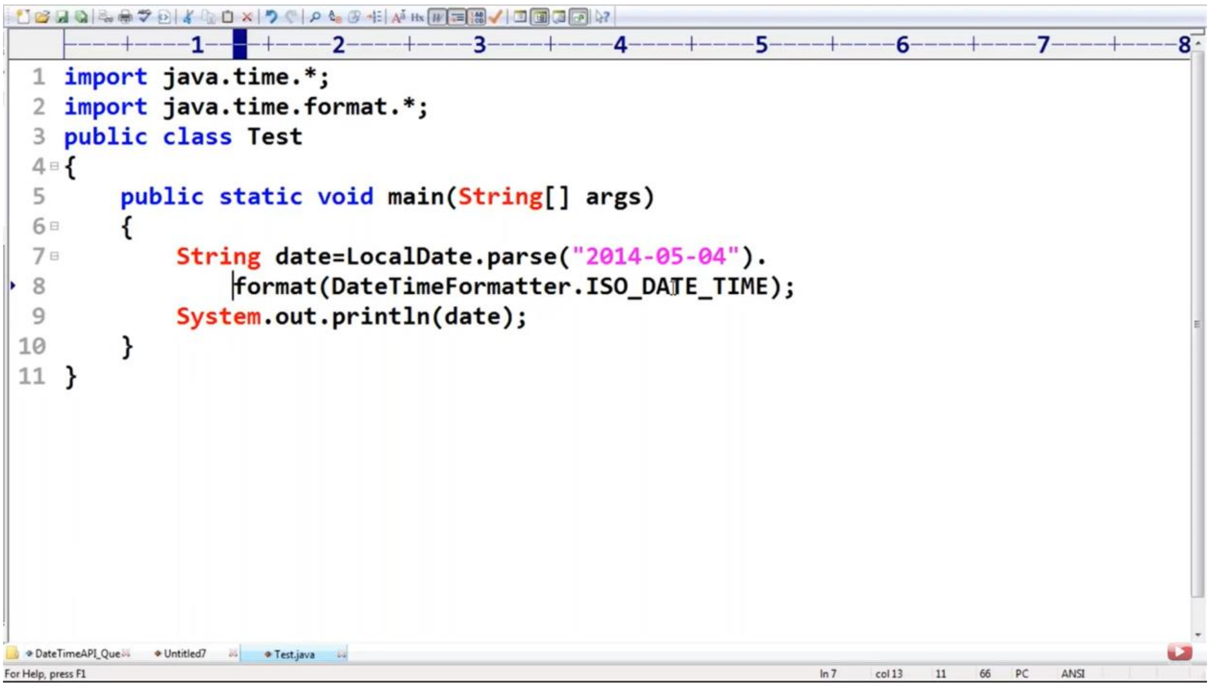
Questions

☑ Show Answered Questions

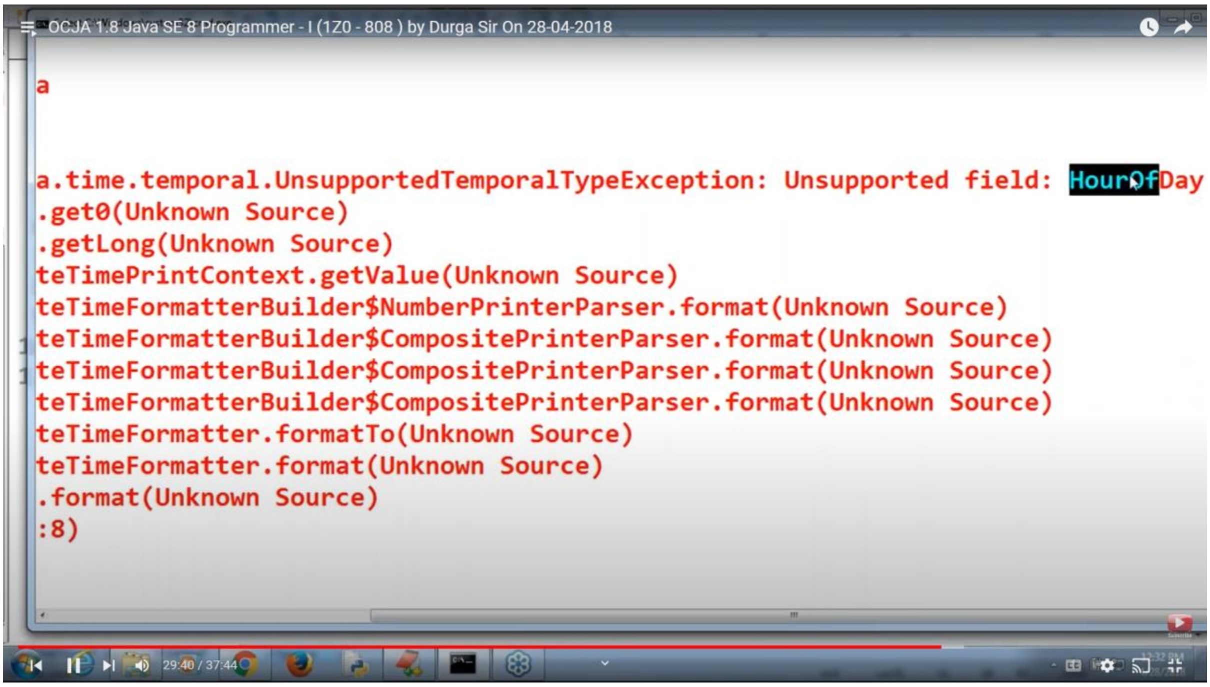
Question	Asker
sir dt is refferening to old	Deepankaj Yadav
CE	Govindu Rayapur
sir if we add days 20 then what will happen?	Shubham Gupta
ok	Govindu Rayapur
ohhh	Shubham Gupta
yes	Shubham Gupta
clear sir	Shubham Gupta

