```
1 #mount google drive
  3 from google.colab import drive
  4 drive.mount('/content/drive')
Error Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mount("/content/drive", force_remount=True).
Use the following code to upload the file from your local machine:
 from google.colab import files
uploaded = files.upload()
After uploading, read the file into a Pandas DataFrame:
 import pandas as pd
dataframe = pd.read csv('student.csv')
 dataframe```
  1 #import pandas
  2 import pandas as pd
  1 import pandas as pd
  3 # Replace with the actual path to your file
   \texttt{4 file\_path = '} \underline{/content/drive/MyDrive/JustIT\_Python/pandas/Resources/Copy} \ of \ student.csv' 
  5 df = pd.read_csv(file_path)
  6 print(df)
∓
        id
                   name class mark
                                       gender
               John Deo
                                       female
         1
                          Four
                                   75
    1
               Max Ruin
                          Three
                                   85
                                         male
    2
         3
                 Arnold Three
                                   55
                                         male
    3
         4
             Krish Star
                           Four
                                   60 female
    4
         5
               John Mike
                           Four
                                   60 female
    5
         6
              Alex John
                           Four
                                   55
                                         male
            My John Rob
                          Fifth
                 Asruid
                           Five
                                   85
                                         male
                 Tes Qry
                                          NaN
    8
         9
                            Six
                                   78
    9
        10
                           Four
                                   55 female
                Big John
    10
        11
                  Ronald
                           Six
                                   89
                                       female
                   Recky
                                   94
    11
        12
                            Six
                                       female
    12
        13
                    Kty
                          Seven
                                   88
                                       female
    13
        14
                    Bigy
                          Seven
                                   88 female
    14
        15
                Tade Row
                            NaN
                                   88
                                         male
    15
        16
                   Gimmy
                           Four
                                   88
                                         male
    16
        17
                   Tumyu
                            Six
                                   54
                                         male
                           Five
    17
        18
                   Honny
                                   75
    18
        19
                   Tinny
                           Nine
                                   18
                                         male
                  Jackly
                                   65 female
    19
        20
                           Nine
    20
        21
             Babby John
                           Four
                                   69
                                       female
    21
        22
                  Reggid
                          Seven
                                   55 female
    22
        23
                  Herod
                          Eight
                                   79
                                         male
    23
        24
               Tiddy Now
                          Seven
                                   78
                                         male
                Giff Tow
    24
        25
                          Seven
                                   88
                                         male
    25
        26
                 Crelea
                          Seven
                                   79
                                         male
    26
        27
                     NaN
                          Three
                                   81
                                          NaN
    27
        28
               Rojj Base
                          Seven
                                   86
                                      female
        29 Tess Played
    28
                          Seven
                                   55
                                         male
                                   79 female
        30
              Reppy Red
                            Six
    30
        31 Marry Toeey
                           Four
                                   88
                                         male
    31
              Binn Rott Seven
                                   90 female
        32
    32
        33
               Kenn Rein
                           Six
                                   96
                                      female
    33
        34
               Gain Toe Seven
                                   69
                                         male
        35
             Rows Noump
                                   88 female
    34
                            Six
```

