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B.tech CSE
Batch No:- D9
Roll no- 24018

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Class Assessment-2

Regularize.. 24/30

Q.1

a) In Numpy, broadcasting is a powerful feature that allows array of different shapes and sizes to be combined or operated on together.
- The smaller array is broadcast across the larger array so that they have compatible shapes of element wise operators.
- The broadcasting rule in numpy is that dimensions are capatible when they are equal or one of them is
- If dimensions of the arrays are capatible, Numpy will raise a 'ValueError'.

- e.g input numpy as np

(3)

```
arr1 = np.array([[1,2,3],
                 [4,5,6]])

arr2 = np.array([10,20,30])
result = arr1 + arr2
print(result)
```

⟹ output array([[11,12,33],
[14,25,36]])

Here each element of arr1 is added to the corresponding element of broadcasted 'arr' leading to the final result.

Q.2 In numpy both 'np.dot()' and 'np.matmul()' can be used for matrix multiplication but

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they have some differences in terms of their behaviour and usage

a) 'np.dot()':
- The np.dot() function in numpy is a general purpose matrix multiplication function. It can perform dot products and matrix multiplication for 1-D and 2-D array
- For 2-D array, it performs matrix multiplication and for 1-D arrays, it performs inner product (dot product).

b) 'np.matmul()':
- np.matmul() function is specifically designe for matrix multiplication.
- It provide a clear and more explicit syntax for matrix multiplication making the code more readable. In fact 'np.matmul()' is equivalent to the operator in Python introduced for matrix multiplication starting from python 3.5.

```
import pandas as pd
first_5_rows = sales_data.head()
print(first_5_rows)
```

b) data_types = sales_data.dtypes

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Q 4

c) Import pandas as pd.
Sales-data['price_per_unit'] = 0
Sales_data['Total_sales'] = Sales_data['Quantity_sold'] * Sales_dat['Price_per_unit']
print(sales_data)

d) Sales_data['transaction_Date'] = Pd.to_datetime(sales_data['Transaction_Date'])
print(Sales_data)

Q 5 Import pandas as pd

average quantity per product = sales_data.groupby('product ID')['quantity_sold'].mean()

Q 6 a) Numerical python.

Q 7 b) arr = numpy.array([1,2,3])

Q 8 a) create an array filled with zeros

Q 9 A) A 2 Dimensional labelled data structure

Q 10 c) df['column-name'].

Q 11 b) Students_data['Age']

Q 12 b) sum(sales_data['Price'] * Sales_data['Quantity_Sold'])

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Q.13 a) In numpy is primarily used for data manipulation and mathematical operations on homogeneous arrays, while pandas provides high level data structures and functions to manipulate and analyze structured data like DataFrames.

Q.14 a. df.head(3)

Q.15 a. drops all rows with missing values

Q.16 a. df.apply()

Q.17 a. df.sort_values('column_name')

Q.18 b. Returns the largest value in a specific column.

Q.19 c. df.to_csv(output.csv)

Q.20 b. convert a column to datetime format

Q.21 a. df.fillna()