ok sir...planning to take my exam here (US)

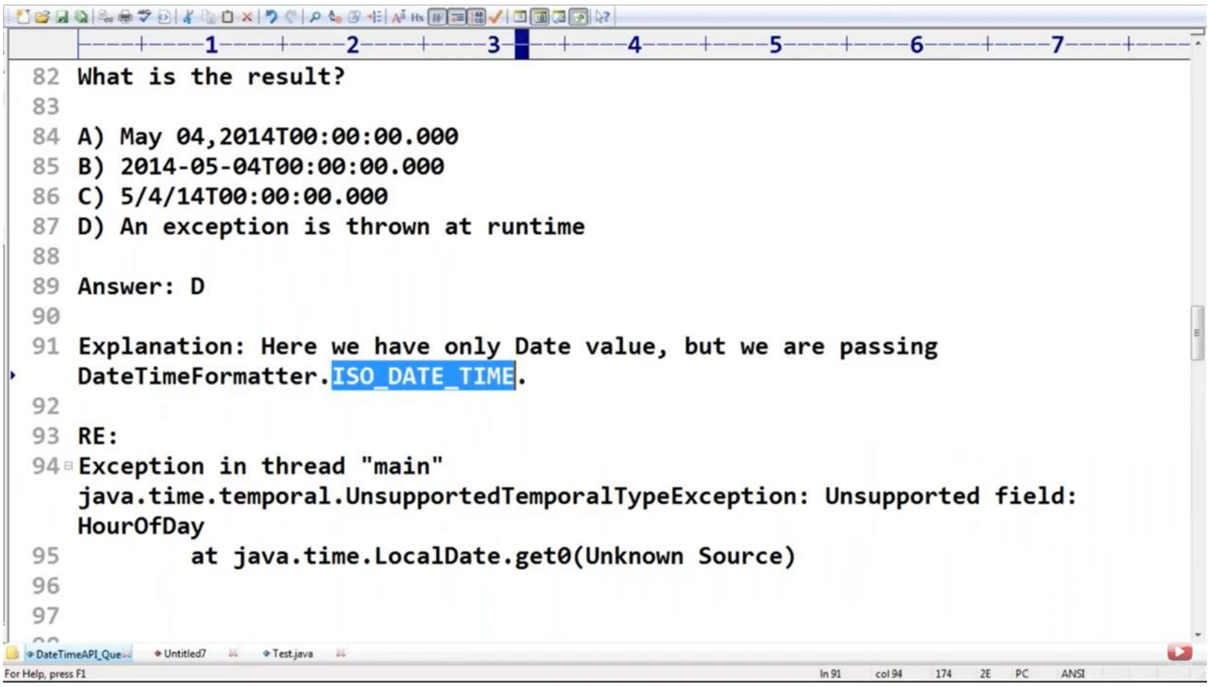
You are formatting Date but the formatter is DateTime Formatter, No time is specified



```java
import java.time.*;
import java.time.format.*;
public class Test
{
    public static void main(String[] args)
    {
        String date=LocalDate.parse("2014-05-04").