Inspecting Data

Lets try and see what methods are available to us to inspect datasets

```
1 #head() by default shows the top five rows of the dataset
 2 print(df.head())
₹
                                     gender
       id
                  name
                        class mark
    0
        1
              John Deo
                        Four
                                 75
                                     female
    1
         2
              Max Ruin
                        Three
                                 85
                                       male
        3
                Arnold
                        Three
                                 55
                                       male
    3
        4
           Krish Star
                         Four
                                 60
                                     female
            John Mike
                        Four
                                 60
                                     female
 1 df.head(5)
₹
        id
                name class mark gender
     0
            John Deo
         1
                        Four
                               75
                                    female
             Max Ruin
                       Three
                               85
                                      male
     2
         3
               Arnold
                       Three
                               55
                                      male
            Krish Star
                        Four
                               60
                                    female
     4 5 John Mike
                        Four
                               60
                                    female
 1 #you can view amount of rows if you insert number into brackets
 2 df.head(10)
₹
        id
                   name class mark gender
     0
         1
               John Deo
                          Four
                                  75
                                      female
         2
               Max Ruin Three
     1
                                  85
                                        male
     2
         3
                  Arnold Three
                                  55
                                        male
     3
               Krish Star
         4
                          Four
                                  60
                                       female
               John Mike
                          Four
                                  60
                                       female
     5
         6
               Alex John
                          Four
                                  55
                                        male
     6
         7 My John Rob
                          Fifth
                                  78
                                        male
     7
         8
                  Asruid
                           Five
                                  85
                                        male
     8
         9
                 Tes Qry
                           Six
                                  78
                                        NaN
     9 10
                Big John
                          Four
                                  55
                                      female
 1 #if there is a head there is a tail
  2 #by default it shows the last five rows
 3 df.tail()
→
         id
                    name
                          class mark
                                       gender
     30 31
              Marry Toeey
                            Four
                                   88
                                         male
     31 32
                 Binn Rott Seven
                                   90
                                        female
     32 33
                Kenn Rein
                             Six
                                   96
                                        female
     33 34
                 Gain Toe Seven
                                   69
                                         male
     34 35 Rows Noump
                             Six
                                   88
                                        female
 1 #checking for basic information using info()
 2 df.info()
    <class 'pandas.core.frame.DataFrame'>
    RangeIndex: 35 entries, 0 to 34
    Data columns (total 5 columns):
     # Column Non-Null Count Dtype
                  35 non-null
                                  int64
     0
         id
     1
         name
                  34 non-null
                                  object
         class
                  34 non-null
                                  object
         mark
                  35 non-null
                                  int64
         gender 33 non-null
                                  object
    dtypes: int64(2), object(3)
    memory usage: 1.5+ KB
 1 # inspecting summary statistics
  2 print(df.describe())
 4 df.describe()
```

€	count mean std min 25% 50% 75% max	id 35.000000 18.000000 10.246951 1.000000 9.500000 18.000000 26.500000 id	mark 35.000000 74.657143 16.401117 18.000000 62.500000 79.000000 88.000000 96.0000000 mark
	count	35.000000	35.000000
	mean	18.000000	74.657143
	std	10.246951	16.401117
	min	1.000000	18.000000
	25%	9.500000	62.500000
	50%	18.000000	79.000000
	75%	26.500000	88.000000
	max	35.000000	96.000000

1 #checking for missing values one by one
2 df.isnull()



	id	name	class	mark	gender
0	False	False	False	False	False
1	False	False	False	False	False
2	False	False	False	False	False
3	False	False	False	False	False
4	False	False	False	False	False
5	False	False	False	False	False
6	False	False	False	False	False
7	False	False	False	False	False
8	False	False	False	False	True
9	False	False	False	False	False
10	False	False	False	False	False
11	False	False	False	False	False
12	False	False	False	False	False
13	False	False	False	False	False
14	False	False	True	False	False
15	False	False	False	False	False
16	False	False	False	False	False
17	False	False	False	False	False
18	False	False	False	False	False
19	False	False	False	False	False
20	False	False	False	False	False
21	False	False	False	False	False
22	False	False	False	False	False
23	False	False	False	False	False
24	False	False	False	False	False
25	False	False	False	False	False
26	False	True	False	False	True
27	False	False	False	False	False
28	False	False	False	False	False
29	False	False	False	False	False
30	False	False	False	False	False

```
1 #checking for missing values
 2 df.isnull().sum()
     34 False False False
                                  False
       id
            0
      name 1
      class
      mark 0
     gender 2
    dtype: int64
 1 \#checking for summary of the missing values
 2 df.isnull().sum().sum()
→▼ 4
 1 #inspecting the rows v column
 2 df.shape
→ (35, 5)
 1 #checking for unique values in a column
 2 df['gender'].unique()
⇒ array(['female', 'male', nan], dtype=object)
 1 #finding duplicates in the data
 2 df.duplicated().sum() #this checks for duplicated rows
→ 0
 1 #sorting for the top marks achieved by students
 2 df.sort_values(by='mark', ascending=False) #by default its ascending (which is when its not included)
 3 #descending does not exist so it is written ascending=False
```

