```
In [ ]: NAME:HARSH ARORA
          ROLL NO:AE-1218
 In [2]: # Creating a DataFrame from the given dataset by using DataFrame() function in pandas
          import pandas as pd
         StudentData = {'Student Name':['Aman','Rahul', 'Shreya', 'Vinita'],
                         'Physics':[78,67,85,96],
                         'Chemistry': [80,77,85,90],
                         'Maths':[88,95,100,90]}
         STUDENT_DATA = pd.DataFrame(StudentData)
         print(STUDENT_DATA)
            Student Name
                          Physics Chemistry
                                              Maths
          0
                               78
                    Aman
                                                 88
                               67
                                          77
                                                 95
                   Rahul
                               85
                                                100
         2
                  Shreya
                                          85
          3
                  Vinita
                               96
                                          90
                                                 90
In [11]: | #reading data from a data frame using locate row,loc[] and iloc[] function
         'Chemistry': [80,77,85,90],
                         'Maths':[88,95,100,90]}
         STUDENT_DATA = pd.DataFrame(StudentData)
         print(STUDENT_DATA.loc[[1]])#can use index name after adding index
         print(STUDENT_DATA.iloc[[0]])
            Student Name
                          Physics
                                   Chemistry
                                              Maths
                   Rahul
                               67
                                          77
                                                 95
                                   Chemistry
            Student Name
                          Physics
                                              Maths
         0
                    Aman
                               78
                                          80
                                                 88
 In [4]: #Adding name to each row using 'index'
         StudentData = {'Student Name':['Aman','Rahul', 'Shreya', 'Vinita'],
                         'Physics':[78,67,85,96],
                         'Chemistry': [80,77,85,90],
                         'Maths':[88,95,100,90]}
         STUDENT_DATA = pd.DataFrame(StudentData,index = ['std1','std2','std3','std4'])
         print(STUDENT_DATA.to_string())
         print(STUDENT_DATA.loc[['std1']])
               Student Name Physics Chemistry
                                                 Maths
          std1
                       Aman
                                  78
                                             80
                                                    88
          std2
                      Rahul
                                  67
                                             77
                                                    95
          std3
                     Shreya
                                  85
                                             85
                                                    100
                     Vinita
                                  96
                                             90
                                                    90
          std4
               Student Name
                             Physics
                                      Chemistry
                                                 Maths
          std1
                       Aman
                                  78
                                             80
In [13]: # To access data of a row using row index name
StudentData = {'Student Name':['Aman','Rahul', 'Shreya', 'Vinita'],
                         'Physics':[78,67,85,96],
                         'Chemistry': [80,77,85,90],
                         'Maths':[88,95,100,90]}
         STUDENT_DATA = pd.DataFrame(StudentData,index = ['std1','std2','std3','std4'])
         print(STUDENT_DATA.loc[['std1']])
               Student Name Physics Chemistry Maths
          std1
                      Aman
                                  78
                                             80
In [14]: #to access data of a student by specifying student name
StudentData = {'Student Name':['Aman','Rahul', 'Shreya', 'Vinita'],
                         'Physics':[78,67,85,96],
                         'Chemistry': [80,77,85,90],
                         'Maths':[88,95,100,90]}
         STUDENT DATA = pd.DataFrame(StudentData)
         STUDENT_DATA=STUDENT_DATA.set_index(['Student Name'])
         print(STUDENT_DATA.loc[['Rahul']])
                        Physics Chemistry Maths
          Student Name
          Rahul
                             67
                                        77
                                               95
In [23]: # Reading data from a spreadsheet (.xlsx/.xls) file
         import pandas as pd
         import openpyxl
         STUDENT_DATA = pd.read_excel(r"C:\Users\HP\Downloads\lab 2\StudentDataSet1_LAB2.xlsx")#using r so that we can read the file
         print(STUDENT DATA)
           Student Name Physics
                                    Chemistry
                                               Maths
         0
                    Aman
                               78
                                                  88
                                           80
                                           77
                                                  95
                   Rahul
                               67
         1
         2
                  Shreva
                               85
                                           85
                                                 100
```

