

Third team

2021 year

# SEA LEVEL PREDICTOR 5 TASK

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# TODAY'S AGENDA

**1**

Introduction to the problem

**3**

Summary of problem

**2**

Solution way to the problem  
(with explanation)

**4**

Reflection // role of team

# INTRODUCTION

We will analyze a dataset of the global average sea level change since 1880. We will use the data to predict the sea level change through year 2050.

## Data Source

Global Average Absolute Sea Level Change, 1880-2014 from the US Environmental Protection Agency using data from CSIRO, 2015; NOAA, 2015. <https://datahub.io/core/sea-level-rise>

## SEA LEVEL



# SOLUTION WAY

Main Tools: PyCharm, Repl.it, Python programming language, Matplotlib , NumPy, Pandas libraries.

1

Review to library which given in repl.it compiler from freecodecamp

2

Search information about library function and their meaning

3

Identify task question and starting solving with python library such as pandas, matplotlib etc

# EXPLANATION OF SOLUTION WITH CODE DEMONSTRATION

## 1 STEP

```
import pandas as pd  
import matplotlib.pyplot as plt  
from scipy.stats import linregress
```

## IMPORTING LIBRARIES

First of all we imported the libraries that will be needed:

- Pandas is the library for reading and manipulating data
- Matplotlib is used for the visualisation of data
- linregress from scipy.stats was used to show the relationship between 'year' and 'sea level'

# EXPLANATION OF SOLUTION WITH CODE DEMONSTRATION

## 2 STEP

```
# Read data from file
df = pd.read_csv(
'epa-sea-level.csv') #First task [reading]

# Create scatter plot
x = df['Year'] #first column[Year]
y = df['CSIRO Adjusted Sea Level'] #sea level[]
plt.scatter(x, y)
```

## READING DATA FROM FILE AND CREATING SCATTER PLOT

- In this step we read the csv file using pandas
- Then we defined variables x('year') and y('CSIRO Adjusted Sea Level')
- After that created scatter plot using these variables with pandas

# EXPLANATION OF SOLUTION WITH CODE

## DEMONSTRATION

### 3 STEP

```
slope = linregress(x, y).slope #finding slope
intercept = linregress(x, y).intercept #finding intercept
print(slope) #print results in order to check values
print(intercept)
print(df)
def myfunc(x):
    return slope * x + intercept #formula

plt.scatter(x, y)

x_pred = pd.Series([i for i in range(1880,2050)])
y_pred = slope * x_pred + intercept
```

### CREATE FIRST LINE OF BEST FIT FROM 1800-2050

In this task we use information from 1800 to 2013 and after that with help of slope , intercept we can predict results.

First of all we find slope and intercept with functions from pandas. After that we use function that return values with help of formula.

Scatter helps with printing graph.

pd.Series helps with creating one-dimensional ndarray with axis labels.

# EXPLANATION OF SOLUTION WITH CODE

## DEMONSTRATION

### 4 STEP

```
x_2000 = df[ df['Year'] >= 2000 ]['Year']  
y_2000 = df[ df['Year'] >= 2000 ]['CSIRO Adjusted Sea  
Level']
```

```
fit2 = linregress(x_2000, y_2000)  
slope_2000 = fit2.slope  
intercept_2000 = fit2.intercept
```

```
x_pred2 = pd.Series([i for i in range(2000,2050)])  
y_pred2 = slope_2000 * x_pred2 + intercept_2000  
#plt.scatter(x, y)  
plt.plot(x_pred, y_pred, x_pred2, y_pred2, "g")
```

### CREATE SECOND LINE BEST FIT

The same operation like previous first line fit , but with different range of year from 2000 to 2050.  
and in Y we give slope and intercept by formula  $y=mx+b$ .

And finally we plot our chart of x and y from first line and second line fit and put the color of green to illustrate in the line chart



# EXPLANATION OF SOLUTION WITH CODE DEMONSTRATION

## 5 STEP

# Add labels and title

```
plt.xlabel("Year")
```

```
plt.ylabel("Sea Level (inches)")
```

```
plt.title("Rise in Sea Level")
```