_0, _	– .					
_		id	name	class	mark	gender
	32	33	Kenn Rein	Six	96	female
	11	12	Recky	Six	94	female
	31	32	Binn Rott	Seven	90	female
	10	11	Ronald	Six	89	female
	24	25	Giff Tow	Seven	88	male
	15	16	Gimmy	Four	88	male
	14	15	Tade Row	NaN	88	male
	13	14	Bigy	Seven	88	female
	12	13	Kty	Seven	88	female
	34	35	Rows Noump	Six	88	female
	30	31	Marry Toeey	Four	88	male
	27	28	Rojj Base	Seven	86	female
	7	8	Asruid	Five	85	male
	1	2	Max Ruin	Three	85	male
	26	27	NaN	Three	81	NaN
	22	23	Herod	Eight	79	male
	29	30	Reppy Red	Six	79	female
	25	26	Crelea	Seven	79	male
	8	9	Tes Qry	Six	78	NaN
	6	7	My John Rob	Fifth	78	male
	23	24	Tiddy Now	Seven	78	male
	0	1	John Deo	Four	75	female
	17	18	Honny	Five	75	male
	20	21	Babby John	Four	69	female
	33	34	Gain Toe	Seven	69	male
	19	20	Jackly	Nine	65	female
	4	5	John Mike	Four	60	female
	3	4	Krish Star	Four	60	female
	21	22	Reggid	Seven	55	female
	9	10	Big John	Four	55	female
				_		

^{1 #}sorting for the top 10 students by mark

28 29 Tess Played Seven

55

male

₹	16	17	Тирукц	cla ^{Si} š	ma ⁵ k	gender
	32	33	Kenn Rein	Six	96	female
	11	12	Recky	Six	94	female
	31	32	Binn Rott	Seven	90	female
	10	11	Ronald	Six	89	female
	24	25	Giff Tow	Seven	88	male
	15	16	Gimmy	Four	88	male
	14	15	Tade Row	NaN	88	male
	13	14	Bigy	Seven	88	female
	12	13	Kty	Seven	88	female
	34	35	Rows Noump	Six	88	female

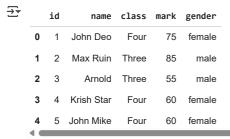
² df.sort_values(by='mark', ascending=False).head(10)

^{1 #}sorting by multiple columns with different ordering
2 df.sort_values(by=['mark', 'id'], ascending=[False, True])

Show hidden output

4 John Mike

1 df.head()



Locating data .iloc() and .loc()

.loc is label based way of retreiving data from the dataframe

.iloc is interger based way of retreiving data from the dataframe

v Locating data .iloc[] and .loc[]

Lesson Plan: Understanding .loc and .iloc in Pandas

Course: Data Technician - Python for Data Analysis

Day: 3

Duration: 1 Hour

Teaching Style: Hands-on with explanations and real dataset usage

Lesson Objectives

By the end of this lesson, learners will be able to:

- 1. Understand the difference between .loc and .iloc.
- 2. Retrieve specific rows and columns using $\mbox{.loc}$ and $\mbox{.iloc}\,.$
- 3. Apply filtering techniques to extract meaningful data.
- 4. Practice .loc and .iloc using the Student Dataset.

1. Introduction: What are .loc and .iloc?

When working with large datasets in Pandas, we often need to select specific rows and columns.

This can be done using:

- .loc[] → Selects data by label (name of the row or column).
- 2. .iloc[] \rightarrow Selects data by position (row or column index number).

Think of it as:

- .1oc \rightarrow Uses **explicit labels** (like column names or row labels).
- .iloc \rightarrow Uses integer-based indexing (position numbers).