3

Vinita

96

90

90

```
In [24]: #reading data from a csv file
                   STUDENT_DATA = pd.read_csv(r"C:\Users\HP\Downloads\lab 2\StudentDataSet1_LAB2.csv")#using r so that we can read the file
                   print(STUDENT_DATA)
                                                   Physics Chemistry
                                                                                           Maths
                       Student Name
                   0
                                                             78
                                       Aman
                                                                                    80
                                                                                                  88
                                     Rahul
                                                              67
                                                                                    77
                                                                                                  95
                                                              85
                                                                                                100
                   2
                                   Shreya
                                                                                    85
                   3
                                   Vinita
                                                              96
                                                                                                  90
In [25]: #reading data from a json file
                    \textbf{STUDENT\_DATA} = \texttt{pd.read\_json(r"C:\backslash Users\backslash HP\backslash Downloads\backslash lab 2\backslash StudentDataSet1\_LAB2.json")} \\ \textit{\#using r so that we can read the file } \\ \textbf{STUDENT\_DATA} = \textbf{pd.read\_json(r"C:\backslash Users\backslash HP\backslash Downloads\backslash lab 2\backslash StudentDataSet1\_LAB2.json")} \\ \textit{\#using r so that we can read the file } \\ \textbf{STUDENT\_DATA} = \textbf{pd.read\_json(r"C:\backslash Users\backslash HP\backslash Downloads\backslash lab 2\backslash StudentDataSet1\_LAB2.json")} \\ \textbf{\#using r so that we can read the file } \\ \textbf{STUDENT\_DATA} = \textbf{pd.read\_json(r"C:\backslash Users\backslash HP\backslash Downloads\backslash lab 2\backslash StudentDataSet1\_LAB2.json")} \\ \textbf{\#using r so that we can read the file } \\ \textbf{Musing r so that we can read the file } \\ \textbf{Musing r so that we can read the file } \\ \textbf{Musing r so that we can read the file } \\ \textbf{Musing r so that we can read the file } \\ \textbf{Musing r so that } \\ \textbf{Musin
                   print(STUDENT_DATA)
                       Student Names
                                                     Physics Chemistry
                                                                                             Maths
                   a
                                         Aman
                                                               78
                                                                                      80
                                                                                                    88
                   1
                                       Rahul
                                                               67
                                                                                      77
                                                                                                    95
                   2
                                     Shreya
                                                               85
                                                                                      85
                                                                                                  100
                   3
                                     Vinita
                                                               96
                                                                                      90
                                                                                                    90
In [44]: # To determine the shape ( no.of ROWs x no. of COLUMNS) in a given data frame
                   STUDENT DATA = pd.DataFrame(StudentData)
                   print("(ROWS, COLUMNS) in the given data set is",STUDENT_DATA.shape)
                    (ROWS, COLUMNS) in the given data set is (4, 4)
In [27]: # To determine the size ( no. of data elements) in a given data frame
                   STUDENT_DATA = pd.DataFrame(StudentData)
                   print("No. of elements in the given data set are",STUDENT_DATA.size)
                   No. of elements in the given data set are 16
In [28]: #display first few rows of a dataframe using head function
                   STUDENT_DATA = pd.read_csv(r"C:\Users\HP\Downloads\lab 2\StudentDataSet1_LAB2.csv")
                   print(STUDENT_DATA.head(2))
                       Student Name Physics Chemistry
                                                                                           Maths
                   0
                                       Aman
                                                             78
                                                                                    80
                                                                                                  88
                   1
                                     Rahul
                                                             67
                                                                                    77
                                                                                                  95
In [29]: #display last few rows of a dataframe using tail function
                   STUDENT_DATA = pd.read_csv(r"C:\Users\HP\Downloads\lab 2\StudentDataSet1_LAB2.csv")
                  print(STUDENT_DATA.tail(2))
                       Student Name Physics Chemistry
                                                                                           Maths
                   2
                                   Shreya
                                                             85
                                                                                    85
                                                                                                100
                   3
                                   Vinita
                                                             96
                                                                                    90
                                                                                                 90
In [30]: #displaying information about the type of data in a dataframe using info function
                   STUDENT_DATA = pd.read_csv(r"C:\Users\HP\Downloads\lab 2\StudentDataSet1_LAB2.csv")
                  print(STUDENT_DATA.info())
                   <class 'pandas.core.frame.DataFrame'>
                   RangeIndex: 4 entries, 0 to 3
                   Data columns (total 4 columns):
                                                         Non-Null Count Dtype
                    #
                             Column
                    ---
                    0
                             Student Name 4 non-null
                                                                                          object
                    1
                             Physics
                                                         4 non-null
                                                                                          int64
                             Chemistry
                                                         4 non-null
                                                                                          int64
                             Maths
                                                         4 non-null
                                                                                          int64
                   dtypes: int64(3), object(1)
                   memory usage: 256.0+ bytes
                   None
In [31]: #listing names of all the columns in a dataset
                   STUDENT_DATA = pd.read_csv(r"C:\Users\HP\Downloads\lab 2\StudentDataSet1_LAB2.csv")
                   print(STUDENT_DATA.columns)
                   Index(['Student Name', 'Physics', 'Chemistry', 'Maths'], dtype='object')
In [32]: #inserting a new column in an existing dataframe using insert function
                   STUDENT_DATA = pd.read_csv(r"C:\Users\HP\Downloads\lab 2\StudentDataSet1_LAB2.csv")
                   STUDENT_DATA.insert(4, 'English', [96,75,88,80], True)
                   print(STUDENT_DATA)
                        Student Name Physics Chemistry
                                                                                           Maths
                                                                                                          English
                   0
                                       Aman
                                                             78
                                                                                                 88
                                                                                                                    96
                                                                                    80
                                     Rahul
                                                              67
                                                                                    77
                                                                                                  95
                                                                                                                    75
                   1
                   2
                                   Shreya
                                                              85
                                                                                    85
                                                                                                100
                                                                                                                    88
```

