

Homework #3

Due October 12th, 2020

Underscore Functional Programming

1. Introduction

In this assignment, you use the Underscore library <https://underscorejs.org> to program several functions to process the wsudgrs dataset found at this link:

<https://xinghuizhao.github.io/wsudata/wsudgrs.js>

Note you can NOT use loops or if statements in any of the functions, otherwise you will lose points for them.

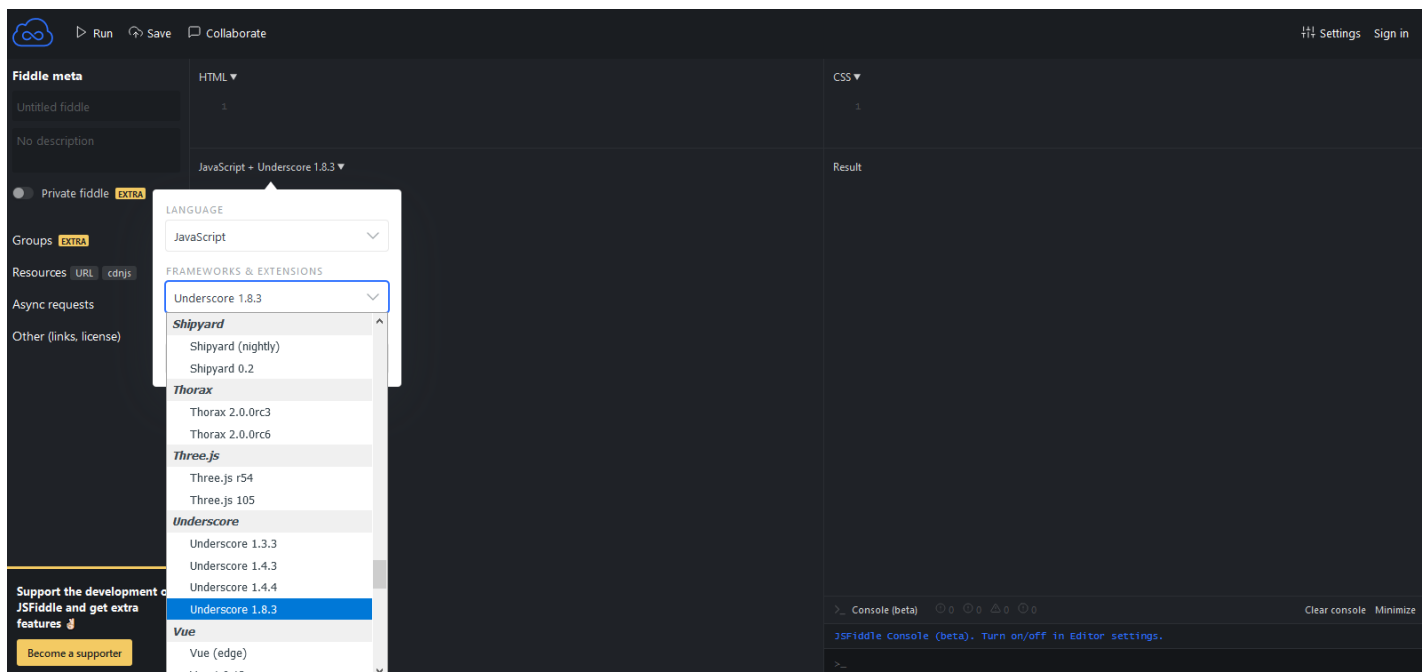
2. Environment Setup

Follow the instructions below:

1. Set up JSfiddle with Underscore, use the latest version 1.8.3. This can be done by clicking on

JavaScript + No-Library (pure JS) ▼

to bring up drop down options. See the figure below.

