Lab 3_2 [20 points] JavaScript Functions

Objectives

- Create and use JavaScript functions
- Practice debugging and error correction

What to do

Please follow the steps to complete debugging and function creation tasks

1. Download and extract the lab3_2.html and lab3_2_functions file. Open the HTML web page and you should a page like the following. However, the buttons are not working now. The reason is that the JavaScript code completion.

Lab 3_2

Create the required functions and click the buttons to test.

| Click to calculate seconds | Click to calculate Hour-Min-Sec | Click to compare the fall time on different planets |

2. [5 points] Write a function getSeconds() that converts time (e.g., 13:05:36 (13 hour, 05 minute 36 second)) into a different format (e.g, 47136s). Please follow the detailed steps in the comments of the JavaScript file. To be simple, assume the user will enter the number correctly, validation of the data is not required here.

The sample users' input and the result should look like the following screenshots.

This page says

Enter a number(0-23) for the hour of the current time

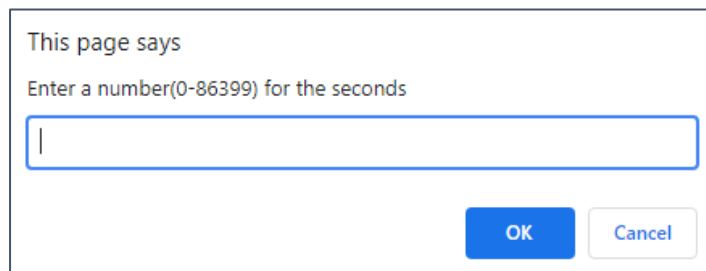| |

OK   Cancel

This page says

The current time 15:26:47 is 55607 seconds after 12:00AM.

OK

3. [5 points] Write a function getHMS() that converts time in seconds format (e.g, 47136s) into a different format (e.g., 13:05:36 (13 hour, 05 minute 36 second)). Please follow the detailed steps in the comments of the JavaScript file. To be simple, assume the user will enter the

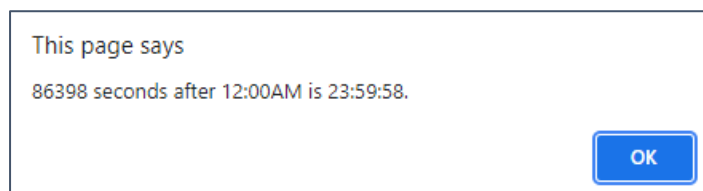number correctly, validation of the data is not required here.

The sample users' input and the result should look like the following screenshots.

This page says

Enter a number(0-86399) for the seconds

| |

OK   Cancel

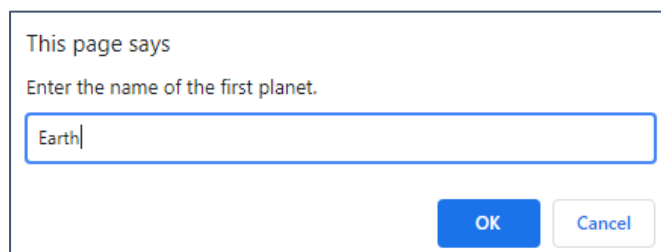This page says

86398 seconds after 12:00AM is 23:59:58.

OK

4. [3 points] Write a function calculateFallTime(height, intialVelocity, gravity) that calculate the free fall time of an object from certain height on a planet. height, initial velocity, and acceleration of gravity (can use 'gravity' to be simple) are the parameters. The formula to calculate the free fall time t is

$$t = \frac{\sqrt{(v^2 + 2gh)} - v}{g},$$

where v is the initial downward velocity, g is the acceleration of gravity, and h is the height. Please follow the detailed steps in the comments of the JavaScript file. To be simple, assume the user will enter the number correctly, validation of the data is not required here.

5. [7 points]Write a function compareFreeFallTime() that compare the free fall time of objects on different planet by using the function. Please follow the detailed steps in the comments of the JavaScript file. To be simple, assume the user will enter the number correctly, validation of the data is not required here. Hint: toPrecision() method can be used to specify the precision of a   floating point number.

The sample users' input and the result should look like the following screenshots.

This page says

Enter the name of the first planet.

Earth|

OK   Cancel

This page says

Enter the height of the free fall in meters on planet Earth

100

OK   Cancel

This page says

Enter the initial downward velocity in meters/sec on planet Earth

0

OK   Cancel

This page says

Enter the gravity in meters/sec^2 on planet Earth

10

OK   Cancel

This page says

The free fall time of an object on planet Earth without air from the height of 100 with initial downward velocity of 0 is approximately 4.5 seconds, while the free fall time of an object on planet Mars without air from the height of 100 with initial downward velocity of 0 is approximately 7.3 seconds.

OK

Submission:

Zip the HTML and JavaScript file and submit to Brightspace.