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TimeZones with examples in Java 8

04: Understanding TimeZones with examples in Java 8

Posted on November 7, 2015 by Arulkumaran Kumaraswamipillai



What is UTC? which stands for Coordinated Universal

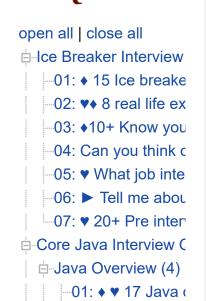
Time. The diagram below shows the standard time offsets of different countries. Some places observe daylight saving time (**DST**) during their respective summer periods. For example,

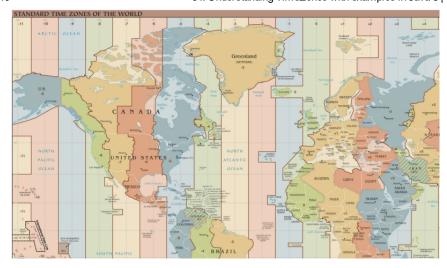
Los Angeles (i.e LA) UTC – 8.0 hours (without DST) & UTC – 7.0 hours (with DST)

Berlin UTC + 3.0 hours (without DST) & UTC + 2.0 hours (with DST).

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Lets take a reference datetime as 2015-05-15 9:00am and represent it with timezone for LA and Berlin. Note that 15th of May is with **DST** in both LA and Berlin. Here is the basic code with time zones.

```
package test;
3
   import java.time.LocalDateTime;
import java.time.ZoneId;
import java.time.ZonedDateTime;
5
6
8
   public class Converting {
9
10
       public static void main(String□ args) {
11
12
            // 2015-05-15 9:00am
            LocalDateTime utcDateTime = LocalDateTim
13
14
15
            ZoneId zoneLA = ZoneId.of("America/Los_A
16
            ZoneId zoneBerlin = ZoneId.of("Europe/Be
17
18
            ZonedDateTime _9AmInLA = ZonedDateTime.o
19
            ZonedDateTime _9AmInBerlin = ZonedDateTi
20
            //UTC-7.00 \text{ hours: } \_9AmInLA = 2015-05-15T
21
22
            System.out.println("_9AmInLA = " + _9AmI
23
            //UTC+2.00 hours: _9AmInBerlin = 2015-05
24
            System.out.println("_9AmInBerlin = " + _
25
26
27
            //if 9am in LA then UTC (9 am + 7 hours)
28
            System.out.println("if 9am in LA then UT
29
30
            //if 9am in Berlin then UTC (9 am - 2 ho
31
            System.out.println("if 9am in Berlin the
32
33
            boolean laDaylightSavings = zoneLA.getRu
34
            boolean berlinDaylightSavings = zoneBerl
35
36
            System.out.println("laDaylightSavings="
            System.out.println("berlinDaylightSaving
37
38
```

```
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    03: ♦ 9 Core Jav
   04: ♦ Top 10 mos
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    → Java class load
   → Java classes a
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    ♥♦ HashMap & F
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    ♦♥ Object equals
   --Java serialization
   Mocks, stubs, do
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    How to create a
    Top 5 OOPs tips
    Top 6 tips to go a
   --Understanding C
   What are good re
□ GC (2)
   → Java Garbage
```

39 } 40

Output:

_9AmInLA = 2015-05-15T09:00-07:00[America/Los_Angeles]
_9AmInBerlin = 2015-05-15T09:00+02:00[Europe/Berlin]
if 9am in LA then UTC (9 am + 7 hours) = 2015-0515T16:00:00Z
if 9am in Berlin then UTC (9 am - 2 hours) = 2015-0515T07:00:00Z
laDaylightSavings=true
berlinDaylightSavings=true

Flying from LA to Berlin in 12 Hours

Extending the above example, let us assume that you are flying from LA to Berlin.

Flying Time: 12 Hours

Total Time Difference (with DST): 9 hours (i.e. 7 + 2), derived from LA is UTC-7 and Berlin is UTC+2.

