System Time and Numeric Operations

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Objectives

- To obtain the current system time using **System.currentTimeMillis()** (§2.12).

Outline

- Discussed
  - Problem → Algorithm → Implementation
  - Design a program with input and output
  - Numeric data types and operators
  - Augmented assignment
  - Type casting
- This lesson covers an example
  - Obtain system time
  - Display it nicely (using numerical operations)

Problem. Displaying Current Time

- Write a program that displays current time in GMT in the format hour:minute:second such as 1:45:19.

- Algorithm

  - Obtain current system time

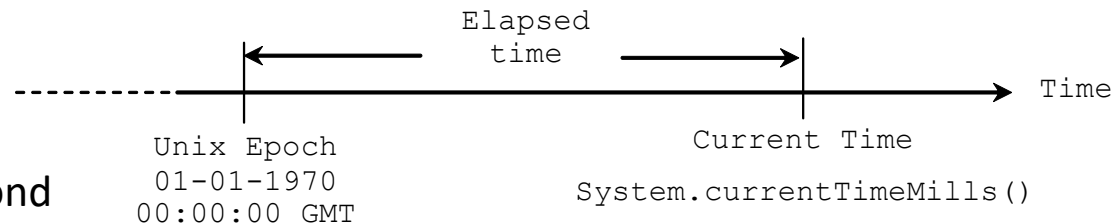 - Convert it to the format

  - Print it out

Obtaining Current System Time

- Java provides
  - System.currentTimeMillis()

- It returns the current time in milliseconds since the midnight, January 1, 1970 GMT.
  - 1970 was the year when the Unix operating system was formally introduced.

- We can then use numeric operations to convert it to the nice format we want

- Note:
  - 1000 milliseconds = 1 second
  - 60 seconds = 1 minute
  - 60 minutes = 1 hour

```
                              Elapsed
                               time
- - - - - - - |←-------------→|         |----------→ Time
              |                         |
          Unix Epoch              Current Time
          01-01-1970         System.currentTimeMills()
          00:00:00 GMT
```

Implementation

```
public class ShowCurrentTime {
 public static void main(String[] args) {
   long totalMilliseconds = System.currentTimeMillis(); // Obtain the total milliseconds since midnight, Jan 1, 1970

   long totalSeconds = totalMilliseconds / 1000; // Obtain the total seconds since midnight, Jan 1, 1970

   long currentSecond = totalSeconds % 60; // Compute the current second in the minute in the hour

   long totalMinutes = totalSeconds / 60; // Obtain the total minutes

   long currentMinute = totalMinutes % 60; // Compute the current minute in the hour

   long totalHours = totalMinutes / 60; // Obtain the total hours

   long currentHour = totalHours % 24; // Compute the current hour

   // Display results
   System.out.println("Current time is " + currentHour + ":"
     + currentMinute + ":" + currentSecond + " GMT");
 }
}
```

Questions?

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