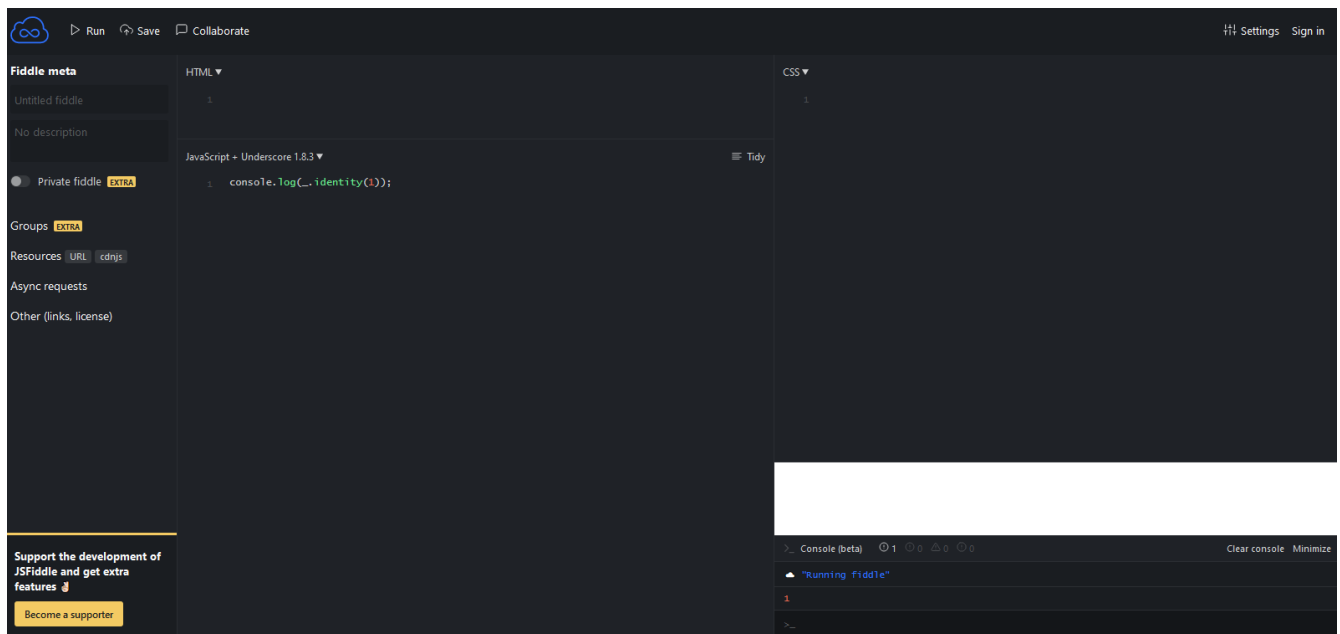


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2. To verify that Underscore is available in your JSfiddle, invoke an underscore function and log the output to the console.

For the function code, you can just use:
`console.log(_.identity(1));`



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3. Load the Dataset

We will be using a dataset of graduate information about WSU over a 10 year sampling period extracted previously by Xinghui. It is stored in a js file located here:

<https://xinghuizhao.github.io/wsudata/wsudgrs.js>

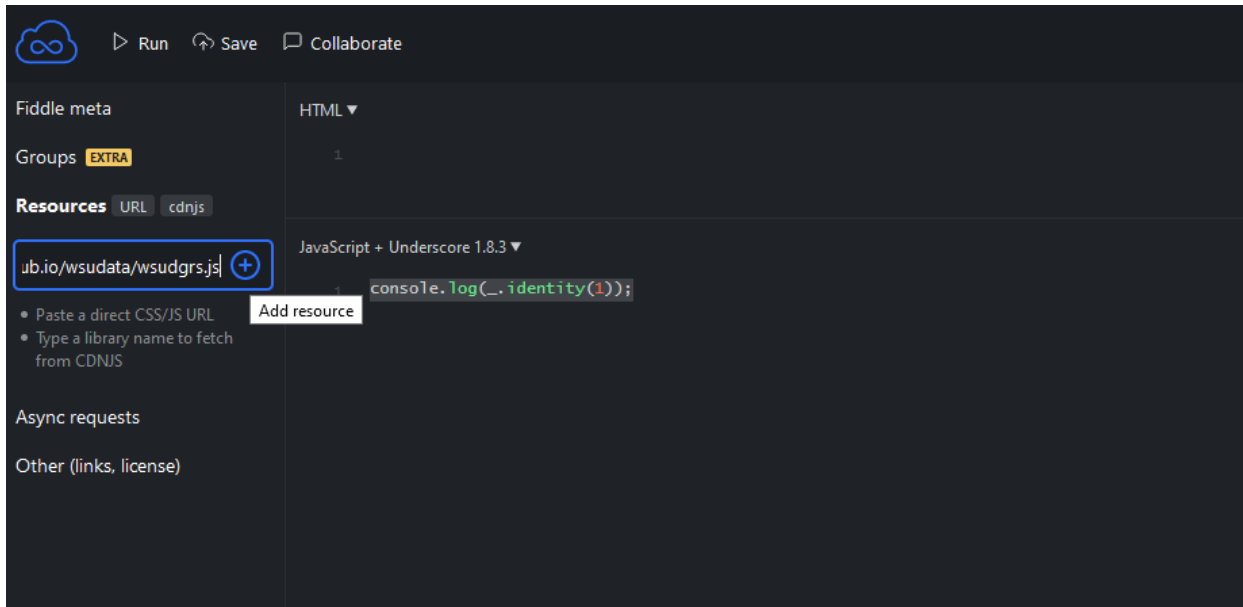
This file defines "wsudgrs", which is an array of objects, each representing a data entry. The first couple of rows look like this:

```
{
  "FISCAL_YEAR":2007,
  "CAMPUS":"Pullman",
  "Level":"Bachelors",
  "AWARDS":3515
},
{
  "FISCAL_YEAR":2008,
  "CAMPUS":"Pullman",
  "Level":"Bachelors",
  "AWARDS":3481
},
{
  "FISCAL_YEAR":2009,
  "CAMPUS":"Pullman",
  "Level":"Bachelors",
  "AWARDS":3409
}
```

