

**INTERNSHIP REPORT
ON
DATA ANALYSIS WITH PYTHON
PRACTICE SCHOOL-II
[PROJCS501]**

Submitted By
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(Duration: 10-07-2023 to 22-07-2023)

**FOR
5th SEMESTER B.TECH. PROGRAMME
IN
EMERGING TECHNOLOGIES
(AI&ML)
(ACADEMIC SESSION 2023-24 ODD)**



**S. B. JAIN INSTITUTE OF TECHNOLOGY,
MANAGEMENT & RESEARCH, NAGPUR**

**(AN AUTONOMOUS INSTITUTION AFFILIATED TO RASHTRASANT TUKADOJI MAHARAJ
NAGPUR UNIVERSITY, NAAC ACCREDITED WITH 'A' GRADE)**



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Practice School Objectives

- ✓ *Develop strong problem-solving computational skills through different software platforms*
- ✓ *Enhance employability quotient in software Industry*
- ✓ *Expose students to the industrial expectations in the relevant field*
- ✓ *Exposure to the current technological developments in the relevant field*
- ✓ *Gain hands-on experience on software computing*
- ✓ *Applicability on the job*
- ✓ *Undertake Projects and learn project management skills*
- ✓ *Exposure to the Engineer's responsibilities and ethics*
- ✓ *Expose students to future employers*
- ✓ *Provide opportunity to learn new skills and supplement knowledge*
- ✓ *Sharpen the real time technical / managerial skills*
- ✓ *Foster personality and inculcate professional skills*
- ✓ *Provide practical experience in an organizational setting*
- ✓ *Expose students to the work environment*
- ✓ *Provide opportunity to learn strategies like time management, multi-tasking etc.*



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Benefit to Students

- ✓ *An opportunity to get hired by the Industry/ organization*
- ✓ *Practical experience in an organizational setting.*
- ✓ *Opportunity to learn new skills and supplement knowledge.*
- ✓ *Excellent opportunity to see how the theoretical aspects learned in classes are integrated into the practical world. On-floor experience provides much more professional experience which is often worth more than classroom teaching.*
- ✓ *Helps them decide if the industry and the profession is the best career option to pursue.*
- ✓ *Opportunity to practice communication and teamwork skills.*
- ✓ *Opportunity to learn strategies like time management, multi-tasking etc in an industrial setup.*
- ✓ *Opportunity to meet new people and learn networking skills.*
- ✓ *Makes a valuable addition to their resume.*
- ✓ *Enhances their candidacy for higher education.*
- ✓ *Creating network and social circle and developing relationships with industry people.*
- ✓ *Provides opportunity to evaluate the organization before committing to a full time position.*



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Outcomes of the Internship

The **outcomes** of the internship/summer training are as follows:

- a. Students should be able to identify various machines/equipments used in the industry.
- b. Students should be able to identify & analyse technical problems in the industry.
- c. Students should be able to explain & prepare a detailed outline/ document on process flow & material flow of industry.
- d. Students should be able to explain modern technology used in the industry.
- e. Students should be able to explain various manufacturers & specifications of the Mechanical equipments used in industry.
- f. Students should be Able to do/plan maintenance activities.
- g. Students should be able to explain quality Control / Assurance Process/Method.



General guidelines for Internship

1. The students should strictly follow the rules and regulations of the Internship Organisation and the Instructions of the Organisation's Mentor Incharge.
2. The student should maintain discipline and a good code of conduct while undergoing Internship.
3. The students should be well acquainted with the safety norms of the Organisation and should rigorously follow the same throughout the Internship period.
4. Any kind of misbehaviour/ misconduct/disobedience in the Organisation shall not be tolerated and will be penalised if found guilty.
5. The student should report to the Organisation on time and shall leave the premises only after informing the Mentor In charge of the Organisation.
6. The students shall always carry the college Identity card with him/her while on Internship.
7. Leave/ half day shall be taken with prior permission from the Institute Internship Co-ordinator and Organisation Mentor.
8. Any kind of photography, recording etc. may be done only with the permission of the Organisation's Mentor In-charge.
9. The student shall maintain the learning records viz. equipment ratings, process, flow diagrams etc. learned on that particular day on daily basis. The report has to be prepared and submitted in a standard format in view of above records.
10. The student will be representing the Institute on its behalf and shall strive to maintain its dignity throughout the Internship.



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Offer Letter:



Reg. No: UDYAM-MH-20-0118072

Date: 23-06-2023

Internship Offer Letter

To,

Mr./Ms. Vaishnavi Rahamatkar
2nd Year, AI & ML Department,
S B Jain Institute of Technology, Management and Research, Nagpur

Subject: Offer Letter of 2 Weeks Internship in Data Analysis Using Python

Dear Intern,

Congratulations! We, Codemate IT Services, are delighted to extend an internship opportunity to you as an intern for **Data Analysis Using Python**. With this letter, we confirm that your registration for an internship with us for **2 Weeks** has been completed. Your training will start from **6th July 2023**.

As an intern at Codemate IT Services, you will have the opportunity to work on a variety of projects / tasks and gain hands-on experience in your field of interest. Our team of experienced professionals will guide and mentor you throughout your internship, ensuring your growth and development. You will be exposed to real-world scenarios, collaborate with talented individuals, and contribute to the success of our organisation. At the end of the internship, you will be awarded a **Certificate of Internship**.

This letter constitutes the complete understanding between you and the company, **Codemate IT Services, Nagpur** regarding your internship and supersedes all prior discussions or agreements. We are excited to have you join our organisation as an intern and provide you with a rewarding learning experience.

Congratulations once again on your selection for this internship opportunity. We believe that this experience will be instrumental in shaping your future career. If you have any questions, please feel free to contact us at contact@codemate.co.in or call us at +91-9307084168, +91-8149922353. We are looking forward to your positive response and your contributions as an intern at Codemate IT Services.

Thank you for choosing this internship opportunity with Codemate IT Services, Nagpur.

With Regards

Dr. Animesh Tayal

Director,
Codemate IT Services, Nagpur





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WEEKLY OVERVIEW OF INTERNSHIP ACTIVITIES

1 st WEEK	DATE	NAME OF THE TOPIC/MODULE COMPLETED
	10-07-23	Basics of python
	11-07-23	Collection data types, functions and decision-making statement
	12-07-23	Numpy library
	13-07-23	Numpy library
	14-07-23	Pandas library
	15-07-23	Pandas library

2 nd WEEK	DATE	NAME OF THE TOPIC/MODULE COMPLETED
	17-07-23	Matplotlib library
	18-07-23	Seaborn library
	19-07-23	Pandas profiling and Github
	20-07-23	Worked on project
	21-07-23	Worked on project
	22-07-23	Worked on project



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INTERNSHIP SUMMARY REPORT

Activity Name:	Internship on “Data Analysis using Python”
Duration of activity (no.of days):	2 Weeks (12 days)
Start Date:	10-07-2023
End Date:	22-07-2023
Name of Faculty Mentor:	Mr. Viveksingh Chauhan
Name of External Mentor (if any):	Mr. Nisarg Gandhewar
Remark:	Successfully Completed
Objective:	<ul style="list-style-type: none">• To learn the basics of Python.• To learn and understand data analysis.• To learn and understand various libraries used for data analysis.• To perform EDA.• To learn pandas profiling.
Benefits in terms of Learning/skill/knowledge:	<ul style="list-style-type: none">• Able to perform data analysis.• Learn about various types of charts.• Learn how to read various charts.• Learn about Kaggle platform.• Developed a project to perform EDA on datasets.• Learn how to convert ipynb to html by using pandas profiling.



Glimpses of Activity
(Screenshot of Coding, Result, etc.)

Task No:-1

Exercise 1: Reverse a list in Python

Exercise 2: Concatenate two lists

Exercise 3: Turn every item of a list into its square

Exercise 4: Replace list's item with new value if found

- You have given a Python list. Write a program to find value 20 in the list, and if it is present, replace it with 200. Only update the first occurrence of an item.

- Read the entire task carefully and help Sam to maintain students marks as per instructions given by the Principal.
 1. Create a list with name **Marks** to store marks of 10 students for teacher Sam.
 2. Add 10 entries in to Marks list.
 3. Sam, forgot to add marks for 5 students, so add 5 students marks in the middle of list.
 4. Principal ask Sam to add another 5 students marks at end of list.
 5. Principal wants to get the total number of students appear for exam.
 6. By mistake Sam enter wrong marks for student whose marks store at position 2 in the list, so sam has to correct it by changing its value to 75.
 7. Principal wants to get marks of last 5 students.
 8. Vice Principal wants to know marks of 2nd last student.
 9. Sam wants to give grace of 2 marks to all students.
 10. Sam has created another list with name **Marks1** to store marks of 5 students, who appear for exam on second day
 11. Principal ask sam to combine both list.
 12. Now principal ask to remove newly added marks in old list.
 13. Principal wants sam to arrange all marks in ascending order.
 14. Principal wants sam to find highest marks score by student.
 15. Principal wants sam to create backup for list Marks1.



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Exercise 1: Reverse a list in Python

```
C:\Users\ACER\PycharmProjects\pythonProject1\venv\Scripts\python.exe C:\Users\ACER\PycharmProjects\pythonProject1\main.py
[10, 9, 8, 7, 6, 5, 4, 3, 2, 1]
```

```
Process finished with exit code 0
```

Exercise 2: Concatenate two lists

```
C:\Users\ACER\PycharmProjects\pythonProject1\venv\Scripts\python.exe C:\Users\ACER\PycharmProjects\pythonProject1\main.py
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
```

```
Process finished with exit code 0
```

Exercise 3: Turn every item of a list into its square

```
C:\Users\ACER\PycharmProjects\pythonProject1\venv\Scripts\python.exe C:\Users\ACER\PycharmProjects\pythonProject1\main.py
[1, 4, 9, 16, 25]
```

```
Process finished with exit code 0
```

Exercise 4: Replace list's item with new value if found

```
C:\Users\ACER\PycharmProjects\pythonProject1\venv\Scripts\python.exe C:\Users\ACER\PycharmProjects\pythonProject1\main.py
['Shardul', 'Rohit', 'Rahul', 'Virat', 'Pant']
```

```
Process finished with exit code 0
```

```
C:\Users\ACER\PycharmProjects\pythonProject1\venv\Scripts\python.exe C:\Users\ACER\PycharmProjects\pythonProject1\main.py
[10, 20, 30, 40, 50, 15, 25, 35, 45, 55]
[10, 20, 30, 40, 50, 15, 25, 35, 45, 55, 85, 92, 78, 88, 95, 82, 90, 87, 91, 84]
[10, 20, 30, 40, 50, 15, 25, 35, 45, 55, 80, 83, 89, 86, 93, 85, 92, 78, 88, 95, 82, 90, 87, 91, 84]
[10, 20, 30, 40, 50, 15, 25, 35, 45, 55, 80, 83, 89, 86, 93, 85, 92, 78, 88, 95, 82, 90, 87, 91, 84, 79, 81, 77, 94, 96]
Total number of students: 30
[10, 75, 30, 40, 50, 15, 25, 35, 45, 55, 80, 83, 89, 86, 93, 85, 92, 78, 88, 95, 82, 90, 87, 91, 84, 79, 81, 77, 94, 96]
Marks of the last 5 students: [79, 81, 77, 94, 96]
Marks of the 2nd last student: 94
[12, 77, 32, 42, 52, 17, 27, 37, 47, 57, 82, 85, 91, 88, 95, 87, 94, 80, 90, 97, 84, 92, 89, 93, 86, 81, 83, 79, 96, 98]
[73, 78, 76, 72, 74]
[12, 77, 32, 42, 52, 17, 27, 37, 47, 57, 82, 85, 91, 88, 95, 87, 94, 80, 90, 97, 84, 92, 89, 93, 86, 81, 83, 79, 96, 98]
[12, 77, 32, 42, 52, 17, 27, 37, 47, 57, 82, 85, 91, 88, 95, 87, 94, 80, 90, 97, 84, 92, 89, 93, 86, 81, 83, 79, 96, 98]
[12, 17, 27, 32, 37, 42, 47, 52, 57, 77, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98]
Highest marks scored: 98
[12, 17, 27, 32, 37, 42, 47, 52, 57, 77, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98]

Process finished with exit code 0
```



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Task No:-2

Assignment Based on Tuple

1. Create a tuple with single item 50
2. Create a tuple with 4 integer numbers and Unpack it into 4 variables
3. Create a tuple to store the names of 5 fruits and then modify 2nd fruit name to apple.
4. Sort the fruit tuple in ascending order
5. Counts the number of occurrences of item 50 from a tuple of 5 numbers
6. Create a tuple storing the names of 5 students and then fetch 2nd last element from it.
7. Combine the fruit and students name tuple.