3

Vinita

96

90

90

80

```
In [34]: #inserting a new column in an existing dataframe without using insert function
          English = [96,75,88,80]
          STUDENT_DATA['English']=English
          print(STUDENT_DATA)
            Student Name Physics
                                    Chemistry
                                                Maths English
          0
                                78
                    Aman
                                            80
                    Rahul
                                67
                                            77
                                                   95
                                                             75
          1
                   Shreya
                                85
          2
                                            85
                                                  100
                                                             88
                  Vinita
                                96
                                            90
                                                   90
                                                             80
          3
In [37]: #inserting a new row in an existing dataframe using Loc function#
         STUDENT_DATA = pd.read_csv(r"C:\Users\HP\Downloads\lab 2\StudentDataSet1_LAB2.csv")
STUDENT_DATA.loc[4]=['Vishal',88,97,100]
          print(STUDENT_DATA)
            Student Name Physics Chemistry
                                                Maths
          0
                    Aman
                                78
                                            80
                                                   88
          1
                   Rahul
                                67
                                            77
                                                   95
          2
                  Shreya
                                85
                                            85
                                                  100
          3
                  Vinita
                                96
                                            90
                                                   90
          4
                  Vishal
                                88
                                            97
                                                  100
'Chemistry':[80,77,85],
'Maths':[88,95,100]}
          'Chemistry:[90,97],
                          'Maths':[90,100]}
          STUDENT_DATA1=pd.DataFrame(StudentData1)
          STUDENT_DATA2=pd.DataFrame(StudentData2)
          STUDENT_DATA = pd.concat([STUDENT_DATA1,STUDENT_DATA2],ignore_index=True)
          print(STUDENT_DATA)
            Student Name Physics Chemistry
                                                Maths
          0
                    Aman
                                78
                                            80
                                                   88
                    Rahul
                                67
                                            77
                                                   95
          2
                  Shreya
                                85
                                                  100
                  Vinita
                                96
                                            90
                                                   90
          3
                  Vishal
                                88
                                            97
                                                  100
In [41]: # To evaluate percentage and display it in a separate column
STUDENT_DATA = pd.read_csv(r"C:\Users\HP\Downloads\lab 2\StudentDataSet1_LAB2.csv")
         Percentage =(STUDENT_DATA['Physics']+

STUDENT_DATA['Chemistry']+

STUDENT_DATA['Maths'])/3
          STUDENT_DATA['Percentage']=Percentage
          print(STUDENT_DATA)
            Student Name Physics Chemistry
                                                Maths
                                                       Percentage
          0
                    Aman
                                78
                                            80
                                                   88
                                                        82.000000
                    Rahul
                                67
                                            77
                                                   95
                                                         79.666667
          1
```

