

## Software Engineering Tools Lab

**PRN/ Roll No: 2019BTECS00008 & 2019BTECS00010**

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**Batch: T3**

### Assignment No. 2

#### Module 2- Software Development Frameworks

##### **1) Ruby on Rails**

1. Original Author - David Heinemeier Hansson
2. Developers - David Heinemeier Hansson
3. Initial Release: August 2004; 17 years ago
4. Stable Release: 7.0.1 / 6 January 2022
5. Preview Release: 30 September, 2007
6. Repository (with Cloud Support): <https://github.com/rails/rails>
7. Written in (Languages): Ruby
8. Operating System Support: Mac OS X, Linux, or Microsoft Windows operating systems.
9. Platform, Portability: Ruby is also a highly portable, cross-platform language.
10. Available in (Total Languages): Ruby
11. List of Languages Supported: HTML, CSS, and JavaScript

12. Type (Programming Tool, Integrated Development Environment etc.): Web application framework

13. Website: <https://rubyonrails.org/>

14. Features

- Symbol garbage collector
- Keyword arguments
- Action Mailer
- Action view
- Turbolinks
- Action cable
- AJAX library

15. Size (in MB, GB etc.): 57.8 MB

16. Privacy and Security:

In March 2012, security researcher Egor Homakov discovered a mass assignment vulnerability that allowed certain Rails applications to be remotely exploited, and demonstrated it by non-maliciously hacking GitHub after his earlier attempts at responsible disclosure were dismissed. Researchers Daniel Jackson and Joseph Near developed a data debugger they called "Space" that can analyze the data access of a Rails program and determine if the program properly adheres to rules regarding access restrictions.

17. Type of Software (Open Source/License): open-source software, MIT License

18. If License- Provide Details. - MIT License,

One of the licenses that Ruby uses, this is a very permissive license that allows you to negotiate terms with the author instead of fulfilling one of several requirements to distribute or modify code.

19. Latest Version: 7.0.1 / 6 January 2022

20. Cloud Support (Yes/No): Yes

## 21. Applicability

A web-app framework that includes everything needed to create database-backed web applications according to the Model-View-Controller (MVC) pattern.

It makes web development quick and easy.

GitHub is one of the popular source code management and version control system built using RoR

## 22. Drawbacks (if any)

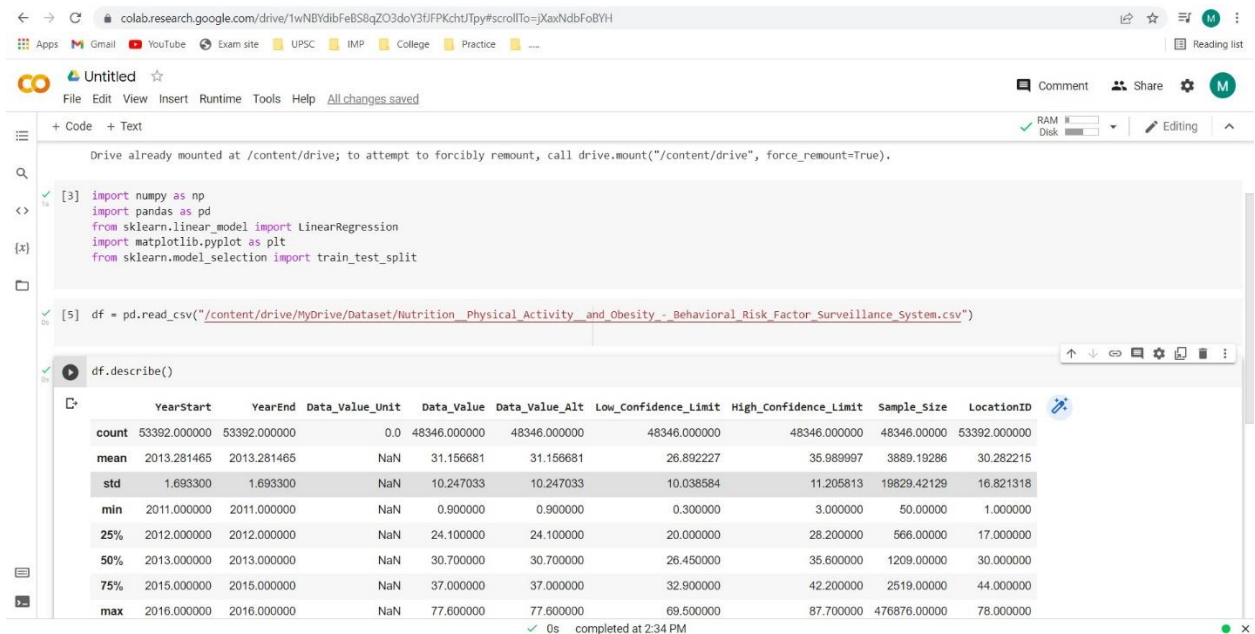
One of the most frequent arguments against RoR is its 'slow' runtime speed, which makes it harder to scale your RoR applications.