            format(DateTimeFormatter.ISO_DATE_TIME);
        System.out.println(date);
    }
}
```

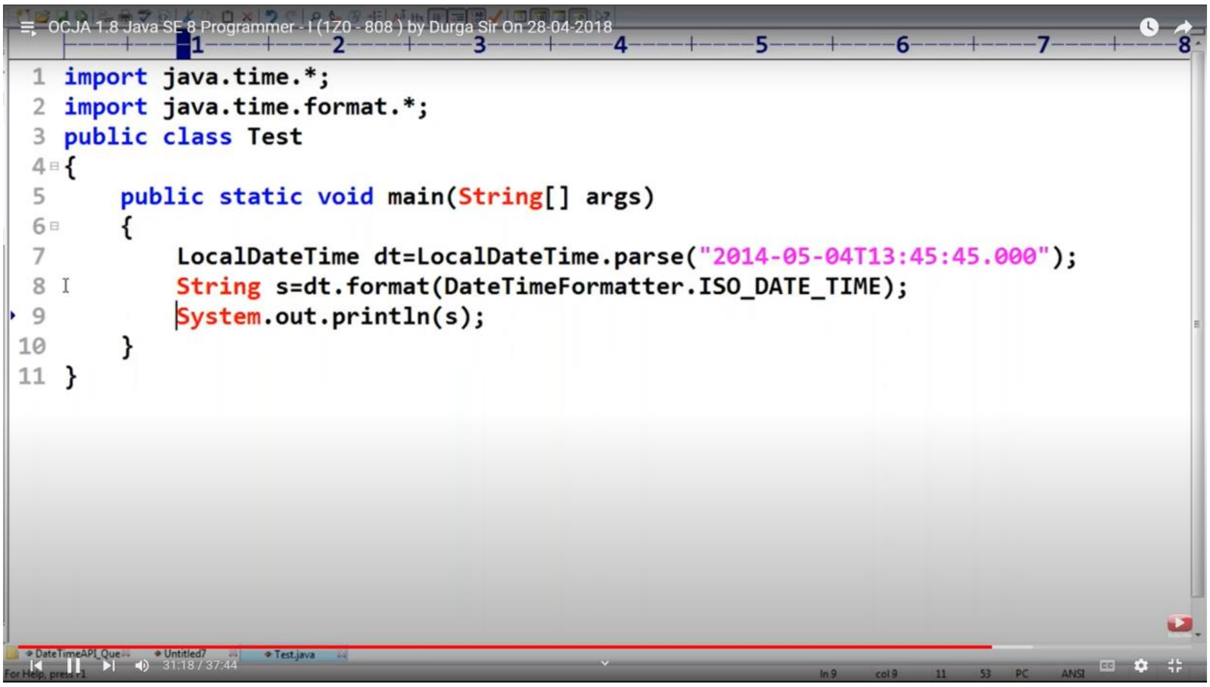

OCJA 1.8 Java SE 8 Programmer - I (1Z0 - 808) by Durga Sir On 28-04-2018
29:40 / 37:44

```
a


a.time.temporal.UnsupportedTemporalTypeException: Unsupported field: HourOfDay
.get0(Unknown Source)
.getLong(Unknown Source)
teTimePrintContext.getValue(Unknown Source)
teTimeFormatterBuilder$NumberPrinterParser.format(Unknown Source)
teTimeFormatterBuilder$CompositePrinterParser.format(Unknown Source)
teTimeFormatterBuilder$CompositePrinterParser.format(Unknown Source)
teTimeFormatterBuilder$CompositePrinterParser.format(Unknown Source)
teTimeFormatter.formatTo(Unknown Source)
teTimeFormatter.format(Unknown Source)
.format(Unknown Source)
:8)
```



```
What is the result?