Assignment Based on Set

1. Return a new set of identical items from below two sets
Set1 = {1,2,3,4,5}
Set2 = {11,2,33,4,55}
2. Write a Python program to return a new set with unique items from both sets by removing duplicates.

Set1 = {1,2,3,4,5}
Set2 = {11,2,33,4,55}
3. Given two Python sets, write a Python program to get items that exist only in the first set and not in the second set.

Set1 = {1,2,3,4,5}
Set2 = {11,2,33,4,55}
4. Create a set to store names of 5 fruits and copy it to another set.

Assignment Based on Dictionary

1. Create a dictionary to store the details of student including name, rollno, branch and contact number.
2. Delete a key branch from a student dictionary
3. Change the name of student to ram
4. Fetch list of keys from student dictionary
5. Fetch list of values from student dictionary
6. Fetch list of both key & values from student dictionary
7. Copy the student dictionary to another dictionary student1

Assignment Based on Decision making & Loops

1. Print First 10 natural numbers using while loop
2. Calculate the sum of all numbers from 1 to a given number
3. Write a program to print multiplication table of a given number
4. Count the total number of digits in a number
5. Write a program to display all prime numbers from 1 to 50
6. Find the factorial of a given number
7. Reverse a integer number 12345
8. Write a program to print the following number pattern using a loop.

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```



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Assignment Based on Functions

1. Create a function which can perform addition of three numbers
2. Create a function which can return product of two given numbers
3. Write a program to create a function show_employee() using the following conditions.
 - o It should accept the employee's name and salary and display both.
 - o If the salary is missing in the function call then assign default value 9000 to salary
4. Create a function to find largest of three given numbers
5. Create a function which accept the list of 5 integer numbers and then return the addition of its square.
6. Write a Python program to create a lambda function that adds 15 to a given number passed in as an argument
7. Write a python program to create a lambda function to get the power of a specified number.

```
C:\Users\ACER\PycharmProjects\pythonProject4\venv\Scripts\python.exe C:\Users\ACER\PycharmProjec
a tuple with single item 50 : 50
create a tuple 4 integer: (5, 10, 15, 20)
unpack into 4 variable: 50
a tuple store and modify: ('banana', 'mango', 'apple', 'cherry')
ascending order: ['apple', 'banana', 'grape', 'kiwi', 'mango', 'orange']
Number of occurrences: 4
the second-to-last student's name: David
('banana', 'mango', 'kivi', 'cherry', 'ram', 'sham', 'karan', 'sagar')

Process finished with exit code 0
```

```
C:\Users\ACER\PycharmProjects\pythonProject5\venv\Scripts\python.exe C:\Users\ACER\PycharmProjects\pythonProject5\main.py
a new set identical items from below two set: {2, 4}
remove duplicates: {70, 40, 10, 80, 50, 20, 60, 30}
exist only in the first set and not in second set: {10, 30}
Name of 1st Fruit: apple
Name of 2nd Fruit: mango
Name of 3rd Fruit: banana
Name of 4th Fruit: papaya
Name of 5th Fruit: watermelon
a set to store names of 5 fruitand copy it to another set: ('apple', 'mango', 'banana', 'papaya', 'watermelon')

Process finished with exit code 0
```



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```
C:\Users\ACER\PycharmProjects\pythonProject6\venv\Scripts\python.exe C:\Users\ACER\PycharmProjects\pythonProject6\main.py
create a dictionary to store details of students : {'name': 'Vaishnavi Rahamatkar', 'rollno': 'AM21014', 'branch': 'AIML', 'contact_number': 1234567890}
Before deletion:
{'name': 'Vaishnavi Rahamatkar', 'rollno': 'AM21014', 'branch': 'AIML', 'contact_number': 1234567890}
After deletion:
delete a key branch from a student dictionary: {'name': 'Vaishnavi Rahamatkar', 'rollno': 'AM21014', 'contact_number': 1234567890}
change the name of student to ram: {'name': 'ram', 'age': 20, 'grade': 'A'}
keys: ['name', 'age', 'grade']
values: ['Vaishnavi Rahamatkar', 20, 'A']
Keys: ['name', 'age', 'grade']
Values: ['Vaishnavi Rahamatkar', 20, 'A']
student1: {'name': 'Vaishnavi Rahamatkar', 'age': 20, 'grade': 'A'}

Process finished with exit code 0
```

```
C:\Users\ACER\PycharmProjects\pythonProject7\venv\Scripts\python.exe C:\Users\ACER\PycharmProjects\pythonProject7\main.py
first 10 natural number : 1
first 10 natural number : 2
first 10 natural number : 3
first 10 natural number : 4
first 10 natural number : 5
first 10 natural number : 6
first 10 natural number : 7
first 10 natural number : 8
first 10 natural number : 9
first 10 natural number : 10
The sum of numbers from 1 to 10 is: 55
Multiplication Table of : 5
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
Number: 12345
Total number of digits: 5
```



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```
Prime numbers from 1 to 50:  
2  
3  
5  
7  
11  
13  
17  
19  
23  
29  
31  
37  
41  
43  
47  
Number: 5  
Factorial: 120  
Number: 1234  
Reversed number: 4321  
1  
12  
123  
1234  
12345  
  
Process finished with exit code 0
```

```
C:\Users\ACER\PycharmProjects\pythonProject8\venv\Scripts\python  
addition the three no: 30  
return product of two given no: 50  
Employee Name: John Doe  
Salary: 15000  
Employee Name: Jane Smith  
Salary: 9000  
find largest of three given number: 10  
the addition of its square: 55  
create lambda function that adds: 22  
create lambda function to get the power of a specified number:  
  
Process finished with exit code 0
```



Glimpses of Activity
(Screenshot of Coding, Result, etc.)

Task No:-3

Assignment Based on Numpy

1. Create two numpy arrays of size (3*3) with name a and b & perform following operations on it.
 - Perform Element-wise addition
 - Perform Element-wise subtraction
 - Perform Element-wise multiplication
 - Perform Element-wise division
 - Perform Element-wise mod
 - Get the power of each element of 1st array with respect to second array.
 - Get the square root of each element
 - Apply transpose operation on array a
 - Stack the array in horizontal & vertical order.
 - Check whether two array a and b are same or not
2. Multiply a matrix (numpy array of size 2*3) by 5.
3. Convert a 1-D array of size (15) to a 2-D array of size(5*3) and (3*5)
4. Create a 3 dimensional array of size (2*3*3) with numbers in range of 18 to 36.
5. Create a 2 dimensional array of size (3*5) with numbers in range of 85 to 100.
6. Create a 2 dimensional array of size (3*5) with numbers in range of 1 to 10 only.
7. Check whether above two arrays are equal or not
8. Create a 2 dimensional array of size (3*4) with float no in range of 0 to 1 which follow std normal distribution
9. Copy the content of two dimensional array to another and then print it.
10. Generate a 3*3 array of random integer elements in the range of 1 to 10.
11. Generate 1D array of elements in the range of 1 to 10.
12. Generate 2D array of size 3*3 have random elements in the range of 0 to 1.
13. Generate 2D array of size 4*4 where every element of array would be 7.
14. Create 2D array of size 3*3 and then convert it into 1D array
15. [Create a Numpy array of size \(3*5\) filled with all zeros](#)

16. [Create a Numpy array of size \(3*5\) filled with all ones](#)
17. [Create a Numpy array of size \(3*5\) filled with elements in range of 25 40.](#)
 - Get the maximum value from given matrix
 - Get the minimum value from given matrix
 - Get the total of all values from given matrix
 - Get the mean of all values from given matrix
 - Get the median of all values from given matrix
 - Get the variance of all values from given matrix
 - Get the standard deviation of all values from given matrix
 - Find the number of rows and columns of a given matrix using NumPy
 - Get the unique value & its count in above array



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task 3.ipynb

File Edit View Insert Runtime Tools Help All changes saved

+ Code + Text

Question 1:

Addition:

```
[[12 14 16]
 [18 20 22]
 [24 26 28]]
```

Subtraction:

```
[[ -10 -10 -10]
 [-10 -10 -10]
 [-10 -10 -10]]
```

Multiplication:

```
[[ 11 24 39]
 [ 56 75 96]
 [119 144 171]]
```

Division:

```
[[0.09090909 0.16666667 0.23076923]
 [0.28571429 0.33333333 0.375      ]
 [0.41176471 0.44444444 0.47368421]]
```

Modulo:

```
[[1 2 3]
 [4 5 6]
 [7 8 9]]
```

Power:

```
[[           1          4096          1594323]
 [       268435456      30517578125      2821109907456]
 [ 232630513987207 18014398509481984 1350851717672992089]]
```

Square Root:

```
[[1.          1.41421356 1.73205081]
 [2.          2.23606798 2.44948974]
 [2.64575131 2.82842712 3.          ]]
```

task 3.ipynb

File Edit View Insert Runtime Tools Help All changes saved

+ Code + Text

Transpose:

```
[[1 4 7]
 [2 5 8]
 [3 6 9]]
```

Horizontal Stack:

```
[[ 1 2 3 11 12 13]
 [ 4 5 6 14 15 16]
 [ 7 8 9 17 18 19]]
```

Vertical Stack:

```
[[ 1 2 3]
 [ 4 5 6]
 [ 7 8 9]
 [11 12 13]
 [14 15 16]
 [17 18 19]]
```

Array Equality:

```
False
```



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task 3.ipynb

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Question 2:
Multiplied Matrix:
[[5 10 15]
 [20 25 30]]

{x}

Question 3:
Array 2D (Shape: 5x3):
[[1 2 3]
 [4 5 6]
 [7 8 9]
 [10 11 12]
 [13 14 15]]

Array 2D (Shape: 3x5):
[[1 2 3 4 5]
 [6 7 8 9 10]
 [11 12 13 14 15]]

Question 4:
Three-Dimensional Array (Shape: 2x3x3):
[[[1 2 3]
 [4 5 6]
 [7 8 9]]

 [[[10 11 12]
 [13 14 15]
 [16 17 18]]]

+ Code + Text

Question 5:
Range Array (Shape: 3x5):
[[1 2 3 4 5]
 [6 7 8 9 10]
 [11 12 13 14 15]]

Question 6:
Restricted Range Array (Shape: 3x5):
[[1 2 3 4 5]
 [6 7 8 9 10]
 [11 12 13 14 15]]

Question 7:
Are the Arrays Equal?
True

Question 8:
Standard Normal Array (Shape: 3x4):
[[-0.99533427 -0.42141391 0.84034273 -1.12352513]
 [1.73846614 0.23449239 -1.36646531 -0.30431753]
 [1.11752251 -1.00207891 -0.21531209 0.57080516]]

Question 9:
Copy Array (Shape: 3x4):
[[-0.99533427 -0.42141391 0.84034273 -1.12352513]
 [1.73846614 0.23449239 -1.36646531 -0.30431753]
 [1.11752251 -1.00207891 -0.21531209 0.57080516]]



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✓ 0s Question 10:
Random Integer Array (Shape: 3x3):
[[9 3 1]
[3 9 2]
[2 1 4]]

Question 11:
Random 1D Array (Size: 10):
[4 10 2 10 10 3 1 4 6 5]

Question 12:
Random 2D Array (Shape: 3x3):
[[0.69433794 0.14209327 0.40865143]
[0.71807961 0.77378659 0.32055383]
[0.19700666 0.9151281 0.40354572]]

Question 13:
Constant Array (Shape: 4x4):
[[7 7 7 7]
[7 7 7 7]
[7 7 7 7]
[7 7 7 7]]

Question 14:
Array 1D:
[1 2 3 4 5 6 7 8 9]

+ Code + Text

✓ 0s Question 15:
Zeros Array (Shape: 3x5):
[[0. 0. 0. 0. 0.]
[0. 0. 0. 0. 0.]
[0. 0. 0. 0. 0.]]