Wrong architecture decisions during the initial stages of your project might cost you more in Rails than in any other framework.

## 2) Implement linear regression problem using Google Colab (Perform pre-processing, training and testing)

Dataset – <https://www.kaggle.com/spittman1248/cdc-data-nutrition-physical-activity-obesity>

### Pre-processing



The screenshot shows a Google Colab notebook with the following code and output:

```
Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mount("/content/drive", force_remount=True).
```

```
[3] import numpy as np
import pandas as pd
from sklearn.linear_model import LinearRegression
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
```

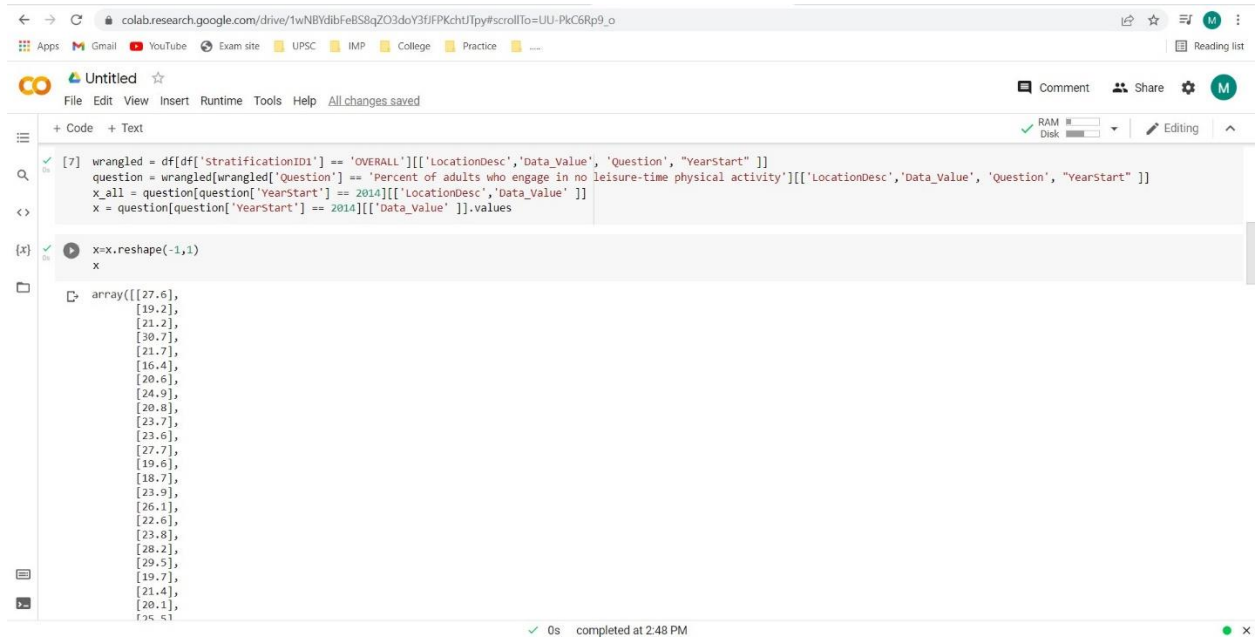
```
[5] df = pd.read_csv("/content/drive/MyDrive/Dataset/Nutrition_Physical_Activity_and_Obesity_-_Behavioral_Risk_Factor_Surveillance_System.csv")
```

```
df.describe()
```