A) May 04,2014T00:00:00.000
B) 2014-05-04T00:00:00.000
C) 5/4/14T00:00:00.000
D) An exception is thrown at runtime

Answer: D

Explanation: Here we have only Date value, but we are passing
DateTimeFormatter.ISO_DATE_TIME.

RE:
Exception in thread "main"
java.time.temporal.UnsupportedTemporalTypeException: Unsupported field:
HourOfDay
        at java.time.LocalDate.get0(Unknown Source)
```

s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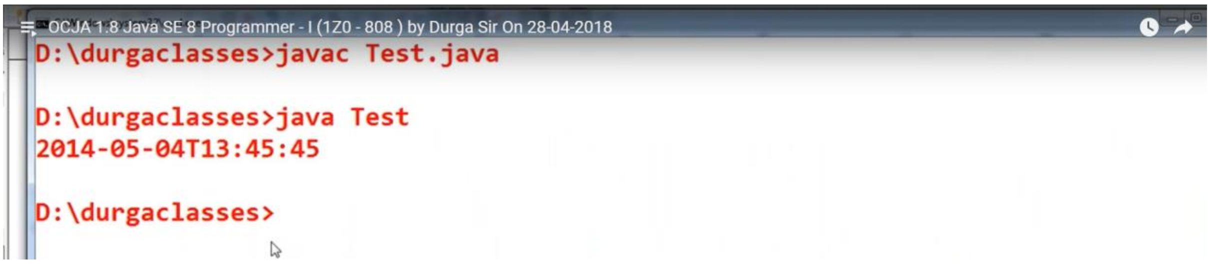
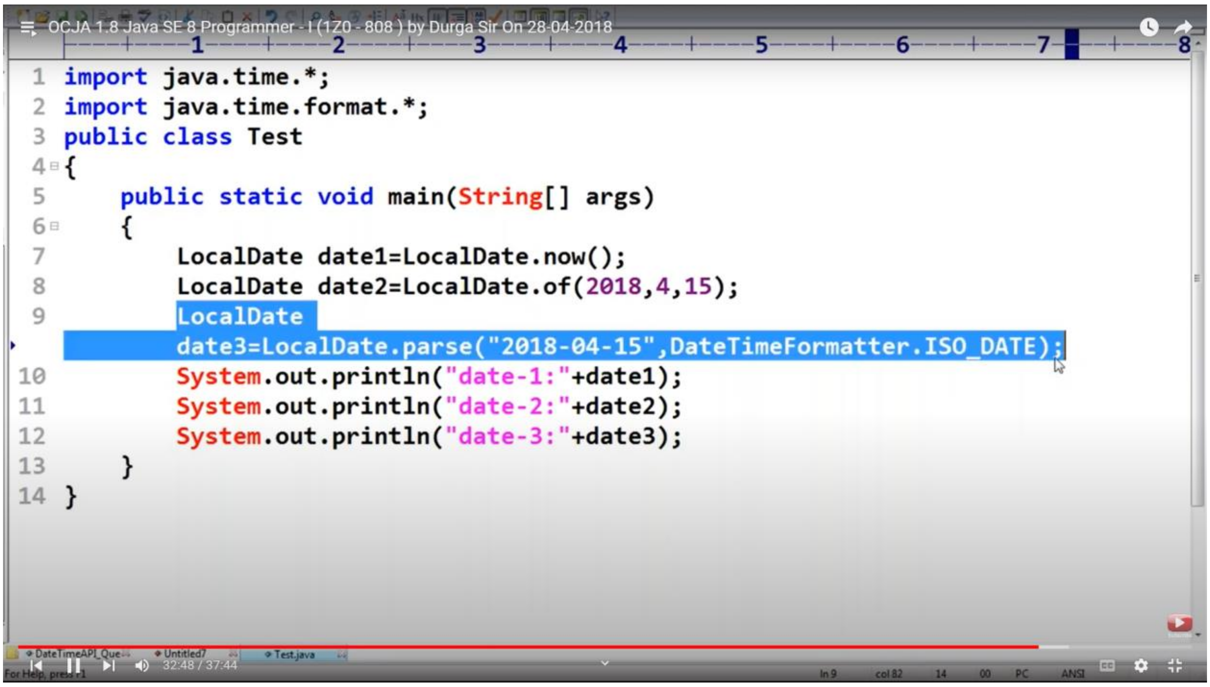
```java
import java.time.*;
import java.time.format.*;
public class Test
{
    public static void main(String[] args)
    {
        LocalDateTime dt=LocalDateTime.parse("2014-05-04T13:45:45.000");