Question 16:
Ones Array (Shape: 3x5):
[[1. 1. 1. 1. 1.]
[1. 1. 1. 1. 1.]
[1. 1. 1. 1. 1.]]

Question 17:
Range Array (Shape: 3x5):
[[1 2 3 4 5]
[6 7 8 9 10]
[11 12 13 14 15]]
Maximum Value:
15
Minimum Value:
1
Total:
120
Mean:
8.0
Median:
8.0
Variance:
18.666666666666668
Standard Deviation:
4.320493798938574



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```
+ CO task 3.ipynb ☆
File Edit View Insert Runtime Tools Help All changes saved
+ Code + Text
✓ 0s Variance:
18.666666666666668
Standard Deviation:
4.320493798938574
Number of Rows:
3
Number of Columns:
5
Unique Values:
[ 1  2  3  4  5  6  7  8  9 10 11 12 13 14 15]
Counts of Unique Values:
[1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1]

Question 18:
Number of Rows:
3
Number of Columns:
5

Question 19:
Unique Values:
[ 1  2  3  4  5  6  7  8  9 10 11 12 13 14 15]
Counts of Unique Values:
[1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1]
```

Task No:-4

Exercise Based on Pandas

Task1:

1. Create one data frame having size (7*7) with the help of randn function and assign row index like X1, X2, X3 & Column index like A1,A2,A3.
2. Fetch the 2nd & 3rd column
3. Fetch the last 3 columns
4. Fetch the last row from dataframe
5. Fetch the first 4 rows from dataframe
6. Fetch the last 3 rows from dataframe
7. Fetch the value from 2nd row and third column
8. Fetch the value from 3rd row and 2nd column
9. Fetching first 3 rows and 3 cols using iloc & loc
10. Fetch all records greater than 0.4
11. Fetch the records from only last two columns where value greater than 0.4
12. Fetch the records first two columns where value greater than 0.5
13. Fetch all the records where value of first column less than 0.3
14. Fetch all the records where value of second column greater than 0.3 and first column less than 0.7
15. Fetch all the records where value of third column greater than 0.2 and fourth column less than 0.8



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Task 4.ipynb

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Task 1:

```
[[ -1.88071595 -0.65198836  2.02045951  1.75821556  0.12097009  1.07763299
  0.02357238]
 [-0.20771043  1.86734107  0.98125821 -1.5134561  -0.09199852  0.26785195
 -1.28076619]
 [-1.15464906 -0.31183219  0.02965396 -0.69701278  0.69152908 -0.48306292
  0.79027273]
 [ 1.04831414  0.0925251   1.99444495  0.36589125 -2.35876147 -0.32908092
  0.09309468]
 [-1.86522745 -0.9326426  -0.93688056  1.02447284  0.20882288  0.47598668
  1.72435352]
 [-0.03032661  0.62836783  0.46530688  2.90039508  0.54752081 -0.54396035
 -0.85659439]
 [-0.00701134  0.55371073 -0.26428735  2.85870901  0.27486706 -0.2243803
 -1.76723601]]
```

Task 2:

	A2	A3
X1	-0.651988	2.020460
X2	1.867341	0.981258
X3	-0.311832	0.029654
X4	0.092525	1.994445
X5	-0.932643	-0.936881
X6	0.628368	0.465307
X7	0.553711	-0.264287

Task 3:

	A5	A6	A7
X1	0.120970	1.077633	0.023572
X2	-0.091999	0.267852	-1.280766
X3	0.691529	-0.483063	0.790273
X4	-2.358761	-0.329081	0.093095
X5	0.208823	0.475987	1.724354

Task 4.ipynb

File Edit View Insert Runtime Tools Help All changes saved

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Task 1:

```
X2 -0.091999  0.267852 -1.280766
X3  0.691529 -0.483063  0.790273
X4 -2.358761 -0.329081  0.093095
X5  0.208823  0.475987  1.724354
X6  0.547521 -0.543960 -0.856594
X7  0.274867 -0.224380 -1.767236
```

Task 4:

	A1	A2	A3	A4	A5	A6	A7
X7	-0.007011	0.553711	-0.264287	2.858709	0.274867	-0.22438	-1.767236

Task 5:

	A1	A2	A3	A4	A5	A6	A7
X1	-1.880716	-0.651988	2.020460	1.758216	0.120970	1.077633	0.023572
X2	-0.207710	1.867341	0.981258	-1.513456	-0.091999	0.267852	-1.280766
X3	-1.154649	-0.311832	0.029654	-0.697013	0.691529	-0.483063	0.790273
X4	1.048314	0.092525	1.994445	0.365891	-2.358761	-0.329081	0.093095

Task 6:

	A1	A2	A3	A4	A5	A6	A7
X5	-1.865227	-0.932643	-0.936881	1.024473	0.208823	0.475987	1.724354
X6	-0.030327	0.628368	0.465307	2.900395	0.547521	-0.543960	-0.856594
X7	-0.007011	0.553711	-0.264287	2.858709	0.274867	-0.224380	-1.767236

Task 7:
0.9812582146044843

Task 8:
-0.31183218632972426

Task 9 (using iloc):

	A1	A2	A3
X1	-1.880716	-0.651988	2.020460
X2	-0.207710	1.867341	0.981258
X3	-1.154649	-0.311832	0.029654

Task 9 (using loc):



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Task 4.ipynb

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Task 9 (using loc):

	A1	A2	A3
X1	-1.880716	-0.651988	2.020460
X2	-0.207710	1.867341	0.981258
X3	-1.154649	-0.311832	0.029654

Task 10:

	A1	A2	A3	A4	A5	A6	A7
X1	NaN	NaN	2.020460	1.758216	NaN	1.077633	NaN
X2	NaN	1.867341	0.981258	NaN	NaN	NaN	NaN
X3	NaN	NaN	NaN	NaN	0.691529	NaN	0.790273
X4	1.048314	NaN	1.994445	NaN	NaN	NaN	NaN
X5	NaN	NaN	NaN	1.024473	NaN	0.475987	1.724354
X6	NaN	0.628368	0.465307	2.900395	0.547521	NaN	NaN
X7	NaN	0.553711	NaN	2.858709	NaN	NaN	NaN

Task 11:

	A1	A2	A3	A4	A5	A6	A7
X1	NaN	NaN	NaN	NaN	NaN	1.077633	NaN
X2	NaN	NaN	NaN	NaN	NaN	NaN	NaN
X3	NaN	NaN	NaN	NaN	NaN	0.790273	NaN
X4	NaN	NaN	NaN	NaN	NaN	NaN	NaN
X5	NaN	NaN	NaN	NaN	0.475987	1.724354	NaN
X6	NaN	NaN	NaN	NaN	NaN	NaN	NaN
X7	NaN	NaN	NaN	NaN	NaN	NaN	NaN

Task 12:

	A1	A2	A3	A4	A5	A6	A7
X1	NaN	NaN	NaN	NaN	NaN	NaN	NaN
X2	NaN	1.867341	NaN	NaN	NaN	NaN	NaN
X3	NaN	NaN	NaN	NaN	NaN	NaN	NaN
X4	1.048314	NaN	NaN	NaN	NaN	NaN	NaN
X5	NaN	NaN	NaN	NaN	NaN	NaN	NaN
X6	NaN	0.628368	NaN	NaN	NaN	NaN	NaN
X7	NaN	0.553711	NaN	NaN	NaN	NaN	NaN

Task 4.ipynb

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Task 12:

	A1	A2	A3	A4	A5	A6	A7
X1	NaN	NaN	NaN	NaN	NaN	NaN	NaN
X2	NaN	1.867341	NaN	NaN	NaN	NaN	NaN
X3	NaN	NaN	NaN	NaN	NaN	NaN	NaN
X4	1.048314	NaN	NaN	NaN	NaN	NaN	NaN
X5	NaN	NaN	NaN	NaN	NaN	NaN	NaN
X6	NaN	0.628368	NaN	NaN	NaN	NaN	NaN
X7	NaN	0.553711	NaN	NaN	NaN	NaN	NaN

Task 13:

	A1	A2	A3	A4	A5	A6	A7
X1	-1.880716	-0.651988	2.020460	1.758216	0.120970	1.077633	0.023572
X2	-0.207710	1.867341	0.981258	-1.513456	-0.091999	0.267852	-1.280766
X3	-1.154649	-0.311832	0.029654	-0.697013	0.691529	-0.483063	0.790273
X5	-1.865227	-0.932643	-0.936881	1.024473	0.208823	0.475987	1.724354
X6	-0.030327	0.628368	0.465307	2.900395	0.547521	-0.543960	-0.856594
X7	-0.007011	0.553711	-0.264287	2.858709	0.274867	-0.224380	-1.767236

Task 14:

	A1	A2	A3	A4	A5	A6	A7
X2	-0.207710	1.867341	0.981258	-1.513456	-0.091999	0.267852	-1.280766
X6	-0.030327	0.628368	0.465307	2.900395	0.547521	-0.543960	-0.856594
X7	-0.007011	0.553711	-0.264287	2.858709	0.274867	-0.224380	-1.767236

Task 15:

	A1	A2	A3	A4	A5	A6	A7
X2	-0.207710	1.867341	0.981258	-1.513456	-0.091999	0.267852	-1.280766
X4	1.048314	0.092525	1.994445	0.365891	-2.358761	-0.329081	0.093095



Glimpses of Activity
(Screenshot of Coding, Result, etc.)

Task No:-5

Exercise Based on Pandas

Task1:

1. Create one data frame to store 10 values of temperature & pressure.
2. Write this temp and pressure data to temp.csv file.
3. Read the temp.csv
4. Display top 3 records from temperature dataframe.
5. Display bottom 3 records from temperature dataframe.
6. Display statistical information of temperature dataframe.
7. Display the shape of temperature dataframe.
8. Display the list of columns for given dataset.
9. Display more information for all attributes in the dataset.

Task 2:

1. Create two series as mark1 & mark2, and perform arithmetic operation on it.
2. Create a dataframe student having information about 10 students, information of students include, name, rollno and marks and display it.
3. Write all information into student.csv file.
4. Read the student.csv file using pandas & display its content using dataframe.
5. Display top 5 records.
6. Display bottom 5 records.
7. Display number of records and attributes.
8. Perform statistical operation like min, max, count, mean, median.

The screenshot shows a Jupyter Notebook interface. The toolbar at the top includes File, Edit, View, Insert, Cell, Kernel, Widgets, Help, and a Trusted button. On the right, there are Python 3 (ipykernel) and Logout buttons. The main area has a code cell labeled In [1] containing Python code to create a DataFrame from a dictionary of lists. The output cell shows the resulting DataFrame with two columns: Temperature and Pressure, containing 10 rows of data.