Departure Time in LA: 2015-05-15 9:00

Arrival Time as per LA: 2015-05-15 21:00 (i.e. 2015-05-15 9:00 + 12 HOURS flying time)

Departure Time as per Berlin: 2015-05-15 18:00 (i.e. 2015-05-15 9:00 + 9 HOURS Total Time difference)

Arrival Time in Berlin: **2015-05-16 06:00** (i.e. 2015-05-15 18:00 + 12 HOURS flying time)

In Short, you depart LA at LA time 2015-05-15 9:00 and arrive in Berlin at Berlin time 2015-05-16 06:00, which is 6.00 am next day. A total of 21 hours (i.e. 12 HOURS flying time + 9 HOURS zone offset).

Here is the Java 8 code:

| 03: Java GC tun |
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| Generics (5) |
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| → Splitting input t |
| → Tree traversal |
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```
2
            package test;
  3
           import java.time.LocalDateTime;
import java.time.ZoneId;
  4
  5
  6
            import java.time.ZonedDateTime;
 8
           public class ZoneBasics {
 9
10
                             public static void main(String□ args) {
11
12
                                              // 2015-05-15 9:00am
13
                                              LocalDateTime utcDateTime = LocalDateTim
14
                                             ZoneId zoneLA = ZoneId.of("America/Los_A
ZoneId zoneBerlin = ZoneId.of("Europe/Be
15
16
17
                                              ZonedDateTime _9AmInLA = ZonedDateTime.o
18
19
20
                                              //LA to berlin flying time 12 hours.
21
                                              ZonedDateTime arrivalTimeAsPerLA = _9AmI
22
23
                                              //arrivalTimeAsPerLA = 2015-05-15T21:00-
24
                                              System.out.println("arrivalTimeAsPerLA =
25
26
                                              ZonedDateTime arrivalTimeAtBerlin = arr
27
28
                                              //9 HOURS time difference between LA and
                                              //arrivalTimeAtBerlin = 2015-05-16T06:00
29
30
                                              System.out.println("arrivalTimeAtBerlin
31
                             }
32 }
33
34
```

Output:

arrivalTimeAsPerLA = 2015-05-15T21:00-07:00[America/Los_Angeles] arrivalTimeAtBerlin = 2015-05-16T06:00+02:00[Europe/Berlin]

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Arulkumaran Kumaraswamipillai



Mechanical Eng to freelance Java developer in 3 yrs. Contracting since 2003, and attended 150+ Java job interviews, and often got 4 - 7 job offers to choose from. It pays to prepare. So, published Java interview Q&A books via Amazon.com in 2005, and sold 35,000+ copies. Books are outdated and replaced with this subscription based site.



About Arulkumaran Kumaraswamipillai

Mechanical Eng to freelance Java developer in 3 yrs. Contracting since 2003, and attended 150+ Java job

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interviews, and often got 4 - 7 job offers to choose from. It pays to prepare. So, published Java interview Q&A books via Amazon.com in 2005, and sold 35,000+ copies. Books are outdated and replaced with this subscription based site.

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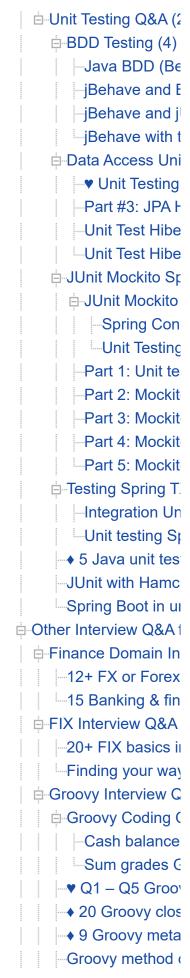
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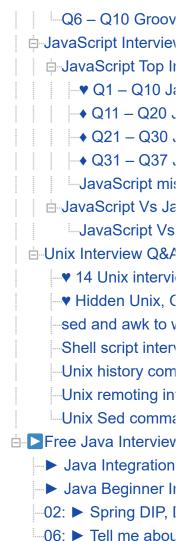
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