

# Curso Java Completo

Capítulo: Tópicos especiais em Java

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## Date

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## Date

Representa um INSTANTE

Pacote java.util

<https://docs.oracle.com/javase/10/docs/api/java/util/Date.html>

Um objeto Date internamente armazena:

- O número de milissegundos desde a meia noite do dia 1 de janeiro de 1970 GMT (UTC)
  - GMT: *Greenwich Mean Time (time zone)*
  - UTC: *Coordinated Universal Time (time standard)*

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## SimpleDateFormat

- <https://docs.oracle.com/javase/10/docs/api/java/text/SimpleDateFormat.html>
- Define formatos para conversão entre Date e String
- dd/MM/yyyy -> 23/07/2018
- dd/MM/yyyy HH:mm:ss -> 23/07/2018 15:42:07

## Padrão ISO 8601 e classe Instant

- Formato: yyyy-MM-ddTHH:mm:ssZ
- Exemplo: "2018-06-25T15:42:07Z"
- `Date y3 = Date.from(Instant.parse("2018-06-25T15:42:07Z"));`

```
SimpleDateFormat sdf1 = new SimpleDateFormat("dd/MM/yyyy");
SimpleDateFormat sdf2 = new SimpleDateFormat("dd/MM/yyyy HH:mm:ss");
SimpleDateFormat sdf3 = new SimpleDateFormat("dd/MM/yyyy HH:mm:ss");
sdf3.setTimeZone(TimeZone.getTimeZone("GMT"));

Date x1 = new Date();
Date x2 = new Date(System.currentTimeMillis());
Date x3 = new Date(0);
Date x4 = new Date(1000L * 60L * 60L * 5L);

Date y1 = sdf1.parse("25/06/2018");
Date y2 = sdf2.parse("25/06/2018 15:42:07");
Date y3 = Date.from(Instant.parse("2018-06-25T15:42:07Z"));

System.out.println("x1: " + x1);
System.out.println("x2: " + x2);
System.out.println("x3: " + x3);
System.out.println("x4: " + x4);
System.out.println("y1: " + y1);
System.out.println("y2: " + y2);
System.out.println("y3: " + y3);
System.out.println("-----");
System.out.println("x1: " + sdf1.format(x1));
System.out.println("x2: " + sdf2.format(x2));
System.out.println("x3: " + sdf2.format(x3));
System.out.println("x4: " + sdf2.format(x4));
System.out.println("y1: " + sdf2.format(y1));
System.out.println("y2: " + sdf2.format(y2));
System.out.println("y3: " + sdf2.format(y3));
System.out.println("-----");
System.out.println("x1: " + sdf3.format(x1));
System.out.println("x2: " + sdf3.format(x2));
System.out.println("x3: " + sdf3.format(x3));
System.out.println("x4: " + sdf3.format(x4));
System.out.println("y1: " + sdf3.format(y1));
System.out.println("y2: " + sdf3.format(y2));
System.out.println("y3: " + sdf3.format(y3));
```

*Demo:  
Criação e  
impressão  
de datas.*

## Manipulando uma data com Calendar

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## Somando uma unidade de tempo

```
SimpleDateFormat sdf = new SimpleDateFormat("dd/MM/yyyy HH:mm:ss");  
  
Date d = Date.from(Instant.parse("2018-06-25T15:42:07Z"));  
  
System.out.println(sdf.format(d));  
  
Calendar cal = Calendar.getInstance();  
cal.setTime(d);  
cal.add(Calendar.HOUR_OF_DAY, 4);  
d = cal.getTime();  
  
System.out.println(sdf.format(d));
```

## Obtendo uma unidade de tempo

```
SimpleDateFormat sdf = new SimpleDateFormat("dd/MM/yyyy HH:mm:ss");  
  
Date d = Date.from(Instant.parse("2018-06-25T15:42:07Z"));  
  
System.out.println(sdf.format(d));  
  
Calendar cal = Calendar.getInstance();  
cal.setTime(d);  
int minutes = cal.get(Calendar.MINUTE);  
int month = 1 + cal.get(Calendar.MONTH);  
  
System.out.println("Minutes: " + minutes);  
System.out.println("Month: " + month);
```