```
In [1]: import pandas as pd
mydata={
    'Temperature': [25, 26, 27, 28, 29, 30, 31, 32, 33, 34],
    'Pressure': [1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1009, 1010]
}
df=pd.DataFrame(mydata)
print(df)
```

	Temperature	Pressure
0	25	1001
1	26	1002
2	27	1003
3	28	1004
4	29	1005
5	30	1006
6	31	1007
7	32	1008
8	33	1009
9	34	1010



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jupyter Untitled2 Last Checkpoint: 15 minutes ago (autosaved)



File Edit View Insert Cell Kernel Widgets Help

Trusted

Python 3 (ip)

In [2]: df.to_csv('temp.csv')

In [4]: pd.read_csv('temp.csv')

Out[4]:

	Temperature	Pressure
0	25	1001
1	26	1002
2	27	1003
3	28	1004
4	29	1005
5	30	1006
6	31	1007
7	32	1008
8	33	1009
9	34	1010

jupyter Untitled2 Last Checkpoint: 16 minutes ago (autosaved)

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Trusted Python 3 (ip)

In [5]: df.head(3)

Out[5]:

	Temperature	Pressure
0	25	1001
1	26	1002
2	27	1003

In [6]: df.tail(3)

Out[6]:

	Temperature	Pressure
7	32	1008
8	33	1009
9	34	1010

In [7]: df.describe()

Out[7]:

	Temperature	Pressure
count	10.00000	10.00000
mean	29.50000	1005.50000
std	3.02765	3.02765
min	25.00000	1001.00000
25%	27.25000	1003.25000
50%	29.50000	1005.50000



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jupyter Untitled2 Last Checkpoint: 17 minutes ago (autosaved)

```
File Edit View Insert Cell Kernel Widgets Help  
count      10.00000 10.00000  
mean       29.50000 1005.50000  
std        3.02765  3.02765  
min        25.00000 1001.00000  
25%        27.25000 1003.25000  
50%        29.50000 1005.50000  
75%        31.75000 1007.75000  
max        34.00000 1010.00000  
  
In [8]: df.shape  
Out[8]: (10, 2)  
  
In [9]: df.columns  
Out[9]: Index(['Temperature', 'Pressure'], dtype='object')  
  
In [10]: df.info()  
  
<class 'pandas.core.frame.DataFrame'>  
RangeIndex: 10 entries, 0 to 9  
Data columns (total 2 columns):  
 #   Column      Non-Null Count  Dtype     
---  --          --          --          --  
 0   Temperature  10 non-null    int64    
 1   Pressure     10 non-null    int64    
 dtypes: int64(2)  
memory usage: 292.0 bytes
```

jupyter Untitled2 Last Checkpoint: 18 minutes ago (autosaved)

```
File Edit View Insert Cell Kernel Widgets Help  
In [11]: mark1 = pd.Series([80, 85, 90, 75, 95])  
mark2 = pd.Series([70, 88, 92, 79, 85])  
  
#addition  
a=mark1+mark2  
print("addition:\n",a)  
  
#subtraction  
b=mark1-mark2  
print("subtraction:\n",b)  
  
#multiplication  
c=mark1*mark2  
print("multiplication:\n",c)  
  
#division  
d=mark1/mark2  
print("division:\n",d)  
  
addition:  
 0    150  
 1    173  
 2    182  
 3    154  
 4    180  
dtype: int64  
subtraction:  
 0     10  
 1     -3  
 2     -2  
 3     -4  
 4     10
```



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jupyter Untitled2 Last Checkpoint: 21 minutes ago (unsaved changes)

File Edit View Insert Cell Kernel Widgets Help

File + < > Run Cell Kernel Widgets Help

```
dtype: int64
multiplication:
 0    5600
 1    7480
 2    8280
 3    5925
 4    8075
dtype: int64
division:
 0    1.142857
 1    0.965909
 2    0.978261
 3    0.949367
 4    1.117647
dtype: float64
```

```
In [12]: student_info={
'Name' : ['Vaishu', 'Sakshi', 'Pranju', 'gomti', 'mansi',
'Pallavi', 'Ruchika', 'Saloni', 'Sahatsh', 'Tanishq'],
'Roll No.' : [15, 34, 12, 32, 43, 13, 67, 45, 9, 78],
'Marks' : [87, 78, 79, 89, 87, 60, 88, 68, 79, 80]
}
df=pd.DataFrame(student_info)
print(df)
```

jupyter Untitled2 Last Checkpoint: 23 minutes ago (unsaved changes)

File Edit View Insert Cell Kernel Widgets Help

File + < > Run Cell Kernel Widgets Help

	Name	Roll No.	Marks
0	Vaishu	15	87
1	Sakshi	34	78
2	Pranju	12	79
3	gomti	32	89
4	mansi	43	87
5	Pallavi	13	60
6	Ruchika	67	88
7	Saloni	45	68
8	Sahatsh	9	79
9	Tanishq	78	80

```
In [20]: df.to_csv('student.csv')
```

```
In [21]: pd.read_csv('student.csv')
```

jupyter Untitled2 Last Checkpoint: 23 minutes ago (unsaved changes)

File Edit View Insert Cell Kernel Widgets Help

File + < > Run Cell Kernel Widgets Help

```
out[21]:
```

	Unnamed: 0	Name	Roll No.	Marks
0	0	Vaishu	15	87
1	1	Sakshi	34	78
2	2	Pranju	12	79
3	3	gomti	32	89
4	4	mansi	43	87
5	5	Pallavi	13	60
6	6	Ruchika	67	88
7	7	Saloni	45	68
8	8	Sahatsh	9	79
9	9	Tanishq	78	80

```
In [22]: df.head()
```

```
out[22]:
```

	Name	Roll No.	Marks
0	Vaishu	15	87
1	Sakshi	34	78
2	Pranju	12	79
3	gomti	32	89
4	mansi	43	87



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jupyter Untitled2 Last Checkpoint: 24 minutes ago (autosaved)

File Edit View Insert Cell Kernel Widgets Help



In [23]: df.tail()

Out[23]:

	Name	Roll No.	Marks
5	Pallavi	13	60
6	Ruchika	67	88
7	Saloni	45	68
8	Sahatsh	9	79
9	Tanishq	78	80

In [24]: print("Number of records:", df.shape[0])
print("Number of attributes:", df.shape[1])

Number of records: 10
Number of attributes: 3

jupyter Untitled2 Last Checkpoint: 25 minutes ago (autosaved)

File Edit View Insert Cell Kernel Widgets Help



```
# Minimum  
minimum = df['Marks'].min()  
print('Minimum:', minimum)  
  
#Maximum  
maximum = df['Marks'].max()  
print('Maximum:', maximum)  
  
#count  
count = df['Marks'].shape[0]  
print('Count:', count)  
  
#mean  
mean=df['Marks'].mean()  
print('Mean:', mean)  
  
#median  
median=df['Marks'].median()  
print('Median:', median)  
  
Minimum: 60  
Maximum: 89  
Count: 10  
Mean: 79.5  
Median: 79.5
```



Task No:-6

Exercise Based on Pandas & Matplotlib

Task 1:

1. Read the diabetes dataset.
2. Display top 5 records.
3. Display bottom 5 records.
4. Display statistical information of dataset.
5. Display more information about all attributes.
6. Display the list of columns for given dataset.
7. Display number of records and attributes.
8. Check for null values if found remove it.
9. Check duplicate values and if found remove it.

Task 2: Based on Matplotlib

1. Import the diabetes dataset
2. Read the top 5 records from dataset
3. Generate following types of plot/chart for diabetes dataset using matplotlib
 - Generate scatter plot for age vs blood pressure.
 - Generate plot for age vs BMI
 - Generate 4 scatter plots (1 age vs BMI, 2 age vs Bloodpressure, 3 age vs pregnancy, 4 age vs glucose) using subplot.
 - Generate bar plot for age vs pregnancy
 - Generate histogram for age and BMI
 - Generate box plot for age and glucose.
 - Generate a pie chart for outcome variable in diabetes dataset.

The screenshot shows a Jupyter Notebook interface with the following content:

In [2]:

```
import pandas as pd
# 1. Read the diabetes dataset
diabetes_data = pd.read_csv('diabetes.csv')
```

In [3]:

```
# 2. Display top 5 records
top_5_records = diabetes_data.head(5)
print("Top 5 records:")
print(top_5_records)
```

Top 5 records:

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	\
0	6	148	72	35	0	33.6	
1	1	85	66	29	0	26.6	
2	8	183	64	0	0	23.3	
3	1	89	66	23	94	28.1	
4	0	137	40	35	168	43.1	

DiabetesPedigreeFunction Age Outcome

	0.627	50	1
0	0.351	31	0
1	0.672	32	1
2	0.167	21	0
3	2.288	33	1



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In [4]: # 3. Display bottom 5 records

```
bottom_5_records = diabetes_data.tail(5)
print("\nBottom 5 records:")
print(bottom_5_records)
```

Bottom 5 records:

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	\
763	10	101	76	48	180	32.9	
764	2	122	70	27	0	36.8	
765	5	121	72	23	112	26.2	
766	1	126	60	0	0	30.1	
767	1	93	70	31	0	30.4	

DiabetesPedigreeFunction Age Outcome

763	0.171	63	0
764	0.340	27	0
765	0.245	30	0
766	0.349	47	1
767	0.315	23	0

In [5]: # 4. Display statistical information of dataset

```
statistical_info = diabetes_data.describe()
print("\nStatistical information:")
print(statistical_info)
```

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Statistical information:

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	\
count	768.000000	768.000000	768.000000	768.000000	768.000000	
mean	3.845052	120.894531	69.105469	20.536458	79.799479	
std	3.369578	31.972618	19.355807	15.952218	115.244002	
min	0.000000	0.000000	0.000000	0.000000	0.000000	
25%	1.000000	99.000000	62.000000	0.000000	0.000000	
50%	3.000000	117.000000	72.000000	23.000000	30.500000	
75%	6.000000	140.250000	80.000000	32.000000	127.250000	
max	17.000000	199.000000	122.000000	99.000000	846.000000	

	BMI	DiabetesPedigreeFunction	Age	Outcome
count	768.000000	768.000000	768.000000	768.000000
mean	31.992578	0.471876	33.240885	0.348958
std	7.884160	0.331329	11.760232	0.476951
min	0.000000	0.078000	21.000000	0.000000
25%	27.300000	0.243750	24.000000	0.000000
50%	32.000000	0.372500	29.000000	0.000000
75%	36.600000	0.626250	41.000000	1.000000
max	67.100000	2.420000	81.000000	1.000000

	BMI	DiabetesPedigreeFunction	Age	Outcome
count	768.000000	768.000000	768.000000	768.000000
mean	31.992578	0.471876	33.240885	0.348958
std	7.884160	0.331329	11.760232	0.476951
min	0.000000	0.078000	21.000000	0.000000
25%	27.300000	0.243750	24.000000	0.000000
50%	32.000000	0.372500	29.000000	0.000000
75%	36.600000	0.626250	41.000000	1.000000
max	67.100000	2.420000	81.000000	1.000000

In [6]: # 5. Display more information about all attributes

```
attribute_info = diabetes_data.info()
print("\nAttribute information:")
print(attribute_info)
```



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```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 768 entries, 0 to 767
Data columns (total 9 columns):
 #   Column           Non-Null Count  Dtype  
--- 
 0   Pregnancies      768 non-null    int64  
 1   Glucose          768 non-null    int64  
 2   BloodPressure    768 non-null    int64  
 3   SkinThickness    768 non-null    int64  
 4   Insulin          768 non-null    int64  
 5   BMI              768 non-null    float64 
 6   DiabetesPedigreeFunction 768 non-null    float64 
 7   Age              768 non-null    int64  
 8   Outcome          768 non-null    int64  
dtypes: float64(2), int64(7)
memory usage: 54.1 KB

Attribute information:
None
```

In [7]: `# 6. Display the list of columns for the given dataset`

```
columns_list = diabetes_data.columns
print("\nList of columns:")
print(columns_list)
```

List of columns:
Index(['Pregnancies', 'Glucose', 'BloodPressure', 'SkinThickness', 'Insulin',
'BMI', 'DiabetesPedigreeFunction', 'Age', 'Outcome'],
 dtype='object')