2. Key Differences Between .loc and .iloc

.iloc[]

Feature

.loc[]

```
Selection Type
                        Label-based (row/column name)
                                                          Position-based (row/column index)
 Index Type
                         Works with row names/column names Works with integer index
 Inclusive Range?
                        Yes, includes both start and end index No, excludes the last index
 Example (Row 1 to 3)
                         df.loc[1:3] \rightarrow Includes row 3
                                                          df.iloc[1:3] \rightarrow Excludes row 3
                         df.loc[2] → Selects row 2
                                                          df.iloc[2] → Selects row 2
 Selecting Single Row
                                                          df.iloc[:, 2] (if 'mark' is column 2)
                        df.loc[:, 'mark']
 Selecting Single Column
 Filtering with Conditions? Yes
                                                          No 🗙
  1 row_data =df.loc[2]
  2 print(row_data)
    id
<del>_</del>__
                 Arnold
     name
                  Three
     class
     mark
                     55
     gender
                   male
     Name: 2, dtype: object
 1 subset_data =df.iloc[0:2, 0:2]
  2 print(subset_data)
\overline{\Sigma}
        id
                  name
     0
         1 John Deo
         2
             Max Ruin
 1 #using .loc i want to access row 10
  2 df.loc[10]
10
        id
                    11
       name
               Ronald
       class
                   Six
       mark
                    89
      gender female
     dtvne: object
  1 #selecting multiple rows
  2 df.loc[[0,1,2,3]]
\overline{2}
         id
                  name class mark gender
      0
          1
             John Deo
                           Four
                                    75
                                         female
      1
          2
              Max Ruin
                          Three
                                    85
                                           male
      2
          3
                 Arnold
                                    55
                                           male
                          Three
      3
          4 Krish Star
                           Four
                                    60
                                         female
  1 #selecting multiple rows from a range
 2 df.loc[3:8] #in label based, the row 8 will be included
₹
         id
                      name class mark gender
      3
          4
                 Krish Star
                              Four
                                            female
          5
                 John Mike
                              Four
                                       60
      4
                                            female
      5
          6
                 Alex John
                              Four
                                       55
                                              male
      6
          7
             My John Rob
                               Fifth
                                       78
                                              male
      7
          8
                    Asruid
                               Five
                                       85
                                              male
      8
         9
                   Tes Qry
                                Six
                                       78
                                              NaN
  1 #accessing a specific column
```

2 df.loc[:, "gender"]

```
→
         gender
      0
         female
      1
           male
      2
           male
      3
          female
          female
      5
           male
      6
           male
      7
           male
      8
           NaN
      9
          female
     10
          female
     11
          female
     12
          female
     13
          female
     14
           male
     15
           male
     16
           male
     17
           male
     18
           male
     19
          female
     20
          female
     21
          female
     22
           male
     23
           male
     24
           male
     25
           male
     26
            NaN
     27
          female
     28
           male
     29
          female
     30
           male
 1 #accessing multiple columns
 2 df.loc[:, ['name', 'mark']]
    38 ow hirdelen output
 1 #accessing rows and columns
 2 df.loc[[1,2,3], ['gender', 'mark']]
₹
        gender mark
     1
          male
                  85
     2
                  55
          male
     3 female
                  60
 1 #accessing rows and columns using range for rows
 2 df.loc[0:3, ['gender', 'mark']]
₹
        gender mark
     0 female
                  75
     1
          male
                  85
     2
          male
                  55
     3 female
                  60
```

```
1 #filtering data with conditions
2 df.loc[df['mark'] > 80].head()
```

```
₹
                name class mark gender
      1
          2 Max Ruin
                      Three
                               85
                                     male
     7
          8
               Asruid
                        Five
                               85
                                     male
     10
        11
              Ronald
                         Six
                               89
                                   female
     11 12
               Recky
                               94
                         Six
                                   female
     12 13
                  Kty Seven
                               88
                                   female
```

1 #filtering data with multiple conditions

2 #showing marks from class seven for females only

3 df.loc[(df['gender'] == 'female') & (df['class'] == 'Seven')]

```
₹
         id
                name class mark gender
     12 13
                 Kty Seven
                              88
                                  female
     13 14
                Bigy Seven
                              88
                                  female
     21 22
              Reggid Seven
                              55
                                  female
     27 28 Rojj Base Seven
                              86
                                  female
     31 32 Binn Rott Seven
                              90
                                  female
```