2

3

Shreya

Vinita

85

96

85

90

100

90

90.000000

92.000000

```
In [ ]: #ADITYA MAURYA
          #AE-1206
          #BSC.(HONS.) COMPUTER SCIENCE
 In [2]: # Creating a DataFrame from the given dataset by using DataFrame() function in pandas
          import pandas as pd
         StudentData = {'Roll':[1,2,3,4,5,6,7,8,9,10],
                         'Student':['Agarwal V','Agnew P','Ahmad H','Alambritis G','Allen J','Anthony A','Antoniou V','Archy J','Armstrong B','A
'Department':['Computer Sc','Computer Sc','Statistics','Physics','Economics','Maths','Computer Sc','Economics','Math','
                          'General Sc': [78,45,78,65,87,54,76,76,86,68],
                          'Maths':[80,78,30,68,50,30,70,40,30,70],
                          'Computer':[66,66,50,70,60,30,70,40,40,80],
                         'Remarks':['Pass','Pass','Fail','Pass','Pass','Fail','?','Fail','?','Pass']}
         STUDENT_DATA = pd.DataFrame(StudentData)
         print(STUDENT_DATA)
             Roll
                         Student
                                    Department General Sc
                                                             Maths
                                                                     Computer Remarks
               1
                       Agarwal V
                                   Computer Sc
                                                         78
                                                                           66
                                                                                 Pass
                         Agnew P
                                   Computer Sc
                                                                           66
                                                                                  Pass
                         Ahmad H
                                    Statistics
                                                         78
                                                                30
                                                                           50
                                                                                  Fail
                    Alambritis G
                                       Physics
                                                                68
                                                                           70
                                                                                 Pass
          3
                                                         65
                         Allen J
                                     Economics
                                                         87
                                                                50
                                                                           60
                                                                                 Pass
                       Anthony A
                                         Maths
                                                         54
                                                                 30
                                                                           30
                6
                                                                                  Fail
                      Antoniou V
                                   Computer Sc
                                                                70
                                                                           70
                                                         76
          6
                                     Economics
                                                                 40
                                                                           40
                                                                                  Fail
                8
                         Archy J
                                                         76
                     Armstrong B
                                          Math
                                                                30
                                                                           40
          8
                                                         86
                                       Physics
               10 Arvanitakis I
                                                         68
                                                                70
                                                                           80
                                                                                 Pass
In [53]: #reading data from a data frame using locate row,loc[] and iloc[] function
         STUDENT_DATA = pd.DataFrame(StudentData)
         print(STUDENT_DATA.loc[[1]])#can use index name after adding index
         print()
         print(STUDENT_DATA.iloc[[0]])
             Roll Student
                             Department General Sc Maths Computer Remarks
               2 Agnew P Computer Sc
                                                   45
            Roll
                     Student
                               Department General Sc Maths Computer Remarks
                1 Agarwal V Computer Sc
 In [3]: #Adding name to each row using 'index'
         STUDENT_DATA = pd.DataFrame(StudentData,index = ['std1','std2','std3','std4','std5','std6','std7','std8','std9','std10'])
         print(STUDENT_DATA.to_string())
         print(STUDENT_DATA.loc[['std1']])
                 Roll
                              Student
                                        Department General Sc
                                                                 Maths Computer Remarks
          std1
                    1
                            Agarwal V
                                       Computer Sc
                                                             78
                                                                     80
                                                                               66
                                                                                     Pass
                                       Computer Sc
         std2
                              Agnew P
                                                                               66
                                                                                     Pass
          std3
                              Ahmad H
                                        Statistics
                                                             78
                                                                     30
                                                                               50
                                                                                     Fail
          std4
                        Alambritis G
                                           Physics
                                                                                     Pass
          std5
                             Allen J
                                         Economics
                                                             87
                                                                               60
                                                                                     Pass
          std6
                            Anthony A
                                             Maths
                                                                                     Fail
                          Antoniou V
          std7
                                       Computer Sc
                                                             76
                                                                     70
                                                                               70
                             Archy J
         std8
                                                             76
                                                                     40
                                                                               40
                                                                                     Fail
                                         Economics
          std9
                         Armstrong B
                                              Math
                                                             86
                                                                     30
                   10 Arvanitakis I
                                           Physics
                                                                     70
                                                                               80
                                                                                     Pass
          std10
                                                             68
                Roll
                        Student
                                  Department General Sc
                                                            Maths
                                                                   Computer Remarks
          std1
                   1 Agarwal V Computer Sc
                                                                                Pass
                                                        78
                                                               80
                                                                          66
 In [8]: # To access data of a row using row index name
         STUDENT_DATA = pd.DataFrame(StudentData,index = ['std1','std2','std3','std4','std5','std6','std7','std8','std9','std10'])
         print(STUDENT_DATA.loc[['std1']])
                Roll
                        Student
                                  Department General Sc Maths Computer Remarks
          std1
                  1 Agarwal V Computer Sc
                                                        78
                                                               80
In [11]: #to access data of a student by specifying student name
         STUDENT_DATA = pd.DataFrame(StudentData)
         STUDENT DATA=STUDENT DATA.set index(['Student'])
         print(STUDENT_DATA.loc[['Agarwal V']])
                     Roll Department General Sc Maths Computer Remarks
          Student
```

