Unit 5: Advanced JavaScript – Lab 3: Pig Latin

Assigned: 11/30/22

Due: 12/05/22

Completed: 12/02/22

**LMS:** <https://lms.grandcircus.co/mod/assign/view.php?id=22777>

**Google Doc:** <https://docs.google.com/document/d/1yo5BYZBDu2Xc-E47G1KWgb4F_aSOShN9Md0tjfrbkU8/preview>

**GitHub:**

**Intro:** Pig Latin is a children’s word game in English where starting consonants are flipped to the ends of words and -ay added to each word.  Hello World would be ellohay orldway in Pig Latin, for instance.  Many languages have games similar to this--read more at

<http://mentalfloss.com/article/50242/pig-latins-11-other-languages>

**Task:** Use TDD practices to build a function that translates from English to Pig Latin.

**Build Specifications:**

1. Translation must all be done in a translate function that takes a string parameter and returns the translated Pig Latin string.
2. The translation functionality must be developed with TDD using tests on the translate function.
3. If desired, you may also create other helper functions and optionally test them.

**Additional Build Specifications:**

1. Convert each word to lowercase before translating.
2. If a word starts with a vowel, just add “way” onto the ending.
3. If a word starts with a consonant, move all of the consonants that appear before the first vowel to the end of the word, then add “ay” to the end of the word.

**Hints:**

1. Treat “y” as a consonant.
2. Start with the simplest cases and work up, for example…
3. words that start with vowels… write tests for several different starting vowels
4. words that start with vowels with capital letters are converted to lowercase
5. words that start with one consonant… write tests for the second letter being several different vowels
6. words that start with two consonants
7. words that start with more consonants

**JavaScript (main file)**

Because we are just learning Testing I opted to take each part of this Lab part-by-part. This helped me build practice with writing the Test code, but also helped me work out the Pig Latin code.

So you will see me converting a string to lowercase, then checking if it starts with a vowel and taking action, then checking if it starts with a consonant and moving those (including if more than one) and taking action, and finally keeping everything with its original case or converting everything to lowercase.

// Export all functions to pig\_latin.test.js

module.exports = {lowercase, startsWithVowel, startsWithConsonant, pigLatin, pigLatinLower};

// Convert string to lowercase ("Hello" -> "hello")

function lowercase (string) {

    return string.toLowerCase();

};

// Test if string starts with a vowel

// If true, add "ay" to the end

function startsWithVowel (string) {

    let vowels = "aeiou".split("");

    string = string.toLowerCase();

    if (vowels.includes(string[0])) {

        return string + "way"

    }

};

// Test if string starts with a consonant

// It true, remove characters up to the first vowel

// Move those characters to end of the string and add "ay"

function startsWithConsonant (string) {

    let vowels = "aeiou".split("");

    string = string.toLowerCase();

    if (vowels.includes(string[0])) {

        return string + "way";

    } else {

        let consonants = ""

        for(let i = 0; i < string.length; i++) {

            if (vowels.includes(string[i])) {

                break;

            }

            consonants += string[i]

        } return string.substring(consonants.length) + consonants + "ay"

    }

};

// Multiple words in our string

// Convert each word to Pig Latin that maintains case

function pigLatin (string) {

    let vowels = "aeiouAEIOU".split("");

    const words = string.split(' ');

    function convertToPigLatin (words) {

    if (vowels.includes(words[0])) {

        return words + "way";

    } else {

        let consonants = ""

        for(let i = 0; i < words.length; i++) {

            if (vowels.includes(words[i])) {

                break;

            }

            consonants += words[i]

        } return words.substring(consonants.length) + consonants + "ay"

    }

    };

    return words.map(word => convertToPigLatin(word)).join(' ');

};

// Multiple words in our string

// Convert each word to Pig Latin that makes everything lowercase

function pigLatinLower (string) {

    let stringLower = string.toLowerCase();

    let vowels = "aeiouAEIOU".split("");

    const words = stringLower.split(' ');

    function convertToPigLatin (words) {

    if (vowels.includes(words[0])) {

        return words + "way";

    } else {

        let consonants = ""

        for(let i = 0; i < words.length; i++) {

            if (vowels.includes(words[i])) {

                break;

            }

            consonants += words[i]

        } return words.substring(consonants.length) + consonants + "ay"

    }

    };

    return words.map(word => convertToPigLatin(word)).join(' ');

};

**JavaScript (test tile)**

Because my pig\_latin.js file broke out each step of the code (everything to lowercase, check if it starts with a vowel, check if it starts with a consonant, etc.), then my testing had to be built to accommodate.

Because I wanted multiple test cases for each step, generally, then I grouped them together with the describe => test / expect, test / expect, etc. structure.