In [8]: `# 7. Display number of records and attributes`

```
num_records, num_attributes = diabetes_data.shape
print("\nNumber of records:", num_records)
print("Number of attributes:", num_attributes)
```

Number of records: 768
Number of attributes: 9

jupyter task no 6.1 Last Checkpoint: an hour ago (autosaved)

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```
In [11]: # 8. Check for null values and remove them if found
null_values = diabetes_data.isnull().sum()
print("\nNull values:")
print(null_values)
# Remove rows with null values
diabetes_data = diabetes_data.dropna()
```

Null values:
Pregnancies 0
Glucose 0
BloodPressure 0
SkinThickness 0
Insulin 0
BMI 0
DiabetesPedigreeFunction 0
Age 0
Outcome 0
dtype: int64

In [12]: `# 9. Check for duplicate values and remove them if found`

```
duplicate_values = diabetes_data.duplicated().sum()
print("\nDuplicate values:", duplicate_values)
# Remove duplicate rows
diabetes_data = diabetes_data.drop_duplicates()
# Display updated information
print("\nUpdated number of records:", len(diabetes_data))
```

Duplicate values: 0
Updated number of records: 768



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```
In [13]: #Task no- 2
import pandas as pd
import matplotlib.pyplot as plt
# 1. Import the diabetes dataset
diabetes_data = pd.read_csv('diabetes.csv')
```

```
In [14]: # 2. Read the top 5 records from the dataset
top_5_records = diabetes_data.head(5)
print("Top 5 records:")
print(top_5_records)
```

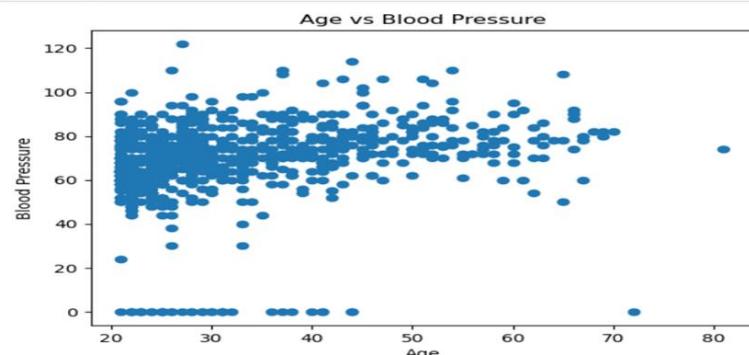
Top 5 records:

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigreeFunction	Age	Outcome
0	6	148	72	35	0	33.6	0.627	50	1
1	1	85	66	29	0	26.6	0.351	31	0
2	8	183	64	0	0	23.3	0.672	32	1
3	1	89	66	23	94	28.1	0.167	21	0
4	0	137	40	35	168	43.1	2.288	33	1

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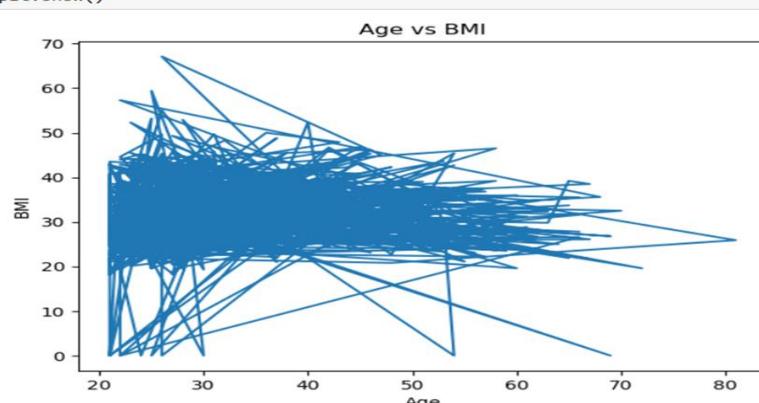
```
In [15]: # 3. Generate scatter plot for age vs blood pressure
plt.scatter(diabetes_data['Age'], diabetes_data['BloodPressure'])
plt.xlabel('Age')
plt.ylabel('Blood Pressure')
plt.title('Age vs Blood Pressure')
plt.show()
```



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```
In [16]: # 4. Generate plot for age vs BMI
plt.plot(diabetes_data['Age'], diabetes_data['BMI'])
plt.xlabel('Age')
plt.ylabel('BMI')
plt.title('Age vs BMI')
plt.show()
```





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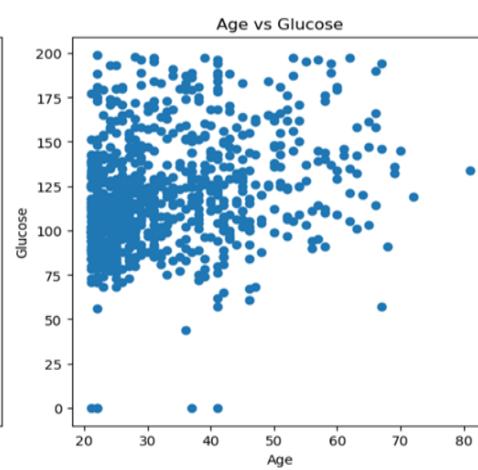
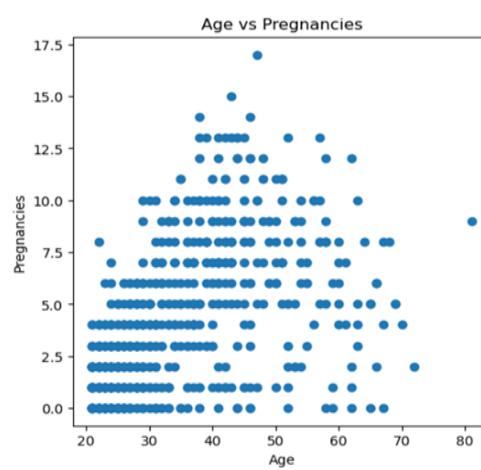
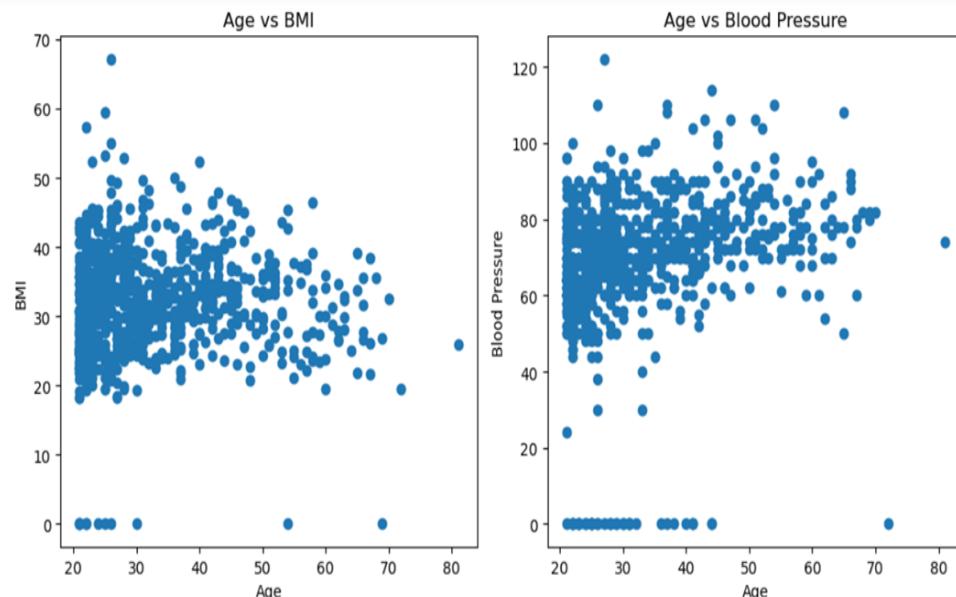
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Code

```
In [17]: # 5. Generate 4 scatter plots using subplot
fig, axes = plt.subplots(2, 2, figsize=(10, 10))
axes[0, 0].scatter(diabetes_data['Age'], diabetes_data['BMI'])
axes[0, 0].set_xlabel('Age')
axes[0, 0].set_ylabel('BMI')
axes[0, 0].set_title('Age vs BMI')
axes[0, 1].scatter(diabetes_data['Age'], diabetes_data['BloodPressure'])
axes[0, 1].set_xlabel('Age')
axes[0, 1].set_ylabel('Blood Pressure')
axes[0, 1].set_title('Age vs Blood Pressure')
axes[1, 0].scatter(diabetes_data['Age'], diabetes_data['Pregnancies'])
axes[1, 0].set_xlabel('Age')
axes[1, 0].set_ylabel('Pregnancies')
axes[1, 0].set_title('Age vs Pregnancies')
axes[1, 1].scatter(diabetes_data['Age'], diabetes_data['Glucose'])
axes[1, 1].set_xlabel('Age')
axes[1, 1].set_ylabel('Glucose')
axes[1, 1].set_title('Age vs Glucose')
plt.tight_layout()
plt.show()
```





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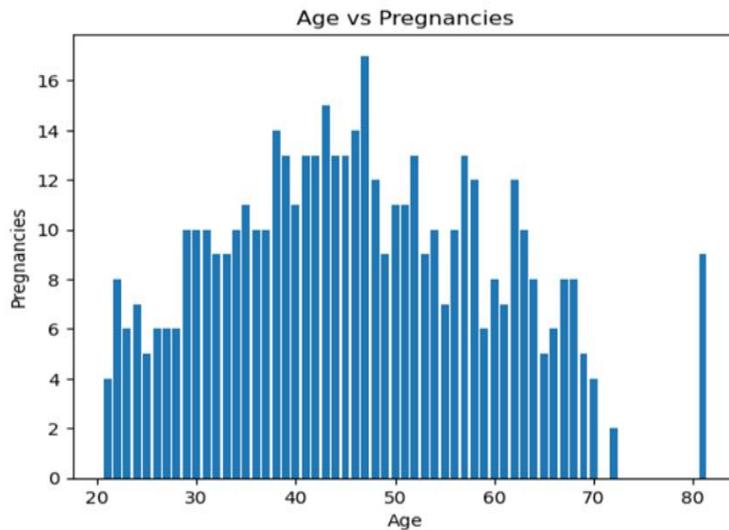
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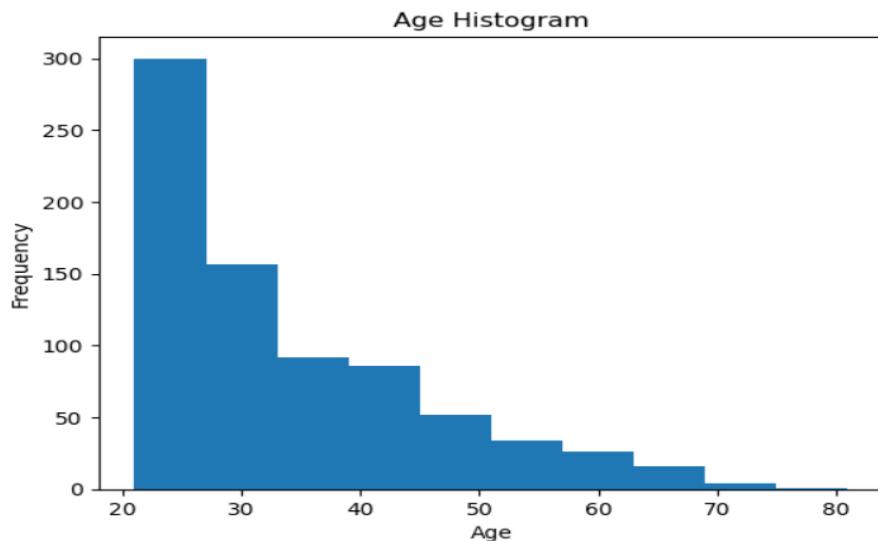
jupyter task no 6.1 Last Checkpoint: an hour ago (autosaved)

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```
In [18]: # 6. Generate bar plot for age vs pregnancy
plt.bar(diabetes_data['Age'], diabetes_data['Pregnancies'])
plt.xlabel('Age')
plt.ylabel('Pregnancies')
plt.title('Age vs Pregnancies')
plt.show()
```



```
In [19]: # 7. Generate histogram for age and BMI
plt.hist(diabetes_data['Age'], bins=10)
plt.xlabel('Age')
plt.ylabel('Frequency')
plt.title('Age Histogram')
plt.show()
plt.hist(diabetes_data['BMI'], bins=10)
plt.xlabel('BMI')
plt.ylabel('Frequency')
plt.title('BMI Histogram')
plt.show()
```