	YearStart	YearEnd	Data_Value_Unit	Data_Value	Data_Value_Alt	Low_Confidence_Limit	High_Confidence_Limit	Sample_Size	LocationID
count	53392.000000	53392.000000	0.0	48346.000000	48346.000000	48346.000000	48346.000000	48346.000000	53392.000000
mean	2013.281465	2013.281465	NaN	31.156681	31.156681	26.892227	35.989997	3889.19286	30.282215
std	1.693300	1.693300	NaN	10.247033	10.247033	10.038584	11.205813	19829.42129	16.821318
min	2011.000000	2011.000000	NaN	0.900000	0.900000	0.300000	3.000000	50.000000	1.000000
25%	2012.000000	2012.000000	NaN	24.100000	24.100000	20.000000	28.200000	566.000000	17.000000
50%	2013.000000	2013.000000	NaN	30.700000	30.700000	26.450000	35.600000	1209.000000	30.000000
75%	2015.000000	2015.000000	NaN	37.000000	37.000000	32.900000	42.200000	2519.000000	44.000000
max	2016.000000	2016.000000	NaN	77.600000	77.600000	69.500000	87.700000	476876.000000	78.000000

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# Training



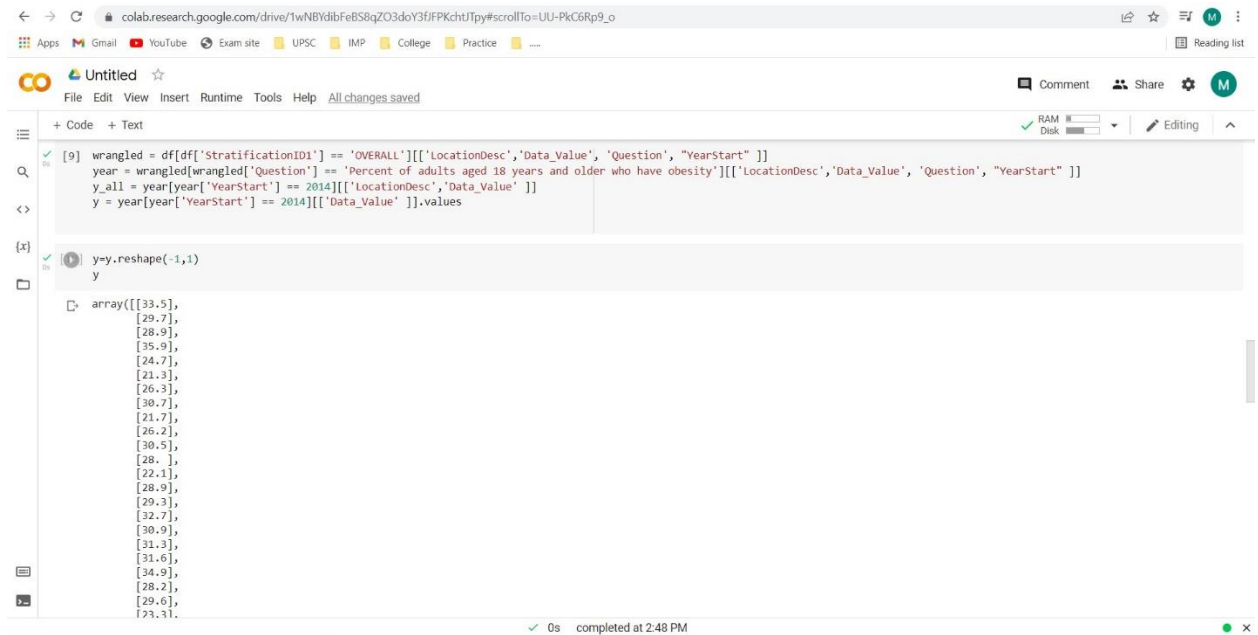
The screenshot shows a Google Colab notebook with the following code and output:

```
[7] wrangled = df[df['StratificationID1'] == 'OVERALL'][['LocationDesc', 'Data_Value', 'Question', 'YearStart' ]]  
question = wrangled[wrangled['Question'] == 'Percent of adults who engage in no leisure-time physical activity'][['LocationDesc', 'Data_Value', 'Question', 'YearStart' ]]  
x_all = question[question['YearStart'] == 2014][['LocationDesc', 'Data_Value' ]]  
x = question[question['YearStart'] == 2014][['Data_Value' ]].values
```

```
{x}  
x = x.reshape(-1,1)  
x
```

```
array([[27.6],  
       [19.2],  
       [21.2],  
       [30.7],  
       [21.7],  
       [16.4],  
       [20.6],  
       [24.9],  
       [20.8],  
       [23.7],  
       [23.6],  
       [27.7],  
       [19.6],  
       [18.7],  
       [23.9],  
       [26.1],  
       [22.6],  
       [23.8],  
       [28.2],  
       [29.5],  
       [19.7],  
       [21.4],  
       [20.1],  
       [25.5]])
```