Agarwal V

1 Computer Sc

78

80

66

Pass

```
In [12]: # Reading data from a spreadsheet (.xlsx/.xls) file
         import pandas as pd
         import openpyxl
         {\tt STUDENT\_DATA = pd.read\_excel(r"C:\Users\HP\Downloads\lab 2\StudentDataSet2.xlsx")} \textit{\#using r so that we can read the file} \\
         print(STUDENT_DATA)
                                   Department General Sc. Maths's Computer Remarks
             Roll
                         Student
         0
               1
                       Agarwal V
                                  Computer Sc
                                                         78
                                                                  80
                                                                            66
                                  Computer Sc
                         Agnew P
         1
                                                                  78
                                                                             66
                                                                                   Pass
                         Ahmad H
                                   Statistics
                                                         78
                                                                  30
                                                                            50
                                                                                   Fail
                   Alambritis G
                                      Physics
                                                         65
                                                                  68
                                                                                  Pass
                        Allen J
                                    Economics
                                                         87
                                                                  50
                                                                            60
                                                                                  Pass
                                       Math's
                                                                            30
                       Anthony A
                                                         54
                                                                  30
               6
                                                                                  Fail
                      Antoniou V
                                  Computer Sc
                                                                            70
         6
                                                         76
                                                                  70
               8
                        Archy J
                                    Economics
                                                         76
                                                                  40
                                                                            40
                                                                                  Fail
               9
                     Armstrong B
                                       Math's
                                                         86
                                                                  30
                                                                            40
         8
              10 Arvanitakis I
                                      Physics
                                                                                  Pass
                                                         68
                                                                  70
                                                                            80
In [56]: #reading data from a csv file
         STUDENT_DATA = pd.read_csv(r"C:\Users\HP\Downloads\lab 2\StudentDataSet2.csv")#using r so that we can read the file
         print(STUDENT_DATA)
             Roll
                        Students
                                   Department General Sc.
                                                            Maths
                                                                    Computer Remarks
                       Agarwal V
         0
                                  Computer Sc
                                                         78
                         Agnew P
                                  Computer Sc
                                                         45
               3
                         Ahmad H
                                   Statistics
                                                         78
                                                                30
                                                                          50
                                                                                Fail
                   Alambritis G
                                      Physics
                                                         65
                                                                          70
                                                                                Pass
                        Allen J
                                    Economics
                                                         87
                                                                50
                                                                          60
                                                                                Pass
                       Anthony A
                                       Math's
                                                                          30
                                                                                Fail
                     Antoniou V
                                  Computer Sc
                                                         76
                                                                70
                                                                          70
         6
                        Archy J
                                    Economics
                                                         76
                                                                40
                                                                                 Fail
               8
                                                                          40
         8
                     Armstrong B
                                       Math's
                                                         86
                                                                30
                                                                          40
              10 Arvanitakis I
                                      Physics
                                                         68
                                                                70
                                                                          80
                                                                                 Pass
In [57]: #reading data from a json file
         STUDENT_DATA = pd.read_json(r"C:\Users\HP\Downloads\lab 2\StudentDataSet2.json")#using r so that we can read the file
         print(STUDENT_DATA)
                                                               Math's Computer Remarks
             Roll #
                           Student
                                     Department General Sc.
         0
                         Agarwal V
                                    Computer Sc
                 2
                           Agnew P
                                    Computer Sc
                                                           45
         1
                                                                   78
                                                                                   Pass
         2
                 3
                           Ahmad H
                                     Statistics
                                                           78
                                                                   30
                                                                             50
                                                                                   Fail
         3
                     Alambritis G
                                        Physics
                                                           65
                                                                   68
                                                                             70
                                                                                   Pass
                          Allen J
                                      Economics
                                                           87
                                                                   50
                                                                              60
                                                                                    Pass
         5
                         Anthony A
                                         Math's
                                                                   30
                                                                             30
