1. a) Write a python program to implement slicing on 1D, 2D and 3D arrays?
   b) i) Create a DataFrame as show below.

	school	Class	name	date_Of_Birth	age	height	weight	Address
S1	s001	V	AlbertoFranco	15/05/2002	12	173	35	street1
S2	s002	V	Gino Mcneill	17/05/2002	12	192	32	street2
S3	s003	VI	Ryan Parkes	16/02/1999	13	186	33	street3
S4	s001	VI	Eesha Hinton	25/09/1998	13	167	30	street1
S5	s002	V	Gino Mcneill	11/05/2002	14	151	31	street2
S6	s004	VI	David Parkes	15/09/1997	12	159	32	street4

   ii) Add some additional columns gender, marks1, marks2, marks3 to the given DataFrame.
   iii) Find sum, mean, max, min values of columns age, height, weight, marks1, marks2, marks3 for girls and boys separately.

2. a) Write a python program to create Numpy array - i) ndarray ii) array of zeros iii) array of ones iv) Random numbers in ndarray
   b) i) Write a pandas program to create DataFrame of ten rows and four columns with random values.
   ii) Using concat() add a column at the beginning, column name is S.No and values are integers starting from 1 to 10.
   iii) Write a pandas program to print all negative numbers from the DataFrame.

3. a) Write a python program to create Numpy array i) identity matrix ii) Evenly spaced ndarray iii) Random numbers in ndarray
   b) i) Write a pandas program to create a DataFrame of ten rows and four columns with random values
   ii) Add a new column at the last, column name Total and values are sum of all the columns.

4. a) Write a python program to create a Numpy array and do the following tasks.
   i) Print dimension and shape of Numpy array
   ii) reshape of numpy array
   b) i) Write a Pandas program to create and display the following DataFrame using dictionary

```
df = pd.DataFrame(exam_data, index = labels)
print(df)
```

```
        name  score  attempts qualify
a  Anastasia   12.5         1     yes
b       Dima    9.0         3      no
c  Katherine   16.5         2     yes
d      James    NaN         3      no
e      Emily    9.0         2      no
f    Michael   20.0         3     yes
g    Matthew   14.5         1     yes
h      Laura    NaN         1      no
i      Kevin    8.0         2      no
j      Jonas   19.0         1     yes
```

   ii) Write a Pandas program to change the name 'James' to 'Suresh' in the name column of the DataFrame
   iii) Write a Pandas program to insert a new column at required position in the existing DataFrame

5. a) Write a python program to create a Numpy array and do the following tasks.
   i) reshape the array and print the size of new array
   ii) Find transpose of the array and flatten the array
   b) i) Write a Pandas program to create and display the following DataFrame using list of lists

```
df = pd.DataFrame(exam_data, index = labels)
print(df)
```

```
        name  score  attempts qualify
a  Anastasia   12.5         1     yes
b       Dima    9.0         3      no
c  Katherine   16.5         2     yes
d      James    NaN         3      no
e      Emily    9.0         2      no
f    Michael   20.0         3     yes
g    Matthew   14.5         1     yes
h      Laura    NaN         1      no
i      Kevin    8.0         2      no
j      Jonas   19.0         1     yes
```

   ii) Write a pandas program to insert a new column in the existing DataFrame?
   iii) Write a Pandas program to get a list from DataFrame column headers.

6. a) Write a python program to create Numpy array - i) ndarray ii) array of zeros iii) array of ones iv) Random numbers in ndarray v) identity matrix vi) evenly spaced ndarray

   b) Read the following file formats using pandas (Open a notepad and create a DataFrame separate values with comma and save it as data.csv, create another file and save it as data.txt, create one excel file)
   i) Read the text file as a DataFrame in the pandas environment and print it.
   ii) Read the csv file and print it.
   iii) Read the excel file and print it.
   iv) Read the text file where every value is delimited by "|".

7. a) Write a python program to implement slicing on 1D,2D and 3D arrays?
   b) i) Create a DataFrame as shown below

	school	Class	name	date_Of_Birth	age	height	weight	Address
S1	s001	V	AlbertoFranco	15/05/2002	12	173	35	street1
S2	s002	V	Gino Mcneill	17/05/2002	12	192	32	street2
S3	s003	VI	Ryan Parkes	16/02/1999	13	186	33	street3
S4	s001	VI	Eesha Hinton	25/09/1998	13	167	30	street1
S5	s002	V	Gino Mcneill	11/05/2002	14	151	31	street2
S6	s004	VI	David Parkes	15/09/1997	12	159	32	street4

   ii) Add some additional columns marks1, marks2, marks3 to the given DataFrame.
   iii) Find sum, mean, max, min values of columns age, height, weight, marks1, marks2, marks3.

8. a) Write a python program to create a Numpy array and do the following tasks.
   i) reshape the array and print the size of new array
   ii) Find transpose of the array and flatten the array
   b) i) Create a DataFrame as shown below

	school	Class	name	date_Of_Birth	age	height	weight	Address
S1	s001	V	AlbertoFranco	15/05/2002	12	173	35	street1
S2	s002	V	Gino Mcneill	17/05/2002	12	192	32	street2
S3	s003	VI	Ryan Parkes	16/02/1999	13	186	33	street3
S4	s001	VI	Eesha Hinton	25/09/1998	13	167	30	street1
S5	s002	V	Gino Mcneill	11/05/2002	14	151	31	street2
S6	s004	VI	David Parkes	15/09/1997	12	159	32	street4

   ii) Add some additional columns gender, marks1, marks2, marks3 to the given DataFrame
   iii) Plot a horizontal bar plot using marks1, marks2 and marks3 columns.

9. a) Write a python program to create Numpy array i) identity matrix ii) Evenly spaced ndarray iii) Random numbers in ndarray
   b) i) Create a DataFrame which contains columns roll number, marks1, marks2, marks3 and gender and calculate the sum, mean , max and min of marks1,marks2 and marks3
   for girls and boys separately.
   ii) Plot a horizontal stacked bar plot using marks1, marks2 and marks3 columns.