# Save plot

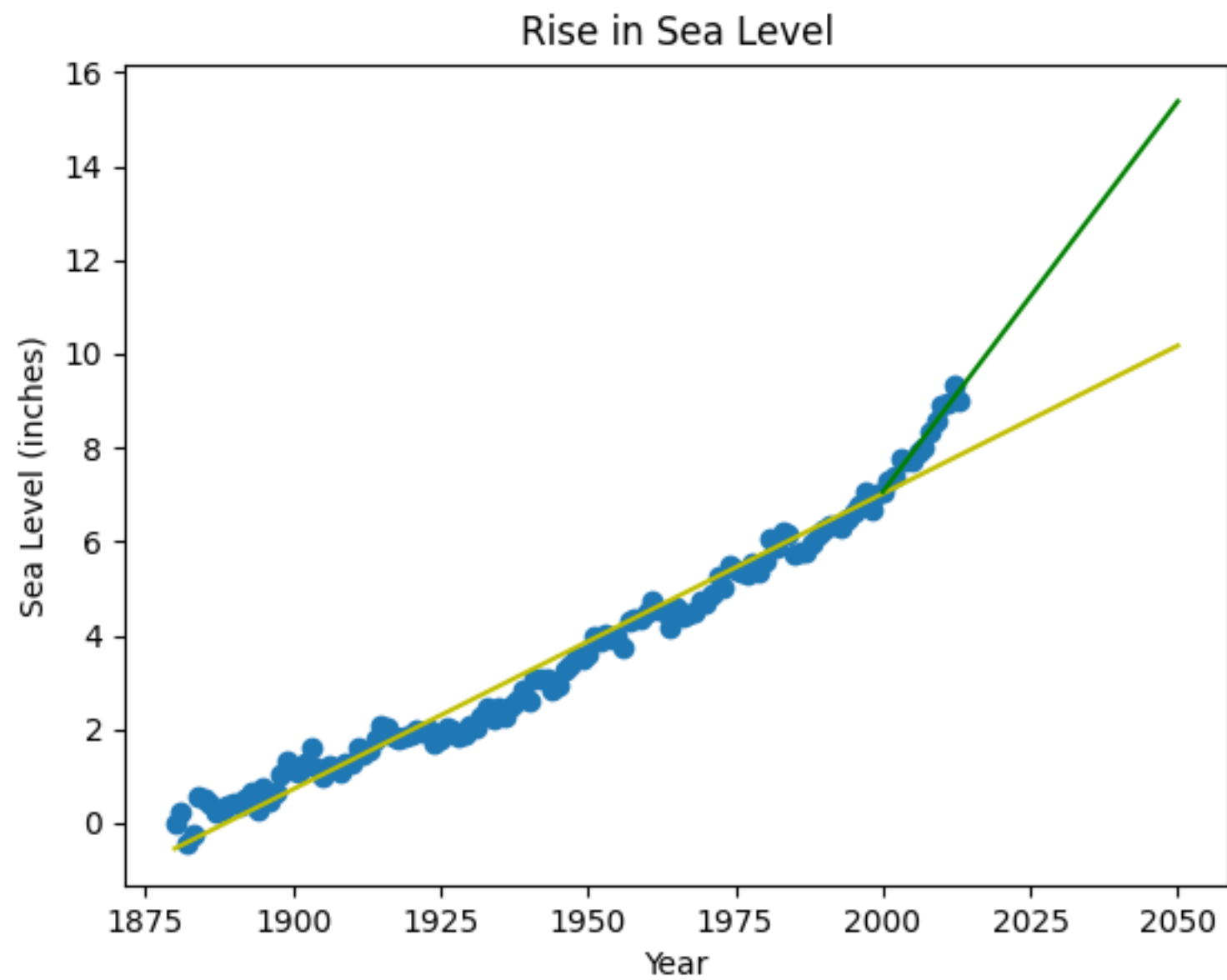
```
plt.savefig('sea_level_plot.png')
```

## ADDING LABELS AND TITLE TO A GRAPH, AND SAVING OUR PLOT

Here we labeled our graph:

- x-axis - 'year'
- y-axis - 'sea level'
- title - 'Rise in sea level'

