EXPERIMENT NO: 01

TITLE: - Pandas in Python

CLASS: - F. Y. B. Tech. (ECE/ECO)   **BATCH: -**

DATE:

ROLL NO: -

AIM:-

Write down a Python Code for Cleaning Data, Checking Missing Vales, Dealing with Missing values

APPRATUS: - Computer with jupyter notebook

THEORY: -

MISSING VALUES

Missing Data can occur when no information is provided for one or more items or for a whole unit. Missing Data is a very big problem in a real-life scenarios. Missing Data can also refer to as NA(Not Available) values in pandas. In DataFrame sometimes many datasets simply arrive with missing data, either because it exists and was not collected or it never existed. For Example, Suppose different users being surveyed may choose not to share their income, some users may choose not to share the address in this way many datasets went missing.

Pandas missing data is represented by two value:

- None: None is a Python singleton object that is often used for missing data in Python code.
- NaN : NaN (an acronym for Not a Number), is a special floating-point value recognized by all systems that use the standard IEEE floating-point representation

Pandas treat None and NaN as essentially interchangeable for indicating missing or null values. To facilitate this convention, there are several useful functions for detecting, removing, and replacing null values in Pandas DataFrame :

- isnull()
- notnull()
- dropna()
- fillna()
- replace()
- interpolate()

Checking for missing values using isnull() and notnull()

In order to check missing values in Pandas DataFrame, we use a function isnull() and notnull(). Both function help in checking whether a value is NaN or not. These function can also be used in Pandas Series in order to find null values in a series.

Checking for missing values using isnull()
In order to check null values in Pandas DataFrame, we use isnull() function this function return dataframe of Boolean values which are True for NaN values.

Filling missing values using fillna(), replace() and interpolate()

In order to fill null values in a datasets, we use fillna(), replace() and interpolate() function these function replace NaN values with some value of their own. All these function help in filling a null values in datasets of a DataFrame. Interpolate() function is basically used to fill NA values in the dataframe but it uses various interpolation technique to fill the missing values rather than hard-coding the value.

Dropping missing values using dropna()

In order to drop a null values from a dataframe, we used dropna() function this function drop Rows/Columns of datasets with Null values in different ways.

CONCLUSION: -

Que: What are different techniques to deal with missing values?

Ques: what is the difference between drop() and dropna() methods?

EXPERIMENT NO: 02

TITLE: - Matplotlib in Python

CLASS: - F. Y. B. Tech. (ECE/ECO)   **BATCH: -**

DATE:

ROLL NO: -

AIM:-

Write down a Python Code to generate & visualize simple line & bar graphs using matplotlib. Give the Name to the graphs, give names to axis & fill different colours in the background and in the bars

APPRATUS: - Computer with jupyter notebook

THEORY: -

A bar plot or bar chart is a graph that represents the category of data with rectangular bars with lengths and heights that is proportional to the values which they represent. The bar plots can be plotted horizontally or vertically. A bar chart describes the comparisons between the discrete categories. One of the axis of the plot represents the specific categories being compared, while the other axis represents the measured values corresponding to those categories.