1 df.loc[(df["class"] == "Four")]

```
<del>_</del>
          id
                     name class mark
                                         gender
      0
                John Deo
           1
                            Four
                                     75
                                          female
                Krish Star
                            Four
                                     60
                                          female
                John Mike
      4
           5
                            Four
                                     60
                                          female
                Alex John
                            Four
                                     55
                                           male
      9
          10
                 Big John
                            Four
                                     55
                                          female
      15 16
                   Gimmy
                            Four
                                     88
                                           male
      20 21
              Babby John
                            Four
                                     69
                                          female
      30 31 Marry Toeey
                            Four
                                     88
                                           male
```

^{1 #}select specific columns

² df[['name', 'mark']]

→

	name	mark
0	John Deo	75
1	Max Ruin	85
2	Arnold	55
3	Krish Star	60
4	John Mike	60
5	Alex John	55
6	My John Rob	78
7	Asruid	85
8	Tes Qry	78
9	Big John	55
10	Ronald	89
11	Recky	94
12	Kty	88
13	Bigy	88
14	Tade Row	88
15	Gimmy	88
16	Tumyu	54
17	Honny	75
18	Tinny	18
19	Jackly	65
20	Babby John	69
21	Reggid	55
22	Herod	79
23	Tiddy Now	78
24	Giff Tow	88
25	Crelea	79
26	NaN	81
27	Rojj Base	86
28	Tess Played	55
29	Reppy Red	79
30	Marry Toeey	88

¹ $\mbox{\tt\#}$ add a new column based on condition

Gaiii iuc JJ υσ class mark gender passed 34 Rows Noump 0 1 John Deo FOUR 75 female True I 1 2 Max Ruin THREE 85 True male **2** 3 Arnold THREE 55 False male 3 4 Krish Star FOUR 60 female True 4 5 John Mike FOUR 60 female True

² df["passed"] = df["mark"] >= 60

³ df.head()

^{1 #}add a new column with filled info

² df["new"] = "stuff"

³ df.head()

```
₹
        id
                name
                        class score gender new new2
     0
         1
            John Deo
                       FOUR
                                  75
                                      female
                                              stuff
                                                    stuff
            Max Ruin THREE
     1
         2
                                  85
                                        male
                                              stuff
                                                    stuff
     2
         3
                      THREE
               Arnold
                                  55
                                        male
                                             stuff
                                                    stuff
     3
            Krish Star
                       FOUR
         4
                                  60
                                      female
                                              stuff
                                                    stuff
     4
         5 John Mike
                       FOUR
                                  60
                                      female stuff
                                                    stuff
 1 # rename column
 2 df = df.rename(columns={"mark" : "score"})
 3 df.head()
₹
        id
                        class score gender passed
     0
                       FOUR
        1
            John Deo
                                  75
                                      female
                                                True
            Max Ruin THREE
         2
                                  85
     1
                                        male
                                                True
     2
         3
               Arnold
                      THREE
                                  55
                                        male
                                               False
     3
         4
            Krish Star
                       FOUR
                                  60
                                      female
                                                True
     4
        5 John Mike
                       FOUR
                                  60
                                      female
                                                True
 1 # IGNORE to revert column back to original
 2 df = df.rename(columns={"score" : "mark"})
 3 df.head()
₹
    Show hidden output
 1 # dropping column - removing a column
 2 df = df.drop(columns=["passed"])
 3 df.head()
 4 #once it is run it can't be repeated since the column has been dropped and does not exist to run again
<del>-</del>-
    Show hidden output
 1 # dropping columns - removing multiple columns
 2 df = df.drop(columns=["new", "new2"])
 3 df.head()
 4 #once it is run it can't be repeated since the columns have been dropped and does not exist to run again
∓
        id
                 name
                       class score gender
            John Deo
                        FOUR
                                      female
     1
         2
            Max Ruin THREE
                                  85
                                        male
     2
         3
               Arnold
                      THREE
                                  55
                                        male
     3
         4
            Krish Star
                       FOUR
                                  60
                                      female
     4
                       FOUR
         5 John Mike
                                  60
                                      female
 1 #group df by "class" and calculating the mean "mark" for each group
 2 df.groupby("class")["mark"].mean()
₹
                 mark
      class
      Eight 79.000000
      Fifth
            78.000000
      Five
            80.000000
      Four
            68.750000
      Nine
            41.500000
      Seven 77.600000
       Six
            82 571429
      Three 73.666667
    dtvpe: float64
```

```
1 # count of students in each class
 2 df["class"].value_counts()
             count
      class
      Seven
                 10
      Four
                 8
       Six
                 7
      Three
                 3
      Five
                 2
      Nine
      Fifth
      Eight
    dtvne: int64
 1 # average "mark" for each "gender"
 2 df.groupby("gender")["mark"].mean()
<del>_</del>
                   mark
      gender
      female 77.312500
      male 71.588235
     dtvne: float64
```

