ICS215: Assignment 6

Due on Wednesday, Novemeber 13, 2013 at the beginning of the lecture (10:30am)

Dr. Jan Stelovsky
Halawai Online Lecture MW 10:30am

Please hand in scripts by email to Andreas Brauchli andreasb+ics215@hawaii.edu

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October 31, 2013

Javascript

This assignment bases on previously aquired Javascript skills. You should now feel comfortable working in a Javascript/HTML environment.

Whenever you encounter a new problem, look it up online by using keywords. There are many good sources with explanations and examples and this is generally a good way to attack coding-problems and get proficient at a new language.
Especially recommended are answers at stackoverflow or w3schools.

All problems must be completed by the hand-in date **before 10:30am** or carry a late-submission penalty of 20% per day. It is strongly suggested to start early, as you may need the time to complete the tasks.
Please account for answering time when you have questions about the assignment. Email questions on the last day before submission may not be answered in time.
Please only hand in the javascript file ex6.js. Do not hand in any html, css or ZIP files.

Problem 1

Car Engine Data - 5pts
Create a function `getRpm` that simulates the data of a car's engine, i.e. its revolutions per minute (RPM). The function should accept one boolean argument `powered` and return 0 when `powered` is false or a number between 1000 and 5000 otherwise.
As we want this RPM number to vary, each consecutive call to `getRpm` should depend on a global variable - let's call it `angle` - and `getRpm()` should change this value of this angle, e.g. increase it by 20°.
To simulate the car continuously accelerating and breaking, vary the RPM based on a sinus function. We suggest that you consider `function f(angle) = Math.sin(angle * Math.PI / 180)` that accepts as an argument an angle in degrees and returns values between -1 and 1. Note that you will need to adapt this function so that your function returns values in between 1000 and 5000. A good angle to start your engine is -60°.

Problem 2

Car Engine - 5pts
Build a car engine gauge based on google's gauge "chart".
Use the sample code from https://developers.google.com/chart/interactive/docs/examples#gauge_example to get started.
Embed the engine gauge within the provided `#engine` container on the web page.
Your engine gauge's region should range from 0-6000rpm with a tick at every 1000rpm. The yellow region should start at 4000rpm, the red at 5000rpm.

Further, create a function `updateEngine` that sets the gauge to the value returned by `getRpm(false)`.

Problem 3

Car Ignition - 5pts
Implement the functionality of the start and stop engine buttons on the web page in your function `startEngine`.
The start button will call your function `startEngine(true)` while the stop button will call `startEngine(false)`.

Problem 3 continued on next page...

You must define and implement this function and update `updateEngine` from problem 2 accordingly.

Use `var myTimer = setInterval(updateEngine, 1000);` to call `updateEngine` every 1000ms, and `clearInterval(myTimer);` to stop the timer. Note that `myTimer` must be visible from both calls so make it global.
Some browsers may require `window.setInterval, window.clearInterval`.