* For lowercase I tested the uppercase character in a different position / the entire string.
* For starting with vowel I have a test for each of the 5 vowels
* For starting with 1 consonant I have tests where the second character is a different vowel
  + The way this code is written it works whether there is 1 or multiple consonants to start a word. I tested 1 case where the first 2 characters are consonants and another where the first 3 characters are consonants. Felt like that covered all possibilities.
* For instances where there is more than one word in a string, I wrote tests where the result would either maintain case (“a” stays “a” or “A” stays “A”) and another where everything is converted to lowercase (“A” becomes “a”).

// Import functions from my pig\_latin.js file to be tested

let main = require('./pig\_latin');

// Additional Build Specifications 1 - test that the function converts a word to lowercase before translating

describe('lowercase function', () => {

    test('The string "Hello" is converted to lowercase "hello" before translating', () => {

        let testLowercase1 = main.lowercase("Hello");

        expect(testLowercase1).toBe("hello");

    });

    test('The string "Goodbye" is converted to lowercase "goodbye" before translating', () => {

        let testLowercase2 = main.lowercase("goodBye");

        expect(testLowercase2).toBe("goodbye");

    });

    test('The string "SPACE" is converted to lowercase "space" before translating', () => {

        let testLowercase3 = main.lowercase("SPACE");

        expect(testLowercase3).toBe("space");

    });

});

// Additional Build Specifications 2 - test that if a string starts with a vowel, then just add "ay" onto the ending

describe('starts with vowel function', () => {

    test('If a string starts with a vowel "a", then just add "ay" to the end of the word', () => {

        let testStartsWithVowel3 = main.startsWithVowel("apple");

        expect(testStartsWithVowel3).toBe("appleway");

    });

    test('If a string starts with a vowel "e", then just add "ay" to the end of the word', () => {

        let testStartsWithVowel2 = main.startsWithVowel("ends");

        expect(testStartsWithVowel2).toBe("endsway");

    });

    test('If a string starts with a vowel "i", then just add "ay" to the end of the word', () => {

        let testStartsWithVowel2 = main.startsWithVowel("inner");

        expect(testStartsWithVowel2).toBe("innerway");

    });

    test('If a string starts with a vowel "o", then just add "ay" to the end of the word', () => {

        let testStartsWithVowel1 = main.startsWithVowel("open");

        expect(testStartsWithVowel1).toBe("openway");

    });

    test('If a string starts with a vowel "u", then just add "ay" to the end of the word', () => {

        let testStartsWithVowel2 = main.startsWithVowel("under");

        expect(testStartsWithVowel2).toBe("underway");

    });

});

// Additional Build Specifications 3 - test that if a string starts with a consonant, move all consonants that appear before

// the first vowel to the end of the word, then add "ay" to the end of the word

// The pig\_latin.js code also covers if it starts with more than one consonant

describe('starts with consonant function', () => {

    test('The string "latin" in English becomes "atinlay" in Pig Latin', () => {

        let testStartsWithConsonant3 = main.startsWithConsonant("latin");

        expect(testStartsWithConsonant3).toBe("atinlay");

    });

    test('The string "hello" in English becomes "ellohay" in Pig Latin', () => {

        let testStartsWithConsonant1 = main.startsWithConsonant("hello");

        expect(testStartsWithConsonant1).toBe("ellohay");

    });

    test('The string "tilt" in English becomes "ilttay" in Pig Latin', () => {

        let testStartsWithConsonant3 = main.startsWithConsonant("tilt");

        expect(testStartsWithConsonant3).toBe("ilttay");

    });

    test('The string "world" in English becomes "orldway" in Pig Latin', () => {

        let testStartsWithConsonant2 = main.startsWithConsonant("world");

        expect(testStartsWithConsonant2).toBe("orldway");

    });

    test('The string "slope" in English becomes "opeslay" in Pig Latin', () => {

        let testStartsWithConsonant3 = main.startsWithConsonant("slope");

        expect(testStartsWithConsonant3).toBe("opeslay");

    });

    test('The string "chrome" in English becomes "omechray" in Pig Latin', () => {

        let testStartsWithConsonant3 = main.startsWithConsonant("chrome");

        expect(testStartsWithConsonant3).toBe("omechray");

    });

});

// Extended Challenges

// Multiple words in a string that maintain their case ("a" vs "A")

describe('multiple words in a string function that maintain case', () => {

    test('The string "Hello World" in English becomes "elloHay orldWay" in Pig Latin', () => {

        let testStartsWithConsonant3 = main.pigLatin("Hello World");

        expect(testStartsWithConsonant3).toBe("elloHay orldWay");

    });

});

// Multiple words in a string where the result is always lowercase ("a" becomes "a")

describe('multiple words in a string function that is all lowercase', () => {

    test('The string "Hello World" in English becomes "ellohay orldway" in Pig Latin', () => {

        let testStartsWithConsonant3 = main.pigLatinLower("Hello World");

        expect(testStartsWithConsonant3).toBe("ellohay orldway");

    });

});