Then saved plot



Mean-Variance-Standard Deviation Calculator ☒

Demographic Data Analyzer ☐

Medical Data Visualizer ☐

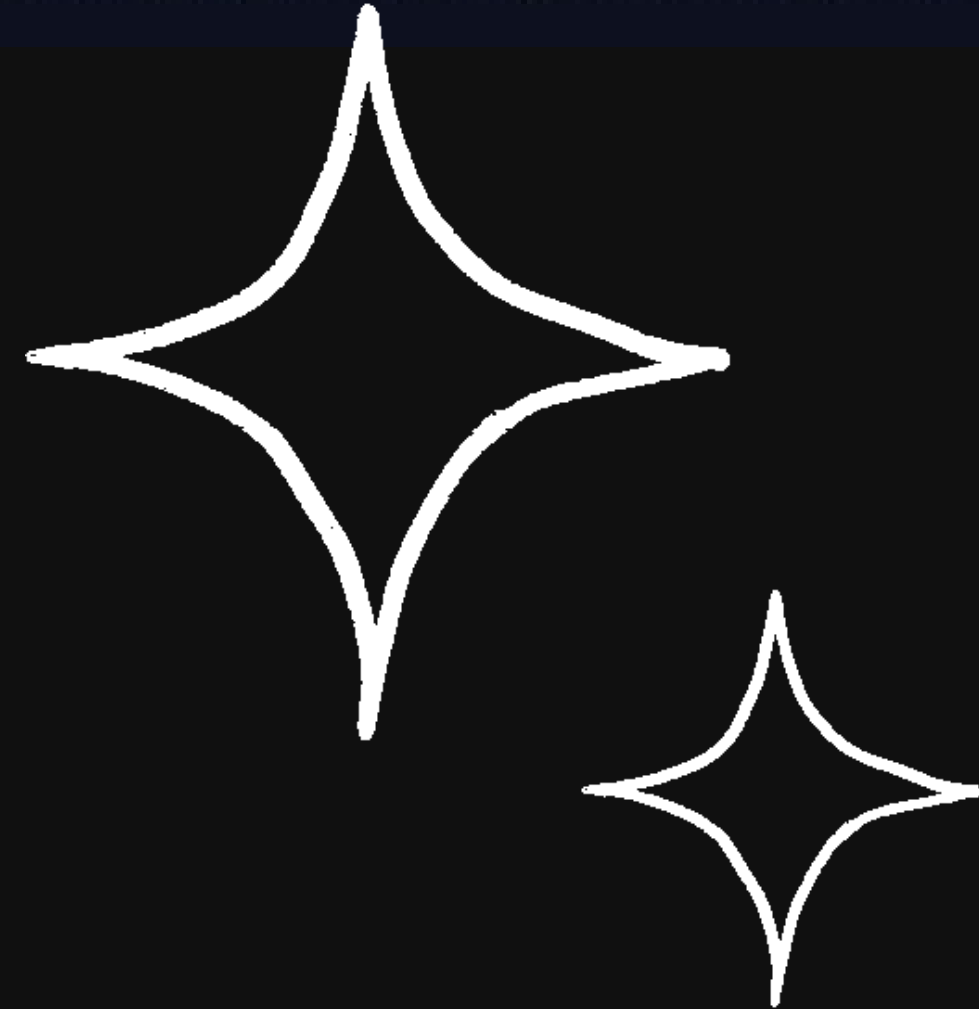
Page View Time Series Visualizer ☐

Sea Level Predictor ☒

Ran 4 tests in 1.362s

OK

✚ BD-2005 3 group Asanali,Adilkhan , Zhanibek



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# SUMMARY

1

All test is provided in repl.it and freecodecamp accept our problem

3

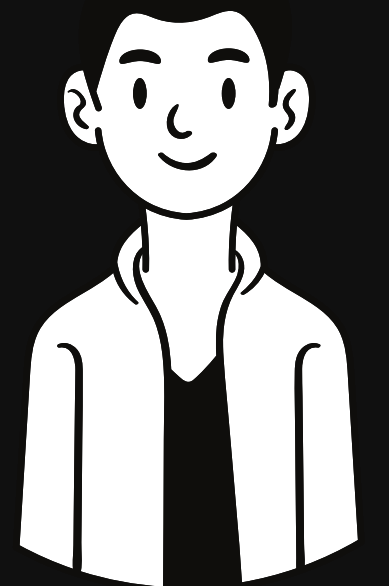
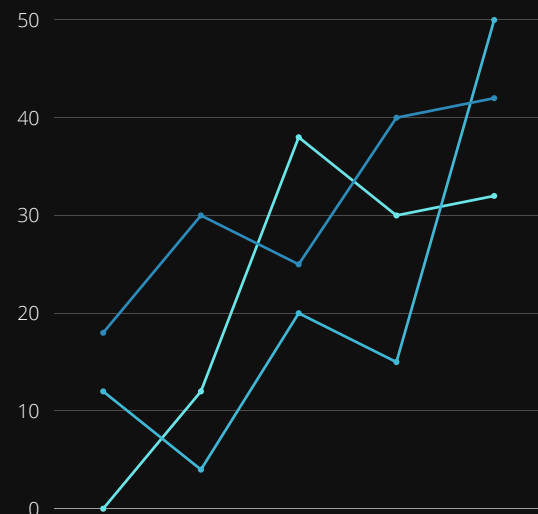
All task was divided equally between each team member

2

Work with CSV and read it and do some operation related to problem

4

Hard, but interesting



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**THANK  
YOU!**

**Have a great day ahead.**