                                                                                   Fail
                 6
                       Antoniou V
                                    Computer Sc
                                                           76
                                                                   70
                                                                             70
         6
                          Archy J
                                      Economics
                                                           76
                                                                   40
                                                                             40
                                                                                   Fail
                      Armstrong B
                                         Math's
                                                           86
                                                                   30
                                                                             40
         8
                10 Arvanitakis I
                                        Physics
                                                                   70
                                                                                   Pass
                                                           68
                                                                             80
In [29]: # To determine the shape ( no.of ROWs x no. of COLUMNS) in a given data frame
         STUDENT_DATA = pd.DataFrame(StudentData)
         print("(ROWS, COLUMNS) in the given data set is",STUDENT_DATA.shape)
          (ROWS, COLUMNS) in the given data set is (10, 7)
In [30]: # To determine the size ( no. of data elements) in a given data frame
         STUDENT DATA = pd.DataFrame(StudentData)
         print("No. of elements in the given data set are",STUDENT_DATA.size)
         No. of elements in the given data set are 70
In [32]: #display first few rows of a dataframe using head function
         STUDENT DATA = pd.read csv(r"C:\Users\HP\Downloads\lab 2\StudentDataSet2.csv")
         print(STUDENT_DATA.head(2))
            Roll
                              Department General Sc. Math's Computer Remarks
                   Students
               1 Agarwal V Computer Sc
                                                    78
                                                             80
                                                                       66
                                                                             Pass
                    Agnew P Computer Sc
                                                    45
                                                             78
                                                                       66
                                                                             Pass
In [33]: #display last few rows of a dataframe using tail function
         STUDENT_DATA = pd.read_csv(r"C:\Users\HP\Downloads\lab 2\StudentDataSet2.csv")
         print(STUDENT_DATA.tail(2))
                        Students Department General Sc. Math's Computer Remarks
         8
               9
                     Armstrong B
                                     Math's
                                                      86
                                                               30
              10
                  Arvanitakis I
                                                               70
                                                                               Pass
         9
                                    Physics
                                                       68
                                                                         80
```

```
In [34]: #displaying information about the type of data in a dataframe using info function
          STUDENT_DATA = pd.read_csv(r"C:\Users\HP\Downloads\lab 2\StudentDataSet2.csv")
          print(STUDENT_DATA.info())
           <class 'pandas.core.frame.DataFrame'>
          RangeIndex: 10 entries, 0 to 9
          Data columns (total 7 columns):
                Column
                              Non-Null Count
                                                Dtype
           0
                Roll
                              10 non-null
                Students
                              10 non-null
                                                object
           2
                Department
                              10 non-null
                                                object
                General Sc.
                              10 non-null
                                                int64
           3
                Math's
                              10 non-null
                                                int64
                Computer
                              10 non-null
                                                int64
                Remarks
                              10 non-null
                                                object
          dtypes: int64(4), object(3)
          memory usage: 688.0+ bytes
          None
In [35]: #listing names of all the columns in a dataset
          STUDENT_DATA = pd.read_csv(r"C:\Users\HP\Downloads\lab 2\StudentDataSet2.csv")
          print(STUDENT_DATA.columns)
          Index(['Roll', 'Students', 'Department', 'General Sc.', 'Math's', 'Computer',
                   'Remarks'],
                 dtype='object')
In [40]: #inserting a new column in an existing dataframe using insert function
STUDENT_DATA = pd.read_csv(r"C:\Users\HP\Downloads\lab 2\StudentDataSet2.csv")
STUDENT_DATA.insert(6, 'English', [96,75,88,80,45,67,89,78,68,90], True)
          print(STUDENT_DATA)
              Roll
                          Students
                                      Department General Sc.
                                                                 Math's Computer
                                                                                     English \
          0
                 1
                         Agarwal V
                                     Computer Sc
                                                             78
                                                                      80
                                                                                 66
                                                                                           96
          1
                 2
                           Agnew P
                                     Computer Sc
                                                             45
                                                                      78
                                                                                 66
                                                                                           75
                 3
                           Ahmad H
                                      Statistics
                                                             78
                                                                      30
                                                                                 50
                                                                                           88
          2
          3
                 4
                     Alambritis G
                                         Physics
                                                             65
                                                                      68
                                                                                 70
                                                                                           80
          4
                           Allen J
                                       Economics
                                                             87
                                                                      50
                                                                                 60
                                                                                           45
                         Anthony A
                                          Math's
                                                             54
                                                                      30
                                                                                 30
                                                                                           67
                        Antoniou V
                                     Computer Sc
                                                             76
                                                                      70
                                                                                 70
                                                                                           89
                           Archy J
                                       Economics
                                                             76
                                                                      40
                                                                                 40
                                                                                           78
          7
          8
                      Armstrong B
                                          Math's
                                                             86
