F27SB2 Software Development 2
Tutorial 1

The `Calendar` class in the `java.util` library provides methods for manipulating `Calendar` objects representing dates and times. To use this library you must put:

```
import java.util.*;
```

at the start of your program.

The method `Calendar.getInstance()` creates a new `Calendar` object set to the current date and time. The method `getTimeInMillis()` returns the time from a `Calendar` object as milliseconds.

The function:

```
void pause(long millisecs)
{  long current = Calendar.getInstance().getTimeInMillis();
   while(Calendar.getInstance().getTimeInMillis()-
         current<millisecs);
}
```

pauses for `millisecs` milliseconds.

1. Write a timer program that prompts for and inputs a time in seconds and then, once a second, prints the time number and decrements it until it is 0. (Note: there are various ways of reading from the keyboard in Java, including using `Scanner` in `java.util`).

2. Write a reaction timer program that finds the initial time in milliseconds, prompts the user to press the “return” key, inputs an empty string from the keyboard when the user has pressed “return”, finds the current time in milliseconds and prints the difference between the current time and the initial time.

The `Random` class in the `java.util` library provides a pseudo random number generator. The constructor `Random()` creates a new `Random` object seeded with the time of day. Calls of `nextInt()` to a Random object return values across the whole range of integers from very negative to very positive.

3a. Write a function: `int abs(int x){ ... }` which returns the absolute value of `x` i.e. returns `x` if `x` is positive or zero and `-x` otherwise.

3b. Extend the reaction time program so it displays an initial message and pauses for a random number of milliseconds, up to 5 seconds, before prompting the user to press “return”.