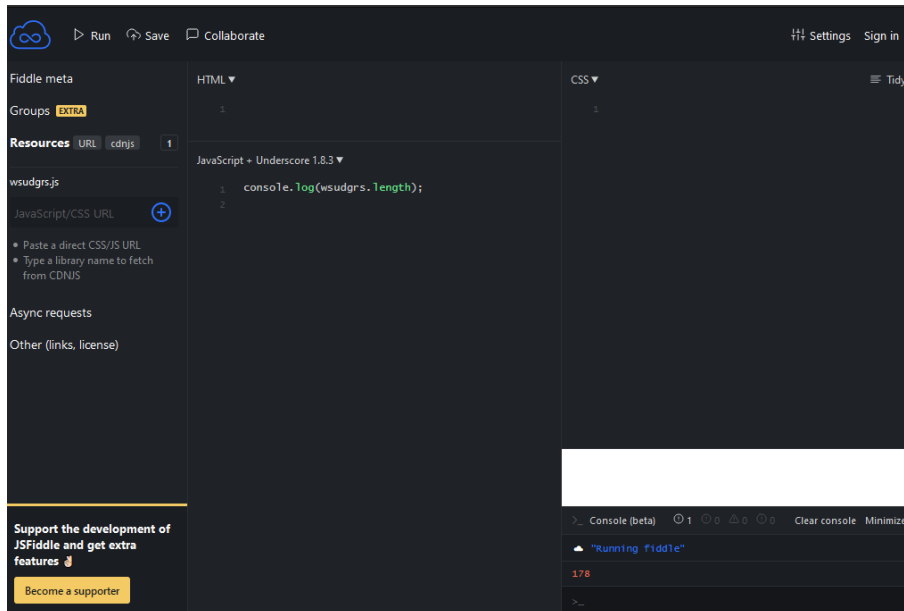
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To load this data into JSFiddle, you need to specify it as an "External Resource". Click on the "URL" on the left side of the window, enter <https://xinghuizhao.github.io/wsudata/wsudgrs.js>, and click the + icon to save it, see below:



To test that the dataset is defined correctly, try printing out its length to the console. You should get a length of 178.



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4. Data Processing

Using the Underscore library, implement the following functions to process the wsudgrs dataset:

1) `totalDegrees(data)`:

This function is passed a data structure like `wsudgrs` and returns the total number of degrees awarded in the data set.

2) `percentagePhD(data)`:

This function is passed a data structure like `wsudgrs` and returns the percentage of degrees that were awarded to PhD students. Such students are indicated by the string "Doctoral" in the "Level" field.

3) `totalDegreesByYear(data, year)`:

This function can be passed `wsudgrs` and a year and returns the total number of degrees awarded in that year.

4) `listCampuses(data)`:

This function can be passed `wsudgrs` and returns an array containing all the campuses referenced in the dataset.

5) `listCampusDegrees(data)`:

This function can be passed `wsudgrs` and returns an object where the property keys are campuses and the values are the number of degrees awarded by the campus.

6) `maxDegrees(data)`:

This function can be passed `wsudgrs`, computes the number of degrees earned in each year in the dataset, and then returns an integer which is the number of degrees earned in the year where the most degrees were earned.

For this assignment, adherence to the conventions of the functions in this document is required. **Recall, no loops nor if statements may be used.**

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5. Submission

This assignment is due at 11:59pm on 10/12/2020. Late work will be accepted up till 11:59pm on 10/15/2020 for a 20% mark down.

Submit your code as one file with your information (name, date, etc.) in comments at the top. Name it something relevant, like "HW3.js".

6. Grading

Each Function is worth 5 points for a total of 30 points. Another 5 points will involve the readability and quality of the code.

- 5pts totalDegrees
- 5pts percentagePhD
- 5pts totalDegreesByYear
- 5pts listCampuses
- 5pts listCampusDegrees
- 5pts maxDegrees
- 5pts Code Quality/Readability

TOTAL: 35 pts