        String s=dt.format(DateTimeFormatter.ISO_DATE_TIME);
        System.out.println(s);
    }
}
```


OCJA 1.8 Java SE 8 Programmer - I (1Z0 - 808) by Durga Sir On 28-04-2018

```
D:\durgaclasses>javac Test.java

D:\durgaclasses>java Test
2014-05-04T13:45:45

D:\durgaclasses>
```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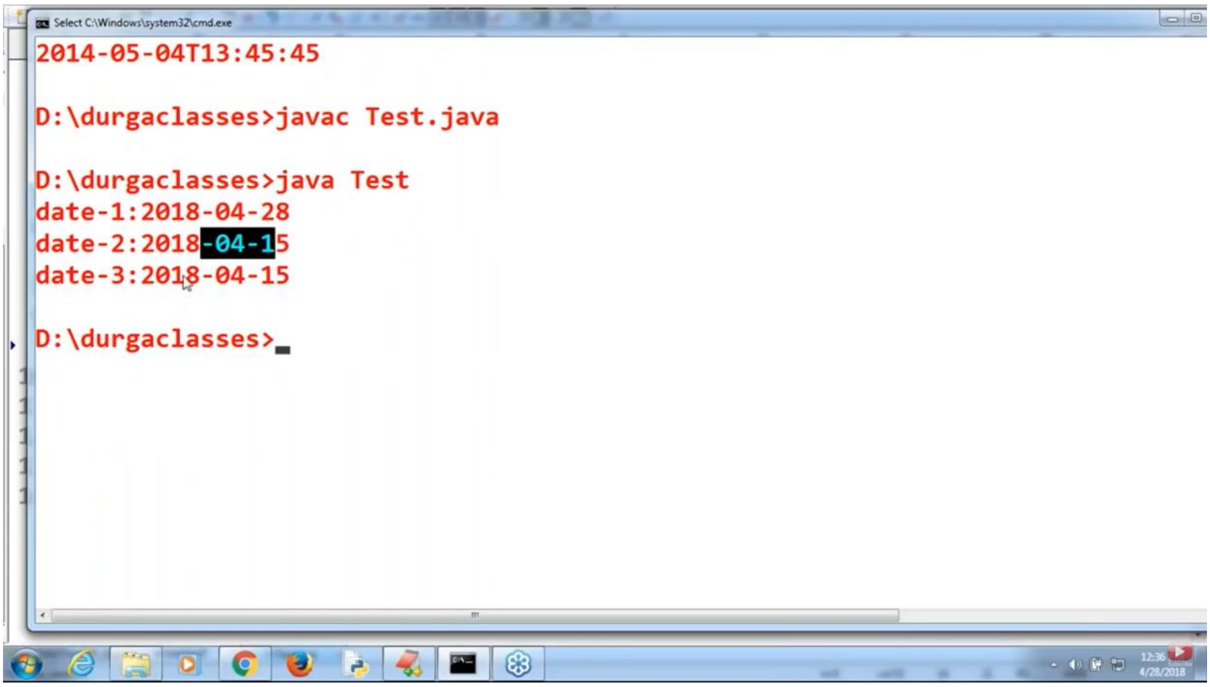
```java
import java.time.*;
import java.time.format.*;
public class Test
{
    public static void main(String[] args)
    {
        LocalDate date1=LocalDate.now();
        LocalDate date2=LocalDate.of(2018,4,15);
        LocalDate date3=LocalDate.parse("2018-04-15",DateTimeFormatter.ISO_DATE);
        System.out.println("date-1:"+date1);
        System.out.println("date-2:"+date2);