Integer based selection

Using .iloc

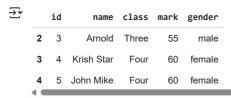
1 #accessing single row by index position
2 df.iloc[3]



dtvne: object

1 #selecting a range of rows

2 df.iloc[2:5] #exclusive of row 5



1 #selecting a column using .iloc

2 df.iloc[:, 2]



→ Student Activity Questions

- 1. use loc to slect row where marks are greater than 85
- 2. use iloc to select the first 10 rows
- 3. use .loc to select name and mark column for al students
- 4. use .iloc to selelct teh first three columns

```
1 #use .loc to select row where marks are greater than 85
 2 df.loc[df["mark"] > 85]
         id
                     name class mark
                                        gender
     10 11
                   Ronald
                              Six
                                    89
                                         female
     11 12
                              Six
                    Recky
                                    94
                                         female
     12 13
                      Kty
                           Seven
                                    88
                                         female
     13 14
                     Bigy
                           Seven
                                    88
                                         female
     14 15
                 Tade Row
                                    88
                            NaN
                                          male
     15 16
                   Gimmy
                            Four
                                    88
                                          male
     24 25
                  Giff Tow
                          Seven
                                    88
                                          male
     27 28
                 Rojj Base
                           Seven
                                    86
                                         female
     30 31
              Marry Toeey
                            Four
                                    88
                                          male
     31 32
                 Binn Rott Seven
                                    90
                                         female
     32 33
                Kenn Rein
                                    96
                              Six
                                         female
     34 35 Rows Noump
                              Six
                                    88
                                         female
 1 #use .iloc to select the first 10 rows
 2 df.iloc[0:10]
<del>____</del>
        id
                    name class mark gender
               John Deo
                           Four
                                   75
                                       female
     1
         2
               Max Ruin Three
                                   85
                                         male
     2
         3
                         Three
                  Arnold
                                   55
                                         male
     3
         4
               Krish Star
                           Four
                                   60
                                       female
     4
         5
               John Mike
                           Four
                                   60
                                       female
         6
               Alex John
                           Four
                                         male
         7
           My John Rob
                           Fifth
                                   78
                                         male
                           Five
                                   85
                  Asruid
                                         male
     8
         9
                 Tes Qry
                            Six
                                   78
                                         NaN
     9 10
                Big John
                           Four
                                   55
                                       female
 1 #use .loc to select name and mark column for all students
 2 df.loc[:,["name", "mark"]]
     Show hidden output
 1 #use .iloc to select the first three columns
 2 df.iloc[:,0:3].head()
₹
        id
                 name class
     0
        1 John Deo
                        Four
     1
         2
            Max Ruin
                       Three
     2
         3
               Arnold
                       Three
         4
            Krish Star
                        Four
         5 John Mike
 1 Start coding or generate with AI.
```

Hands-On Activity: Extracting Data from the Student Dataset

Task 1: Extract Specific Rows

- 1. Use .loc[] to select rows where the mark is greater than 85.
- 2. Use .iloc[] to select the first 10 rows.

* Expected Code, Task 1:

```
# Using .loc
df.loc[df['mark'] > 85]
# Using .iloc
df.iloc[:10]
```

Task 2: Select Specific Columns

```
1. Use .loc[] to select "name" and "mark" columns for all students.
```

2. Use .iloc[] to select the first 3 columns.

* Expected Code, Task 2:

```
# Using .loc
df.loc[:, ['name', 'mark']]
# Using .iloc
df.iloc[:, :3]
```

→ Task 3: Filtering Based on Conditions

- 1. Select all female students who scored more than 75 using .loc[].
- 2. Find students from index 10 to 20 and select only name and mark using .iloc[].

