Data information and completion of CTEC 298

CTEC 298 Spring Semester 2024

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5/16/2024

Introduction

Our presentation is a comprehensive discussion of the CTEC 298 course, a crucial learning experience that has equipped us with Python Tutorials, a summary of ctec128 and ctec298 repositories, and Visualization tools with attached screen shorts as evidence of completion of each tutorial.

The Python tutorials and repositories taught in this course are not just theoretical knowledge, but practical tools that we can use in real-world scenarios. For instance, the Python tutorials taught us how to input data into Python, and the print output example is the Hello World print message displayed on the screen. These are basic yet essential skills that we can apply in various data analysis tasks.A screenshot of a computer

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Variables in python

x = 5

y = "John"

print(x)

print(y)

Integer data type

x = 5

print(type(x))

Numbers in python

x = 1    # int

y = 2.8  # float

z = 1j   # complex

Casting

x = int(1)   # x will be 1

y = int(2.8) # y will be 2

z = int("3") # z will be 3

Print Hello World

print("Hello World")

print('Hello World')

List in python

this list = ["apple," "banana," "cherry"]

print(this list)

Operators in python

\*,+,/,-

Loops in python

fruits = ["apple," "banana," "cherry"]

for x in fruits:

  print(x)

Functions in python

def my\_function():

  print("Hello from a function")

Arrays

cars = ["Ford", "Volvo", "BMW"]

cars[0] = "Ford"

Object in python

class Person:

  def \_\_init\_\_(self, name, age):

    self.name = name

self.age = age

p1 = Person("John", 36)

print(p1.name)

print(p1.age)

Iterators in python

my tuple = ("apple", "banana", "cherry")

my = iter(my tuple)

print(next(it))

print(next(it))

print(next(it))

Summary of CTEC 128 paper.

This is basically about the population distribution in a state in America, but the file was not readable as the permission was denied. That makes us use a Fortune 500 CSV file imported and run as a read file using Jupyter Notebook. The code that we used to read this was df=pd.read\_csv("C:\Users\dadaj\Downloads\fortune500.csv") using jupyter notebookA screenshot of a computer

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In this data, the file that we ran through jupyter notebooks to clean the data, and we received the output of our program. A screenshot of a computer

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-            Fortune 500 csv

-

This is a summary of the Fortune 500 file displaying data that was imported from the CSV file. It is a tabular visualization of the Fortune 500 CSV file.

This file enables our group to import it as a CSV file. The data was also imported into Tableau for visualization. A screenshot of a computer

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Description of CTEC material submitted.

The paper submitted for our group was a collaborative effort that covered the materials taught in this class (ctec298 this spring semester 2024). The summary was on the three repositories (Github, Jupyter Notebook, and Google Drive). As specified by our instructor at the beginning and throughout the whole semester, the proof of completion of all the tutorials was submitted according to specifications in various repositories. This collaborative learning environment has been instrumental in our understanding and application of the course materials.

These screenshots are the proof of completion of NumPy, Pandas, and Matplotlib.

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Proof of completion of Numpy

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Proof of completion of pandas

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Visualization in Tableau

Description of  the plot deliverables

The Matplotlib

Plotting x and y points (Matplotlib)

The plot() function draws points (markers) in a diagram.

By default, the plot() function draws a line from point to point.

The function takes parameters to specify points in the diagram.

Parameter 1 is an array containing the points on the x-axis.

Parameter 2 is an array containing the points on the y-axis.

An example of plotting graphs is in matplotlib

import matplotlib. pyplot as plt

import numpy as np

xpoints = np.array([10, 90])

ypoints = np.array([30, 100])

plt.plot(xpoints, ypoints)

plt.show()

A bar chart is a graph that shows a picture of the variables when plotting the chart.

A graph of a number of different colored bars

Description automatically generated with medium confidence

The histogram displays a graphical representation of the variables' parameters used in the table created from the data set.

A graph with blue bars

Description automatically generated

The scatter plot shows the dots that represent the variables incorporated to make the picture using matplotlib.

Import matplotlib.pyplot as plt

Import numpy as np

plt. Style.use()

np. random.seed()

x=np.random.normal(0,2,24)

y=np.random.normal(0,2,len(x))

sizes=np.random.uniform(15,80,len(x))

ax=plt.subplot()

ax.scatter(x,y,s=sizes,vmin=0,vmax=100)

ax.set(xlim=(0,8),xticks=np.arange(1,8),

ylim=(0,8),yticks=np.arange(1,8))

plot.show()

A grid with blue dots

Description automatically generated

import

[plt.s](https://matplotlib.org/stable/api/_as_gen/matplotlib.pyplot.show.html#matplotlib.pyplot.show)

The pie chart shows the various proportions allocated to each of the segments that make up the circle.

import matplotlib.pyplot as plt

slices = [7,2,2,13]

activities = ['sleeping,'' eating,' 'working,' 'playing']

cols = ['ca,'m','r','be]

plt.pie(slices,

        labels=activities,

        colors=cols,

        startangle=90,

        shadow= True,

        explode=(0,0.1,0,0),

        autopct='%1.1f%%')

plt.title('Interesting Graph')

plt.show()

A screenshot of a computer

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A pie chart with numbers and a number

Description automatically generated

Stem and a leaf plot. This plot retains the original data; the leaf is the last significant digit in each data value, and the stem is the previous value or the remaining digit of the data.

Stack plots, also known as stacked area plots, are a type of data visualization showing the quantities' distribution over time. Each quantity is represented by a different color, stacked on top of each other to show the cumulative effect. Here’s an example of how you can create a stack plot using Python’s Matplotlib library:

This is how to create a stack plot in Python using matplotlib.

import matplotlib.pyplot as plt

days = [1, 2, 3, 4, 5]

Facebook = [100, 200, 150, 300]

google = [200, 100, 200, 150]

tv =  [300, 350, 200, 150]

newspaper =  [100, 120, 200, 220]

Plt. stack plot(

  days,

  Facebook,

  google,

  tv,

  newspaper)

plt.show()

2.import matplotlib.pyplot as plt

x = [1, 2, 3, 4, 5]

y1 = [5, 6, 4, 5, 7]

y2 = [1, 6, 4, 5, 6]

y3 = [1, 1, 2, 3, 2]

fig, ax = plt.subplots()

ax.stackplot(x, y1, y2, y3)

plt.show()

A graph with green and blue lines with Crust in the background

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When/Who/ How/Why there is a need to use matplotlib plot

Matplotlib is used when there is a need for a graphical representation of the data in a project. They use it to draw charts with the data-by-data scientists. It helps the management to have an overview of the outlook on how the data looks so that they can make the best decision regarding their business operations.

In conclusion, this class has taught us the usefulness of these valuable tools for visualizing data in business decisions. We have also learned the skills to perform various tasks requested of us in any place of work after our graduation.

References

<https://www2.deloitte.com/us/en/insights/deloitte-review/issue-12/telling-a-story-with-data.html>

[Matplotlib Plotting (w3schools.com)](https://www.w3schools.com/python/matplotlib_plotting.asp)

https://www2.deloitte.com/us/en/insights/deloitte-review/issue-12/telling-a-story-with-data.html

<https://github.com/dashboard>

<https://www.tableau.com/>

<https://www.learnpython.org/en/Hello%2C_World%21>