This lab spans over 2 lab periods. Both labs are mandatory unless you can complete and submit before the end of the first lab.

JavaScript World Clocks

In this part of the assignment, you will expand upon your previous JavaScript code (from lab4).

In lab4, you displayed the current date and time for 4 cities in different time zones based on user input. In this lab, you will display the current time for 4 different cities continuously and simultaneously, without requiring the user to click a button or select from a list to see the time. As in lab 4, each of your 4 cities should be in different time zones.

Begin by creating a single digital clock on a web page, showing the current local time. Use as a guide the continuous timer shown in class and available at http://www.cs.sfu.ca/~tamaras/javascript2/continuousTimer.html.

The JavaScript for continuousTimer.html includes a startTimer() function which is called when a user clicks the button called “Start Timer”. The startTimer() function calls the timerTick() function which takes care of incrementing and displaying the global variable time, as well as creating a timed event, i.e. calling the same function again after a delay of 1000 milliseconds (1 second).

```javascript
<script type="text/javascript">
var time = 0;
var t = 0;
var timerOn = false;
function timerTick()
{
    document.getElementById("timer").innerHTML=time;
    time++;  
t = setTimeout("timerTick()", 1000);
}

function startTimer()
{
    if (!timerOn) {
        timerOn = true;
        time = 0;
        timerTick();
    }
}
</script>
```

For this lab, you will create 2 functions called startClock() and clockTick() that will serve much the same purpose as startTimer() and timerTick(), respectively. Instead of calling startClock() when a button is clicked, it should be called when your page is loaded. To do this, adapt the body element of your .html source as follows:
As with timerTick(), the function clockTick() will make the necessary call to obtain the current time, and will display the time in an HTML element. It will then call itself again, 1 second later.

Create a webpage called “World Clocks” to display the times for each city, and make it visually appealing, using HTML5 and CSS. You can, for instance, include graphics characteristic of the city. Your digital clock should display hours, minutes, and seconds on a 24 hour clock, and should refresh every second. You do not need to display the date but you certainly can if you want to. Be creative!

BONUS: You will receive one bonus mark if you can make a visual change in some way relative to the time of day. An example would be a background that gets progressively darker throughout the day until it’s black at night.

**Temperature Converter**

On the same page as your “World Clocks” you will provide a utility that allows a user to enter a temperature in either Celsius or Fahrenheit, and then see it on both scales simultaneously. One solution is to create a form with two input text boxes, with a label for each box to identify it as the Fahrenheit or Celsius input. **If the user does not enter a valid temperature, then display an appropriate error message using an alert box.**

Make your webpage available at this URL:

http://cmpt165.csil.sfu.ca/~<username>/lab5/lab5.html