★ Expected Code, Task 3:

```
# Using .loc
df.loc[(df['gender'] == 'female') & (df['mark'] > 75)]
# Using .iloc
df.iloc[10:21, [1, 3]] # 1st and 3rd column (name and mark)
```

→ Bonus Task: Sorting & Filtering

- Find top 5 students based on marks using .loc[] and sort_values().
- Find students from the last 5 rows using .iloc[].

* Expected Code, Bonus Task:

```
# Top 5 students using .loc and sorting
df.loc[:, ['name', 'mark']].sort_values(by='mark', ascending=False).head(5)
# Last 5 students using .iloc
df.iloc[-5:]
```

6. Summary

Feature	.loc[]	.iloc[]	
Selection Type	Label-based (column/row names)	Index-based (position numbers)	
Includes Last Index?	Yes 🔽	No 🗙	
Supports Filtering?	Yes 🔽	No 🗙	
Best For?	Named columns/rows	Numerical indexing	

7. Assessment & Discussion

Quiz Questions

- 1. How do you select only the **name** and **mark** columns using .loc[]?
- 2. How do you select the first 5 rows using .iloc[]?
- 3. What is the difference between .loc[] and .iloc[]?
- 4. How do you select all students with marks **greater than 80** using .loc[]?
- 5. How do you use .iloc[] to get the last 3 rows?

Discussion

- When should you use .loc[] instead of .iloc[]?
- Why does .iloc[] **exclude** the last index?

8. Further Learning

dtvne: int64

- Pandas Documentation \rightarrow Pandas .loc and .iloc
- Interactive Pandas Exercise → Kaggle Pandas Course
- Python for Data Analysis Book \rightarrow O'Reilly Pandas Guide

```
1 #filling missing values in gender column with "not specified"
2 df["gender"].fillna("not specified", inplace=True)
3 df
```

₹		id	name	class	mark	gender
	0	1	John Deo	Four	75	female
	1	2	Max Ruin	Three	85	male
	2	3	Arnold	Three	55	male
	3	4	Krish Star	Four	60	female
	4	5	John Mike	Four	60	female

- 1 #replacing missing values in "mark" column with mean of all the values in the "mark" column
- 2 #one step method
- 3 #two step method

1 #fill missing values

2 df["class"].fillna("Unknown", inplace=True)

3 df

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1 #removing duplicates

2 df.drop_duplicates(inplace=True)

3 df

13 14 Bigy Seven 88 female

1 #inconsistent data

2 df['class'] = df['class'].str.upper()

3 df

₹

a	Т					
	16	17 id	Tumyu name	Six class	54 mark	male gender
	0	1	John Deo	FOUR	75	female
	18 1	2	Max Ruin	ININE THREE	85	male male
	2	3	Arnold	THREE	55	male
	20 3	21 4	варру Jonn Krish Star	⊦our FOUR	60	тетаіе female
	4	5	John Mike	FOUR	60	female
	5	23 6	Heroa Alex John	⊑ignt FOUR	79 55	male male
	6	7	My John Rob	FIFTH	78	male
	24 7	∠5 8	GIII IOW Asruid	Seven FIVE	85	male male
	8	9	Tes Qry	SIX	78	not specified
	∠υ 9	10	inain Big John	FOUR	81 55	not specified female
	10	11	Ronald	SIX	89	female
	∠ŏ 11	29 12	ress Played Recky	Seven SIX	94 70	maie female
	12	13	Kty	SEVEN	88	female
	30 13	31 14	warry roeey Bigy	SEVEN	88	male female
	14	15	Tade Row	NaN	88	male
	3∠ 15	33 16	Kenn Kein Gimmy	FOUR	88 88	remaie male
	16	17	Tumyu	SIX	54	male
	44	45	RUMS MUTIMU	SIV	××	temale