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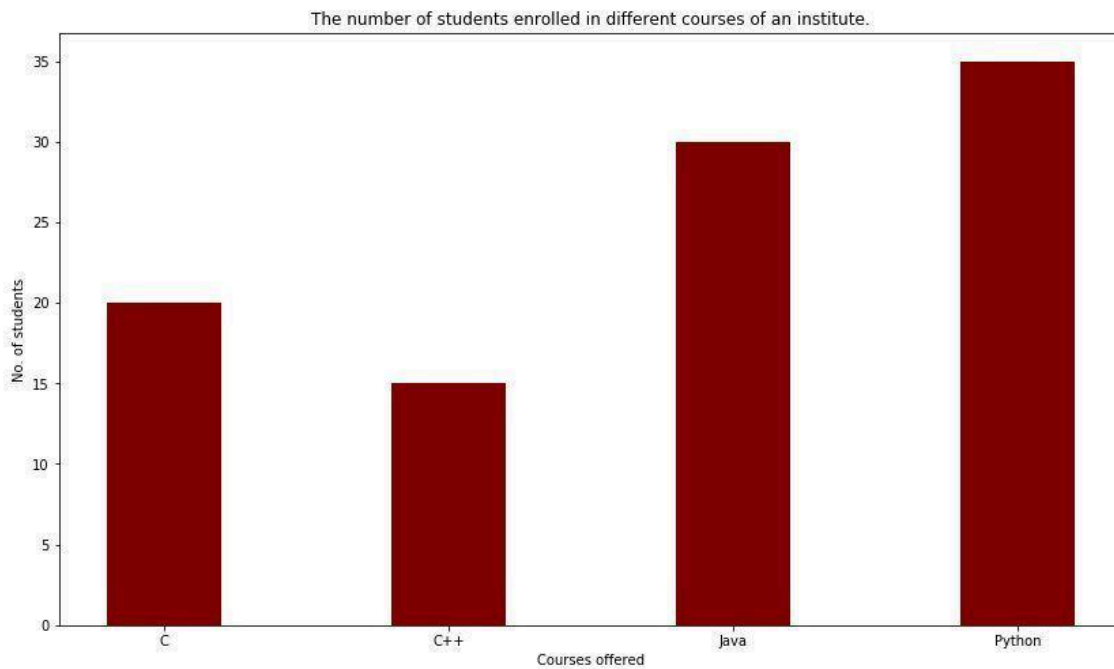🎬 Practice
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A bar plot or bar chart is a graph that represents the category of data with rectangular bars with lengths and heights that is proportional to the values which they represent. The bar plots can be plotted horizontally or vertically. A bar chart describes the comparisons between the discrete categories. One of the axis of the plot represents the specific categories being compared, while the other axis represents the measured values corresponding to those categories.

Creating a Bar Plot
The **matplotlib** API in Python provides the bar() function which can be used in MATLAB style use or as an object-oriented API. The syntax of the bar() function to be used with the axes is as follows:-
plt.bar(x, height, width, bottom, align)

The function creates a bar plot bounded with a rectangle depending on the given parameters. Following is a simple example of the bar plot, which represents the number of students enrolled in different courses of an institute.

Here plt.bar(courses, values, color='maroon') is used to specify that the bar chart is to be plotted by using the courses column as the X-axis, and the values as the Y-axis. The color attribute is used to set the color of the bars(maroon in this case).plt.xlabel("Courses offered") and plt.ylabel("students enrolled") are used to label the corresponding axes.plt.title() is used to make a title for the graph.plt.show() is used to show the graph as output using the previous commands.

CONCLUSION: -

Que: What are different methods used in matplotlib library?

Ques: what are different libraries used for visualization in python ?

EXPERIMENT NO: 03

TITLE: - Numpy array in python

CLASS: - F. Y. B. Tech. (ECE/ECO)   **BATCH: -**

DATE:

ROLL NO: -

EXPERIMENT NO. 3

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Title: Write down a Python Code to demonstrate: Basic array characteristics, Array Creation Techniques, Basic Operations on Single Array

Equipment: Computer with jupyter notebook

Theory:
  Numpy is a general-purpose array-processing package. It provides a high-performance multidimensional array object, and tools for working with these arrays. It is the fundamental package for scientific computing with Python.
Besides its obvious scientific uses, Numpy can also be used as an efficient multi-dimensional container of generic data.

Arrays in Numpy

Array in Numpy is a table of elements (usually numbers), all of the same type, indexed by a tuple of positive integers. In Numpy, number of dimensions of the array is called rank of the array. A tuple of integers giving the size of the array along each dimension is known as shape of the array. An array class in Numpy is called as **ndarray**. Elements in Numpy arrays are accessed by using square brackets and can be initialized by using nested Python Lists.

Creating a Numpy Array

Arrays in Numpy can be created by multiple ways, with various number of Ranks, defining the size of the Array. Arrays can also be created with the use of various data types such as lists, tuples, etc. The type of the resultant array is deduced from the type of the elements in the sequences.

. Data Types in Numpy

Every Numpy array is a table of elements (usually numbers), all of the same type, indexed by a tuple of positive integers. Every ndarray has an associated data type (dtype) object. This data type object (dtype) provides information about the layout of the array. The values of an ndarray are stored in a buffer which can be thought of as a contiguous block of memory bytes which can be interpreted by the dtype object. Numpy provides a large set of numeric datatypes that can be used to

construct arrays. At the time of Array creation, Numpy tries to guess a datatype, but functions that construct arrays usually also include an optional argument to explicitly specify the datatype.

Conclusion:

1. What are different methods used in numpy?
2. What are different operations performed on numpy array?