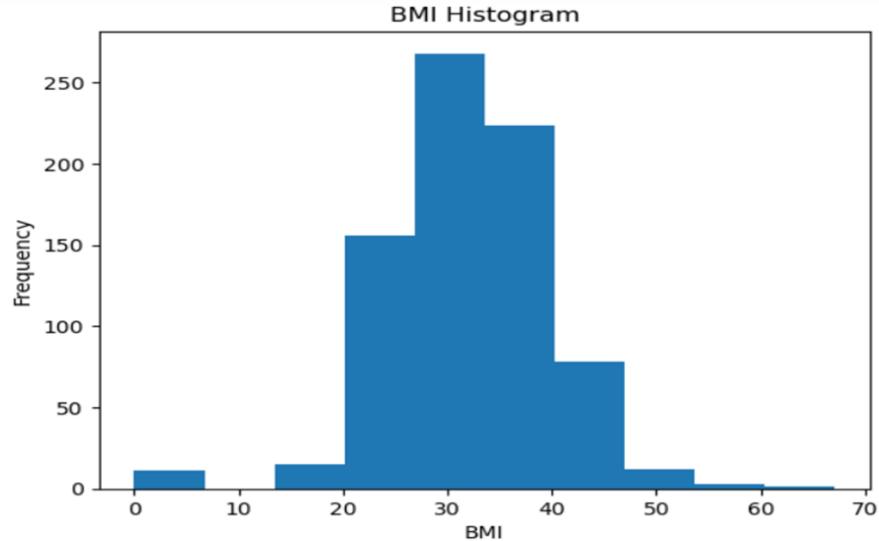
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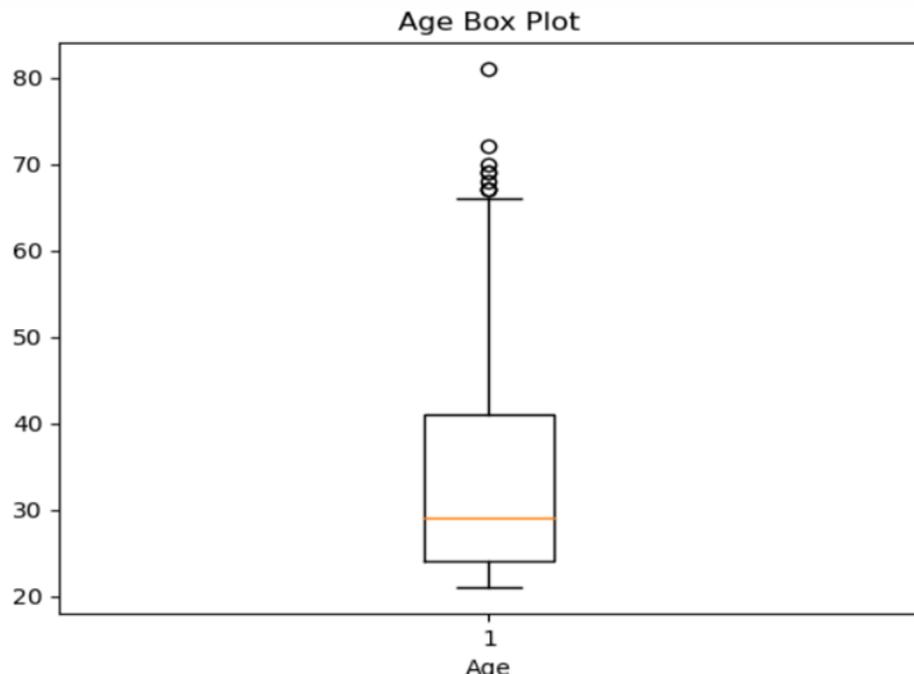


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```
In [20]: # 8. Generate box plot for age and glucose
plt.boxplot(diabetes_data['Age'])
plt.xlabel('Age')
plt.title('Age Box Plot')
plt.show()
plt.boxplot(diabetes_data['Glucose'])
plt.xlabel('Glucose')
plt.title('Glucose Box Plot')
plt.show()
```





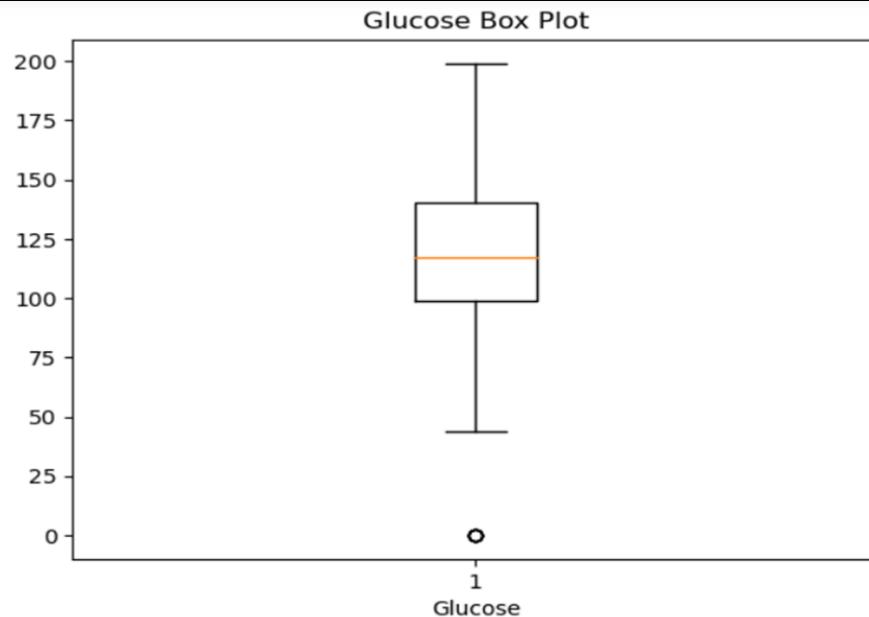
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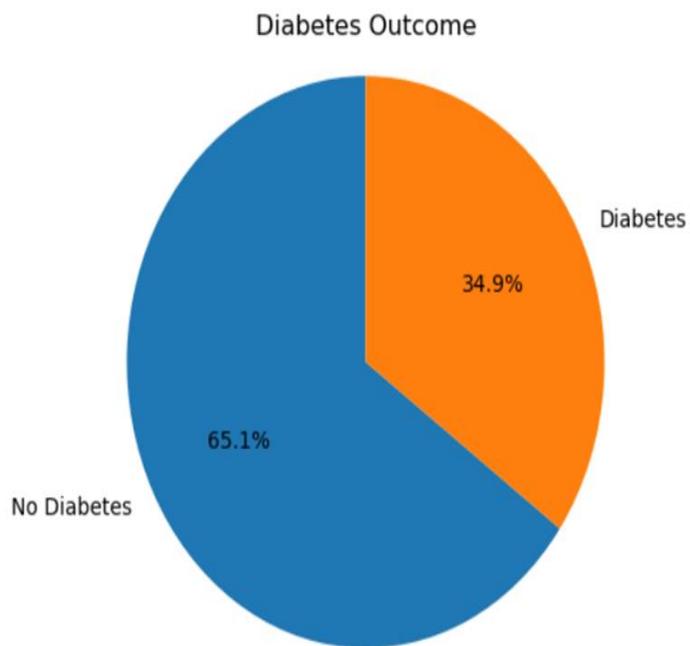


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```
In [21]: # 9. Generate a pie chart for the outcome variable in the diabetes dataset
outcome_counts = diabetes_data['Outcome'].value_counts()
labels = ['No Diabetes', 'Diabetes']
plt.pie(outcome_counts, labels=labels, autopct='%1.1f%%', startangle=90)
plt.axis('equal')
plt.title('Diabetes Outcome')
plt.show()
```





Glimpses of Activity
(Screenshot of Coding, Result, etc.)

Task No:-7

Exercise Based on Seaborn

Task 1: Based on Seaborn

1. Import the diabetes dataset
2. Read the top 5 records from dataset
3. Generate heatmap for diabetes dataset.
4. Generate Joinplot for age vs pregnancy
5. Generate pairplot for diabetes dataset
6. Generate distplot for age
7. Generate countplot for outcome variable in diabetes dataset.
8. Generate barplot for age vs pregnancy in diabetes dataset
9. Generate box plot for age and glucose
10. Generate violin plot for age and glucose

In [1]: #Import the diabetes dataset.
import seaborn as sns
import pandas as pd
import warnings
warnings.filterwarnings('ignore')

In [2]: df = pd.read_csv('diabetes.csv')

In [3]: #Read the top 5 records from dataset.
df.head()

Out[3]:

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigreeFunction	Age	Outcome	
0	6	148	72	35	0	33.6		0.627	50	1
1	1	85	66	29	0	26.6		0.351	31	0
2	8	183	64	0	0	23.3		0.672	32	1
3	1	89	66	23	94	28.1		0.167	21	0
4	0	137	40	35	168	43.1		2.288	33	1

In [4]: #Generate heatmap for diabetes dataset.
sns.heatmap(df.corr(), annot=True, cmap='ocean')