                                                                      30
                                                                                 40
                                                                                           68
                10 Arvanitakis I
                                         Physics
                                                                                 80
                                                                                           90
            Remarks
                Pass
                Pass
          1
                Fail
          2
          3
                Pass
          4
                Pass
          5
                Fail
          6
          7
                Fail
          8
          9
                Pass
In [39]: #inserting a new column in an existing dataframe without using insert function
          English =[96,75,88,80,45,67,89,78,68,90]
          STUDENT_DATA['English']=English
          print(STUDENT_DATA)
              Roll
                          Students
                                     Department General Sc.
                                                                 Math's
                                                                         Computer Remarks \
          0
                         Agarwal V
                                     Computer Sc
                                                             78
                                                                      80
                                                                                 66
                                                                                        Pass
                 1
                           Agnew P
                                     .
Computer Sc
                                                             45
                                                                      78
                                                                                 66
                                                                                        Pass
          1
          2
                 3
                           Ahmad H
                                      Statistics
                                                             78
                                                                      30
                                                                                 50
                                                                                        Fail
                     Alambritis G
                                                                                 70
          3
                                         Physics
                                                             65
                                                                      68
                                                                                        Pass
                           Allen J
                                       Economics
                                                             87
                                                                      50
                                                                                 60
                                                                                        Pass
                                          Math's
                                                             54
                                                                      30
                                                                                 30
                                                                                        Fail
                 6
                         Anthony A
                        Antoniou V
                                     Computer Sc
                                                             76
                                                                      70
                                                                                 70
          6
                 8
                           Archy J
                                                             76
                                                                      40
                                                                                 40
                                                                                        Fail
                                       Economics
                      Armstrong B
                                          Math's
                                                                      30
                                                                                 40
          8
                 9
                                                             86
          9
                10 Arvanitakis I
                                         Physics
                                                             68
                                                                      70
                                                                                 80
                                                                                        Pass
             English
          0
                   96
                   75
          1
          2
                   88
          3
                   80
          4
                   45
          5
                   67
          6
                   89
          7
                   78
          8
                   68
          9
                   90
```

```
STUDENT_DATA = pd.read_csv(r"C:\Users\HP\Downloads\lab 2\StudentDataSet2.csv")
          STUDENT_DATA.loc[4]=[5,'Vishal','Computer Sc',88,97,100,'Pass']
          print(STUDENT_DATA)
             Roll
                         Students
                                    Department General Sc. Math's Computer Remarks
          0
                                   Computer Sc
                        Agarwal V
                                                           78
                          Agnew P
                                   Computer Sc
                                                           45
                                                                    78
                2
                                                                              66
                                                                                    Pass
                                    Statistics
                          Ahmad H
                                                           78
                                                                              50
                                                                                    Fail
                                                                              70
          3
                    Alambritis G
                                        Physics
                                                           65
                                                                   68
                                                                                     Pass
                                                                    97
                           Vishal
                                   Computer Sc
                                                           88
                                                                             100
                                                                                     Pass
          5
                6
                       Anthony A
                                        Math's
                                                           54
                                                                    30
                                                                              30
                                                                                    Fail
                      Antoniou V
                                   Computer Sc
                                                           76
                                                                    70
                                                                              70
          6
                         Archy J
                                     Economics
                                                                    40
                                                                              40
                8
                                                           76
                                                                                    Fail
          8
                9
                     Armstrong B
                                        Math's
                                                           86
                                                                    30
                                                                              40
               10 Arvanitakis I
                                       Physics
                                                                    70
                                                                              80
                                                                                    Pass
          9
                                                           68
In [44]: #concatenation of two dataframes using concat function
          'General Sc': [78,45,78,65,87],