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The screenshot shows a Google Colab notebook with the following code and output:

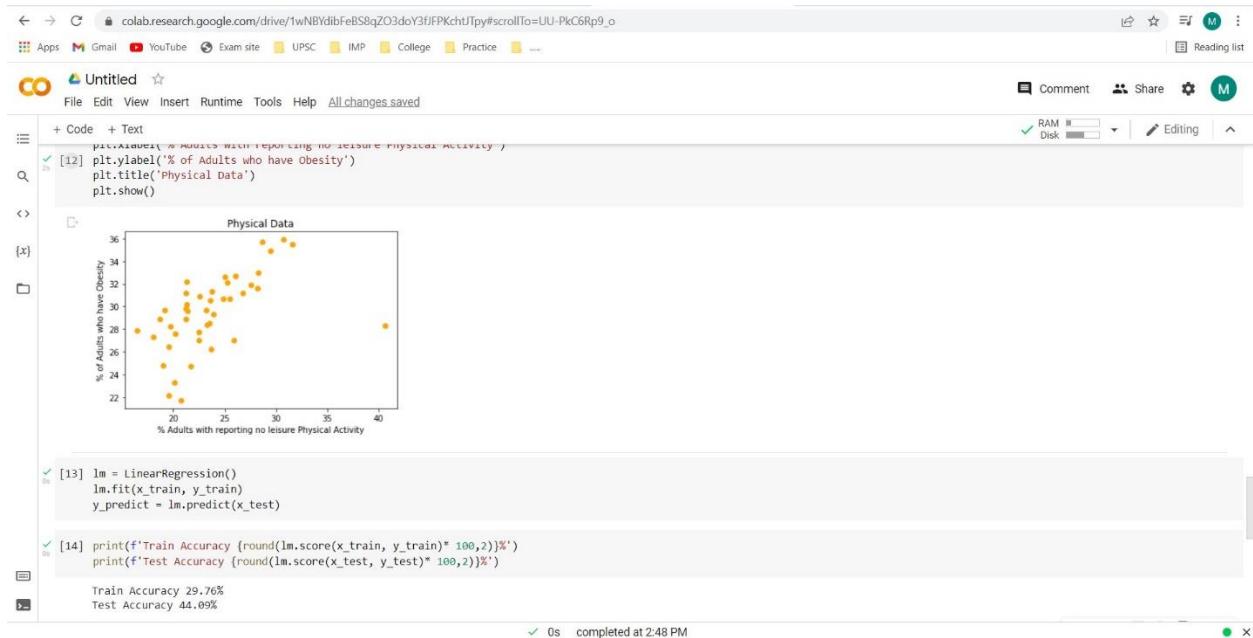
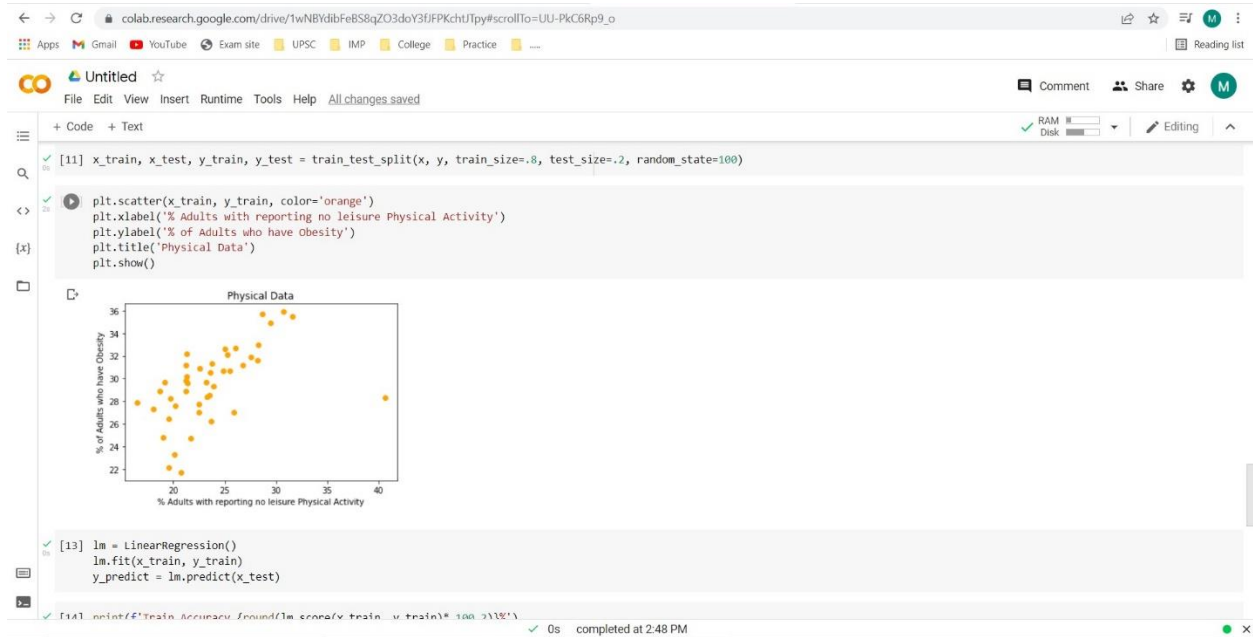
```
[9] wrangled = df[df['StratificationID1'] == 'OVERALL'][['LocationDesc', 'Data_Value', 'Question', 'YearStart' ]]  
year = wrangled[wrangled['Question'] == 'Percent of adults aged 18 years and older who have obesity'][['LocationDesc', 'Data_Value', 'Question', 'YearStart' ]]  
y_all = year[year['YearStart'] == 2014][['LocationDesc', 'Data_Value' ]]  
y = year[year['YearStart'] == 2014][['Data_Value' ]].values
```

```
{y}  
y = y.reshape(-1,1)  
y
```

```
array([[33.5],  
       [29.7],  
       [28.9],  
       [35.9],  
       [24.7],  
       [21.3],  
       [26.3],  
       [30.7],  
       [21.7],  
       [26.2],  
       [30.5],  
       [28. ],  
       [22.1],  
       [28.9],  
       [29.3],  
       [32.7],  
       [30.9],  
       [31.3],  
       [31.6],  
       [34.9],  
       [28.2],  
       [29.6],  
       [23.3]])
```

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# Testing



# Linear Regression