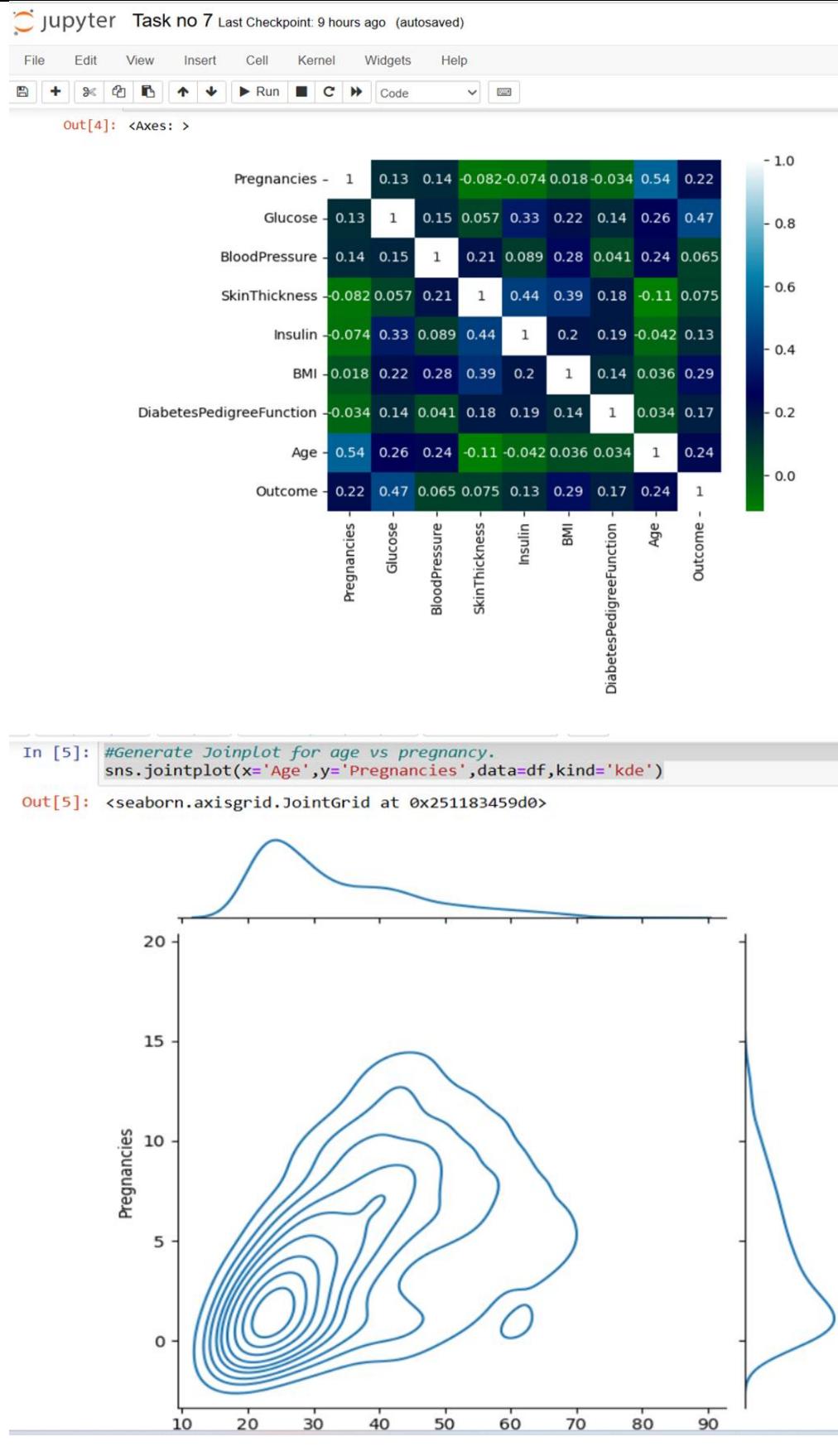
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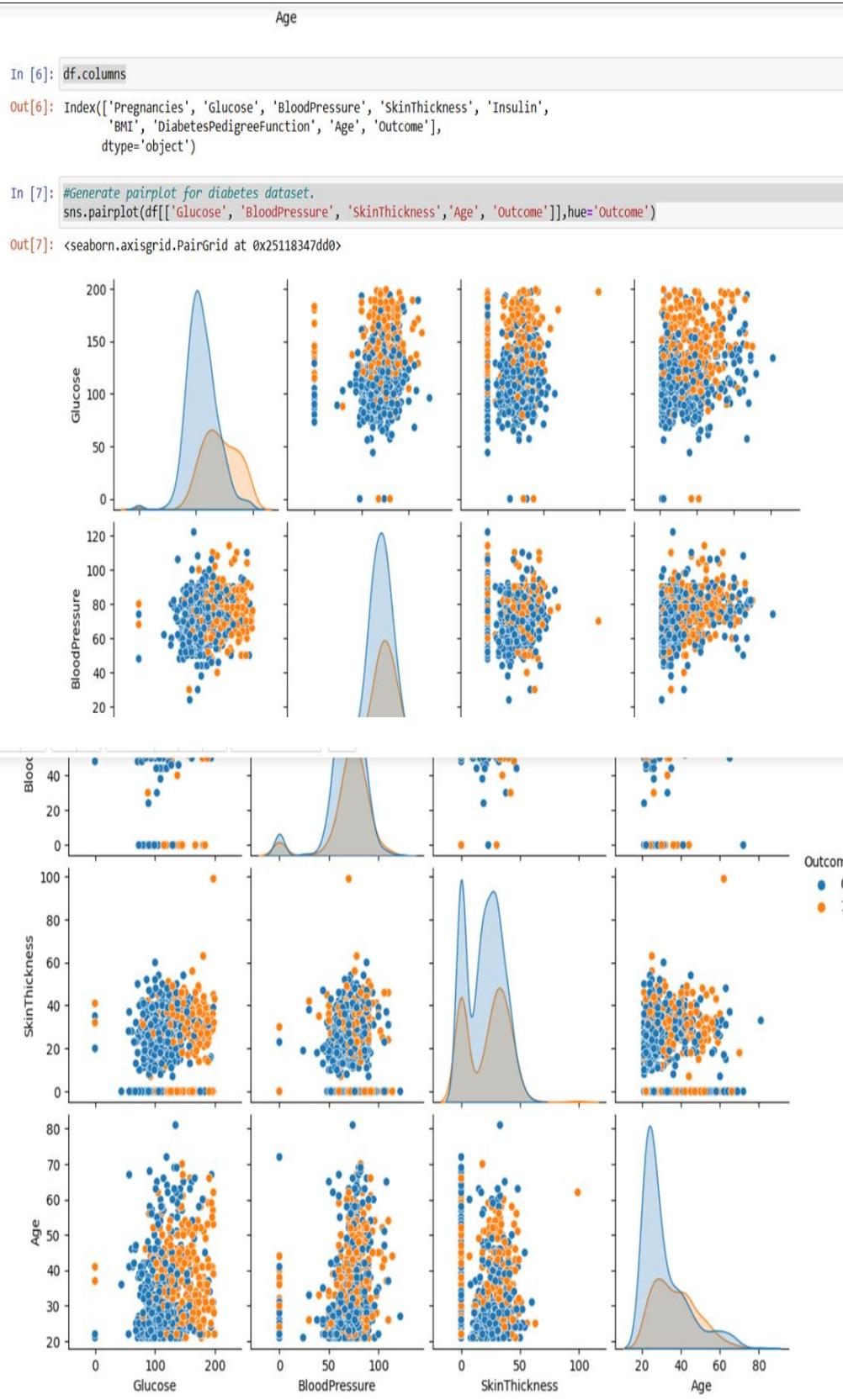
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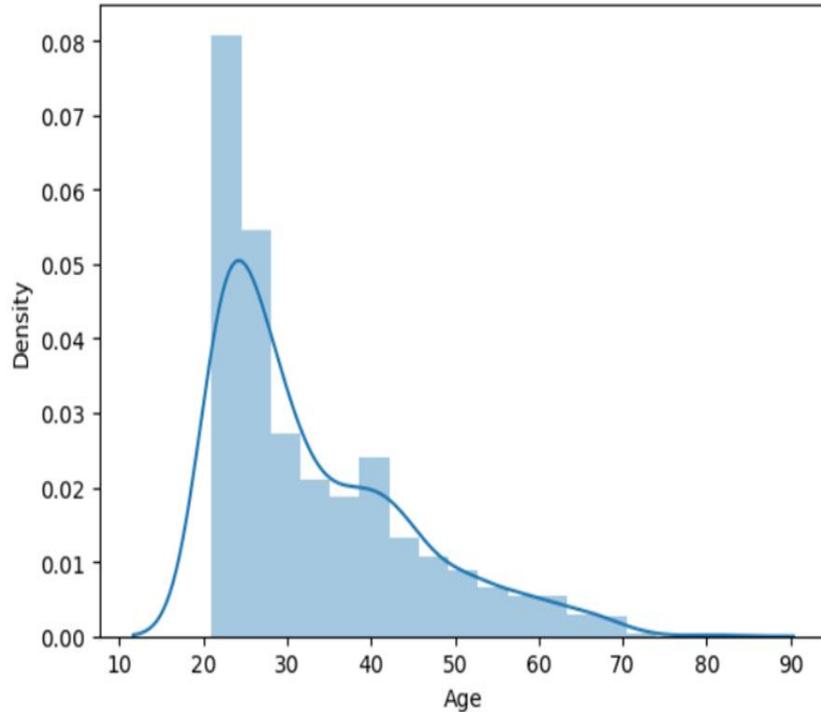


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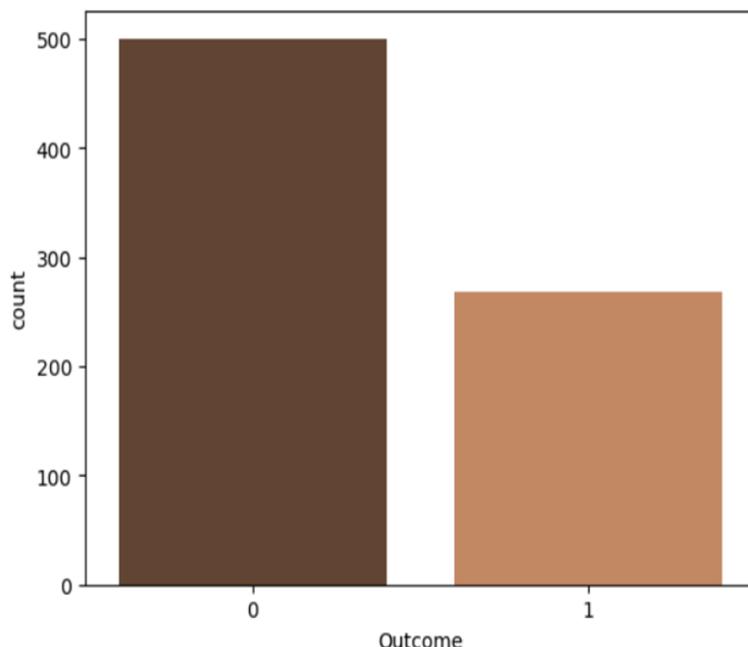
```
In [8]: #Generate distplot for age.  
sns.distplot(df['Age'])
```

```
Out[8]: <Axes: xlabel='Age', ylabel='Density'>
```



```
In [10]: #Generate countplot for outcome variable in diabetes dataset.  
sns.countplot(x=df['Outcome'], palette='copper')
```

```
Out[10]: <Axes: xlabel='Outcome', ylabel='count'>
```





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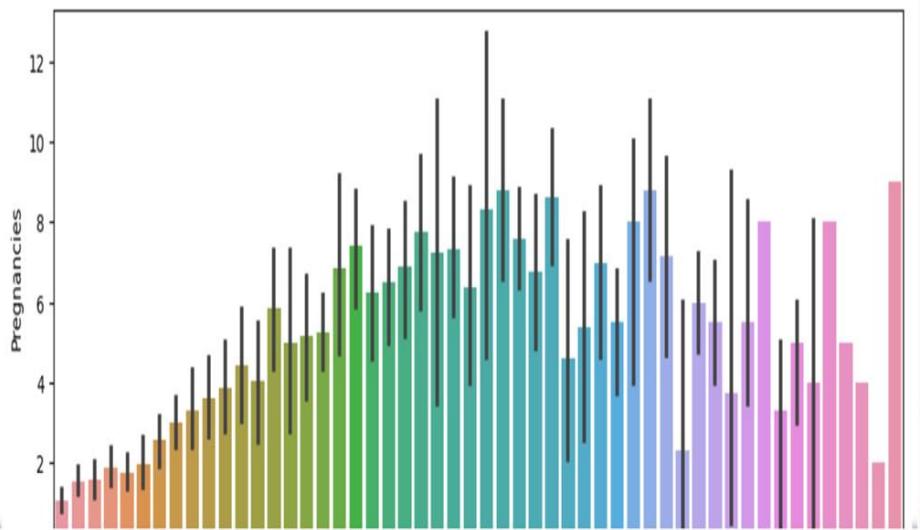
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In [13]: #Generate barplot for age vs pregnancy in diabetes dataset.

```
import matplotlib.pyplot as plt  
plt.figure(figsize=(12,4))  
  
sns.barplot(x='Age',y='Pregnancies',data=df)
```

