

=> Date & Time API :-

-Date and Time API was in previous versions also but new Date-Time API was introduced in

Java SE 8 version

The packages for Date-Time API are :-

1. java.util (old - till JDK 7)

a. java.util.Date

b. java.util.Calendar

c. java.util.TimeZone

2. java.sql

a. java.sql.Date

b. java.sql.Time

c. java.sql.Timestamp

3. java.text

a. java.text.SimpleDateFormat

b. java.text.DateFormat

4. java.time (new - JDK 8)

a. java.time.LocalDate

b. java.time.LocalDateTime

c. java.time.LocalTime

d. java.time.ZoneId

e. java.time.Clock

f. java.time.Year

g. java.time.YearMonth

h. java.time.Period

i. java.time.Duration

j. java.time.Instant

k. java.time.MonthDay

l. etc

=> What is difference between old and new Date API

1. In old Date-Time API, date was mutable
In new Date-Time API, date is not mutable (immutable)
2. In Old Date-Time API, SimpleDateFormat was not thread-safe
In New Date-Time API, Formatter are threadsafe
3. In Old Date-Time API, we can get date and time by using only one class
In New Date-Time API, there are also different classes for date and time
4. In Old Date-Time API, Year starts with 1900 and Months starts from 0
New Date-Time API, years and months int values were modified

Old Way

```
public class Test1
{
    public static void main(String[] args)
    {
        //      Date d=new Date();
        //      System.out.println(d);

        Date d=new Date();

        SimpleDateFormat sdf1=new SimpleDateFormat("dd/MM/yy");
        String current_date=sdf1.format(d);
        System.out.println(current_date);

        SimpleDateFormat sdf2=new SimpleDateFormat("HH:mm:ss");
        String current_time=sdf2.format(d);
        System.out.println(current_time);
    }
}
```

mm for minute
and MM is for month

hh for 12 hr format
HH for 24 hr format

New Way

```
public class Test1
{
    public static void main(String[] args)
    {
//      LocalDate ld1=LocalDate.now();   //yyyy-MM-dd
//      System.out.println(ld1);

//-----
//      LocalDate ld1=LocalDate.now();
//      DateTimeFormatter dtf=DateTimeFormatter.ofPattern("dd/MM/yyyy");
//      String current_date=ld1.format(dtf);
//      System.out.println(current_date);

//      String current_date=dtf.format(ld1);
//      System.out.println(current_date);

//-----
//      String selected_date="01-Jan-1990";
//      DateTimeFormatter dtf=DateTimeFormatter.ofPattern("dd-MMM-yyyy");
//      LocalDate ld=LocalDate.parse(selected_date, dtf);   //yyyy-MM-dd
//      System.out.println(ld);

//-----
//      LocalDate ld=LocalDate.now();
//      System.out.println(ld.getDayOfMonth());
//      System.out.println(ld.isLeapYear());

//      LocalDate ldnew=ld.minusDays(9);
//      System.out.println(ldnew);

//      LocalDate ldnew=ld.plusMonths(7);
//      System.out.println(ldnew);

//-----
//      LocalDate ld=LocalDate.of(2021, 01, 01);
//      System.out.println(ld.isLeapYear());
    }
}
```

```
public class Test2
{
    public static void main(String[] args)
    {
        //      LocalDateTime lt=LocalDateTime.now();
        //      System.out.println(lt);

        //-----
        //      LocalDateTime lt=LocalDateTime.now();
        //      DateTimeFormatter dtf=DateTimeFormatter.ofPattern("HH:mm:ss");
        //      String current_time=lt.format(dtf);
        //      System.out.println(current_time);

        //      String current_time=dtf.format(lt);
        //      System.out.println(current_time);

        //-----
        LocalDateTime lt=LocalDateTime.now();
        System.out.println(lt.getHour());
        System.out.println(lt.minusHours(40));
    }
}
```

```
public class Test3
{
    public static void main(String[] args)
    {
        LocalDateTime ldt=LocalDateTime.now();
        System.out.println(ldt);
    }
}
```

```
public class Test4
{
    public static void main(String[] args)
    {
        //      ZoneId zi=ZoneId.of("America/New_York");
        //
        //      LocalDate ld=LocalDate.now(zi);
        //      System.out.println(ld);
        //
        //      LocalDateTime lt=LocalTime.now(zi);
        //      System.out.println(lt);

        //-----
        //      LocalDateTime indian_time=LocalTime.now();
        //
        //      ZoneId zi=ZoneId.of("America/New_York");
        //      LocalDateTime america_time=LocalTime.now(zi);
        //
        //      long l=ChronoUnit.HOURS.between(america_time, indian_time);
        //      System.out.println(l);

        //-----
        //      String[] arr=TimeZone.getAvailableIDs();
        //      for(String a:arr)
        //      {
        //          System.out.println(a);
        //      }

        //-----
        //      Clock c=Clock.systemDefaultZone();
        //      System.out.println(c);
    }
}
```

```
public class Test5
{
    public static void main(String[] args)
    {
        Year y=Year.now();
        System.out.println(y);
        System.out.println(y.atDay(100));
        System.out.println(y.length());

        //-----
        YearMonth ym=YearMonth.now();
        System.out.println(ym);
    }
}
```