        System.out.println("date-3:"+date3);
    }
}
```



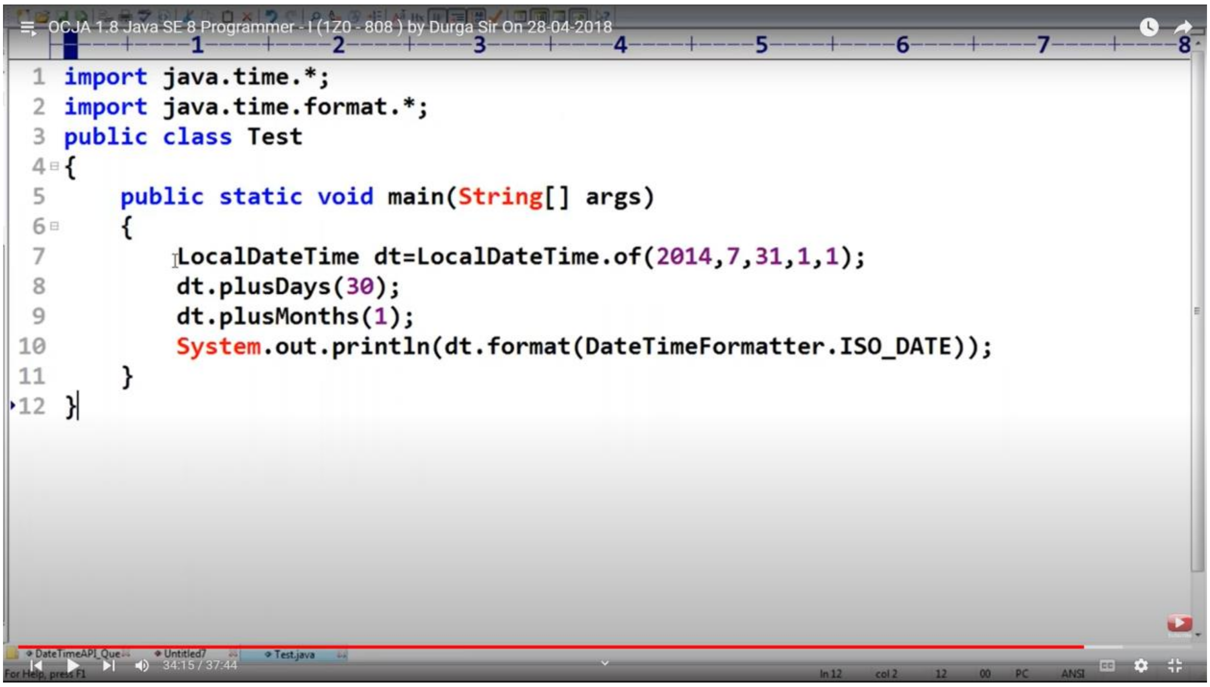
```
2014-05-04T13:45:45

D:\durgaclasses>javac Test.java

D:\durgaclasses>java Test
date-1:2018-04-28
date-2:2018-04-15
date-3:2018-04-15

D:\durgaclasses>_
```

Immutable no changes to dt. Format only formats Date no time is specified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DateTimeAPI_Que
Untitled7
Test.java
34:15 / 37:44
For Help, press F1

```java
import java.time.*;
import java.time.format.*;
public class Test
{
    public static void main(String[] args)
    {
        LocalDateTime dt=LocalDateTime.of(2014,7,31,1,1);
        dt.plusDays(30);
        dt.plusMonths(1);
        System.out.println(dt.format(DateTimeFormatter.ISO_DATE));
    }
}
```