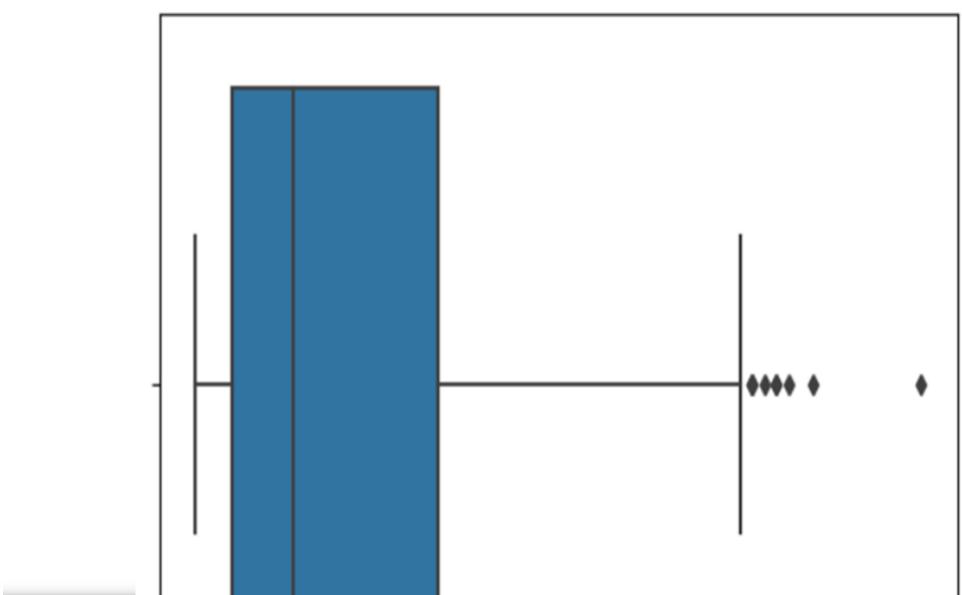
Out[13]: <Axes: xlabel='Age', ylabel='Pregnancies'>



In [14]: # Generate box plot for age and glucose.

```
sns.boxplot(x='Age',data=df)
```

Out[14]: <Axes: xlabel='Age'>





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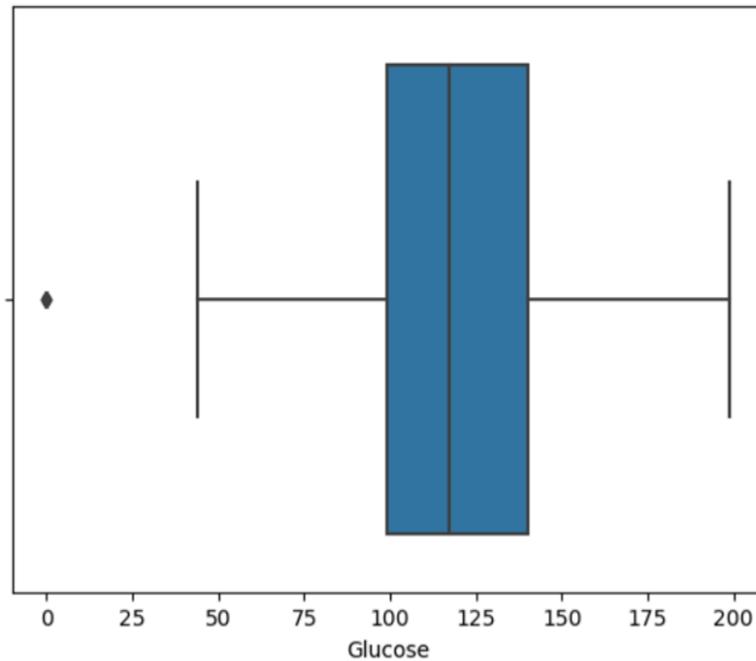


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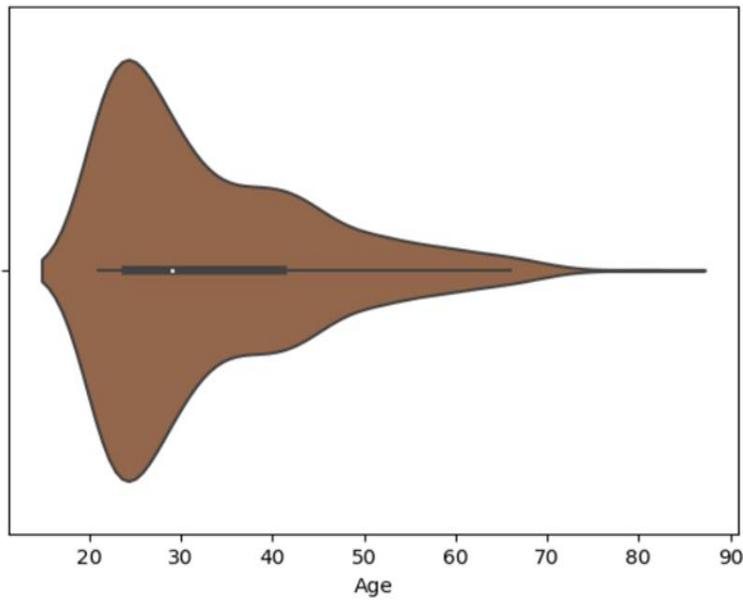
```
In [15]: sns.boxplot(x='Glucose',data=df)
```

```
Out[15]: <Axes: xlabel='Glucose'>
```



```
In [16]: #Generate violin plot for age and glucose.  
sns.violinplot(x=df['Age'],palette='copper')
```

```
Out[16]: <Axes: xlabel='Age'>
```





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Project :-

EDA ON ZOMATO SALES DATASET



vaishnaviraham / EDA

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EDA Public

main 1 branch 0 tags Go to file Add file Code

vaishnaviraham Add files via upload 9759938 2 weeks ago 7 commits

EDA on zomato.ipynb Add files via upload 2 weeks ago

EDA on zomato.pdf Add files via upload 2 weeks ago

README.md Create README.md 2 weeks ago

zomato_dataset.csv Add files via upload 2 weeks ago

zomato_dataset_eda.html Add files via upload 2 weeks ago

Pandas Profiling Report Overview Variables Interactions Correlations Missing values

Overview

Overview		Alerts 8	Reproduction
Dataset statistics		Variable types	
Number of variables	12	Text	3
Number of observations	123657	Numeric	6
Missing cells	129231	Categorical	3
Missing cells (%)	8.7%		
Duplicate rows	20852		
Duplicate rows (%)	16.9%		
Total size in memory	11.3 MiB		
Average record size in memory	96.0 B		



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Conclude your work.

I learn about data analysis using Python, I worked with various libraries like Numpy, pandas, etc. I performed EDA on 'Student mental health'. This EDA is my project on that I performed basic, advanced EDA and deals with Univariate, Bivariate and Multivariate data. Developed different charts like bar charts, heatmap, boxplots ,etc. We also learn pandas profiling for data analysis.

Signature of Student

Signature of Internal Mentor



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ATTENDANCE

DATE	DAY	In-Time	Out-Time	Remarks
10-july-2023	Monday	10:30am	12:30pm	Offline
11-july-2023	Tuesday	10:30am	12:30pm	Offline
12-july-2023	Wednesday	10:30am	12:30pm	Offline
13-july-2023	Thursday	10:30am	12:30pm	Offline
14-july-2023	Friday	10:30am	12:30pm	Offline
15-july-2023	Saturday	10:30am	12:30pm	Online
17-july-2023	Monday	10:30am	12:30pm	Offline
18-july-2023	Tuesday	10:30am	12:30pm	Offline
19-july-2023	Wednesday	10:30am	12:30pm	Offline
20-july-2023	Thursday	10:30am	12:30pm	Offline
21-july-2023	Friday	10:30am	12:30pm	Offline
22-july-2023	Saturday	10:30am	12:30pm	Offline

- The attendance details have to be filled by the student and get it certified by the Mentor In-charge.
- If the organization has its own attendance system, the same can be accepted as a proof by the student but should be certified by the Organization.

Student's Name: Vaishnavi Rahamatkar

Industry Mentor's Name: Nisarg Gandhewar

Students Signature:

Industry Mentor's Designation:

Internship Organisation:

Organisation Stamp/Seal:



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Organization Mentor Evaluation

I. ATTITUDE – APPLICATION TO WORK

- Excellent
- Very good
- Average
- Below average
- Poor

II. INITIATIVE

- Excellent
- Very good
- Average
- Below average
- Poor

III. SENSE OF RESPONSIBILITY

- Excellent
- Very good
- Average
- Below average
- Poor

IV. ORGANIZATION AND PLANNING

- Excellent
- Very good
- Average
- Below average
- Poor

V. ABILITY TO LEARN

- Excellent
- Very good
- Average
- Below average
- Poor



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VI. QUALITY OF WORK

- Excellent
- Very good
- Average
- Below average
- Poor

VII. COMMUNICATIONSKILLS

- | | |
|--|--|
| <i>Oral</i> _____ | <i>Written</i> _____ |
| <input type="checkbox"/> Excellent | <input type="checkbox"/> Excellent |
| <input type="checkbox"/> Very good | <input type="checkbox"/> Very good |
| <input type="checkbox"/> Average | <input type="checkbox"/> Average |
| <input type="checkbox"/> Below average | <input type="checkbox"/> Below average |
| <input type="checkbox"/> Poor | <input type="checkbox"/> Poor |

VIII. INTERACTIONS WITH OTHERS

- Excellent
- Very good
- Average
- Below average
- Poor

IX. OTHER (Please check all that apply)

- Attendance is regular
- Attendance is irregular
- Is punctual
- Punctuality is irregular
- Dresses appropriately
- Dresses inappropriately
- Acts in a professional manner
- Needs to improve conduct and professionalism on the job



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ADDITIONAL COMMENTS

The student's strengths include:

The qualities which the student should strive to improve are:

Would you hire this student if employment was available in the future?

Yes No

If not, what would be the primary reason?

Name & Signature of Industry Mentor

Date:

Thank you for your kind support!!



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Completion Certificate:



CERTIFICATE

OF INTERNSHIP

This certificate is proudly awarded to

Vaishnavi Jayprakash Rahamatkar

in recognition of his/her efforts and achievement in completing the

Two Weeks internship program in **Data Analysis using Python**

*conducted From **10th July -22nd July 2023***

DIRECTOR



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Feedback Form: (Printout of Google Link form)

Google Forms

Thanks for filling out **INTERNSHIP FEEDBACK FORM (PS II)**

Here's what was received.

Edit response

INTERNSHIP FEEDBACK FORM (PS II)

ALL STUDENTS FILL OUT THIS FEEDBACK FORM, TO KNOW WHAT YOU LEARN DURING THE INTERNSHIP.

Your email (vaishnavir.aiml21@sbjit.edu.in) was recorded when you submitted this form.

NAME OF STUDENT

*

Vaishnavi Rahamatkar



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DEPARTMENT

*

- Em-Tech (AI&ML)
- Em-Tech (AI&DS)

DURATION OF INTERNSHIP *

- 2 WEEKS
- 3 WEEKS

DOMAIN OF INTERNSHIP?

*

Data Analysis in python

Name of Company?

*

CODEMATE IT SERVICE



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**WAS THE CONTENT DELIVERED ARE
HELPFUL?**

*

- YES
 NO

**IS THIS INTERNSHIP HELPFUL TO
ENHANCE YOUR KNOWLEDGE?**

*

- YES
 NO

**KINDLY RATE THE CONTENT OF
INTERNSHIP**

*

- EXCELLENT
 VERY NICE
 GOOD
 FAIR
 NOT GOOD UPTO THE EXPECTATION



ARE YOU UNDERSTAND THE CONTENTS DELIVER BY TRAINER?

*



YES



NO

What kind of impact has this Internship had on you?

*



Provided me with a better understanding of my career goals.



Increased my skills and knowledge in performing a particular activity.



Changed my attitudes or feelings about myself and other people.



Provided me with the opportunity to apply theoretical concepts to the actual work environment.



How would you rate the educational value of your internship?

*

- Exceptional opportunity.
- Worthwhile experience.
- Not too useful but might help some.
- Probably of no value (please comment).

How was the experience related to your major field or career goals?

*

- Very closely related
- Related through occasional assignments.
- No relationship exists.
- Not applicable



Overall Internship Rating:

*

- Exceeded expectations.
- Met expectations.
- Did not meet expectations.
- Unsatisfactory.

WHAT CHANGE DO YOU WANT IN INTERNSHIP?

*

NA

ANY SUGGESTION ABOUT INTERNSHIP?

*

Please give internet facility and duration should increased