                          'Maths':[80,78,30,68,50],
                          'Computer':[66,66,50,70,60],
'Remarks':['Pass','Pass','Fail','Pass','Pass']}
          StudentData2 = { 'Roll': [6,7,8,9,10],
                          'Student':['Anthony A','Antoniou V','Archy J','Armstrong B','Arvanitakis I'],
'Department':['Maths','Computer Sc','Economics','Math','Physics'],
'General Sc': [54,76,76,86,68],
                          'Maths':[30,70,40,30,70],
                          'Computer':[30,70,40,40,80],
'Remarks':['Fail','?','Fail','?','Pass']}
          STUDENT_DATA1=pd.DataFrame(StudentData1)
          STUDENT DATA2=pd.DataFrame(StudentData2)
          STUDENT_DATA = pd.concat([STUDENT_DATA1,STUDENT_DATA2],ignore_index=True)
         print(STUDENT_DATA)
                                   Department General Sc Maths Computer Remarks
             Roll
                         Student
          0
                       Agarwal V
                                   Computer Sc
                                                                                  Pass
                                                          78
                                                                 80
                                                                            66
                1
                          Agnew P
                                   Computer Sc
                                                                 78
                                                                                  Pass
          1
                2
                                                          45
                                                                            66
                         Ahmad H
                                    Statistics
                                                                                  Fail
          2
                3
                                                          78
                                                                 30
                                                                            50
                    Alambritis G
                                       Physics
                                                                            70
                                                          65
                                                                 68
                                                                                  Pass
          3
                4
          4
                5
                         Allen 1
                                     Economics
                                                          87
                                                                 50
                                                                            60
                                                                                  Pass
                                                                            30
          5
                6
                       Anthony A
                                         Maths
                                                          54
                                                                 30
                                                                                  Fail
                      Antoniou V
                                   Computer Sc
                                                          76
                                                                 70
                                                                            70
          6
                7
                8
                         Archy J
                                     Economics
                                                          76
                                                                 40
                                                                            40
                                                                                  Fail
          8
                9
                     Armstrong B
                                          Math
                                                          86
                                                                 30
                                                                            40
          9
               10 Arvanitakis I
                                        Physics
                                                          68
                                                                 70
                                                                            80
                                                                                  Pass
In [51]: # To evaluate percentage and display it in a separate column
          STUDENT_DATA = pd.read_csv(r"C:\Users\HP\Downloads\lab 2\StudentDataSet2.csv")
          Percentage =(STUDENT_DATA['General Sc.']+
                       `STUDENT_DATA['Maths']+
                       STUDENT DATA['Computer'])/3
          STUDENT_DATA['Percentage']=Percentage
         print(STUDENT_DATA)
                                    Department General Sc.
                                                                      Computer Remarks ∖
             Roll
                        Students
                                                               Maths
          0
                1
                        Agarwal V
                                   Computer Sc
                                                           78
                                                                  80
                                                                             66
                                                                                   Pass
          1
                2
                          Agnew P
                                   Computer Sc
                                                           45
                                                                  78
                                                                             66
                                                                                   Pass
          2
                3
                          Ahmad H
                                    Statistics
                                                           78
                                                                  30
                                                                             50
                                                                                   Fail
          3
                    Alambritis G
                                        Physics
                                                           65
                                                                  68
                                                                             70
                                                                                   Pass
          4
                         Allen J
                                     Economics
                                                           87
                                                                  50
                                                                             60
                                                                                   Pass
          5
                6
                       Anthony A
                                        Math's
                                                           54
                                                                  30
                                                                             30
                                                                                   Fail
                      Antoniou V
                                   Computer Sc
                                                           76
                                                                  70
                                                                             70
          6
          7
                8
                          Archy J
                                     Economics
                                                           76
                                                                  40
                                                                             40
                                                                                    Fail
          8
                q
                     Armstrong B
                                        Math's
                                                           86
                                                                  30
                                                                             40
               10 Arvanitakis I
                                        Physics
                                                                  70
                                                                             80
                                                                                   Pass
          9
             Percentage
          0
              74.666667
              63.000000
              52.666667
          2
              67.666667
          4
              65.666667
              38.000000
          6
              72.000000
              52.000000
          8
              52.000000
              72.666667
```

In [43]: #inserting a new row in an existing dataframe using loc function#