In [1]:
```
import pandas as pd
```

In [2]:
```
import numpy as np
```

In [3]:
```
import matplotlib.pyplot as plt
```

In [4]:
```
import seaborn as sns
```

In [11]:
```
df = pd.read_csv('Academic-Performance-Dataset.csv')
```

In [12]:
```
df
```

Out[12]:

	Rollno	Name	Gender	Branch	Attendence	Phy_marks	Che_marks	EM1_marks	P
0	1	Mohammed	M	Comp	72	62.0	98.0	63.0	
1	2	Reyansh	M	IT	58	62.0	83.0	83.0	
2	3	Aarav	M	IT	57	-20.0	100.0	NaN	
3	4	Atharv	M	IT	60	89.0	83.0	70.0	
4	5	Vivaan	M	Comp	85	90.0	NaN	78.0	
5	6	Advik	M	ENTC	94	99.0	84.0	100.0	
6	7	Ansh	M	ENTC	98	88.0	95.0	81.0	
7	8	Ishaan	M	ENTC	75	66.0	51.0	83.0	
8	9	Dhruv	M	ENTC	63	NaN	NaN	97.0	
9	10	Siddharth	M	ENTC	96	67.0	78.0	95.0	
10	11	Vihaan	M	ENTC	82	54.0	70.0	88.0	
11	12	NaN	M	IT	75	64.0	67.0	71.0	
12	13	Aarush	M	IT	67	56.0	81.0	NaN	
13	14	Leo	M	IT	98	-34.0	70.0	94.0	
14	15	Maryam	F	IT	64	87.0	60.0	90.0	
15	16	Saanvi	F	Comp	66	90.0	95.0	67.0	
16	17	Zaranew	F	Comp	93	54.0	NaN	75.0	
17	18	Inaya	F	Comp	74	67.0	93.0	93.0	
18	19	Aarya	F	Comp	72	88.0	84.0	81.0	
19	20	NaN	F	Comp	53	76.0	81.0	93.0	

In [13]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 20 entries, 0 to 19
Data columns (total 12 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   Rollno       20 non-null     int64  
 1   Name         18 non-null     object 
 2   Gender       20 non-null     object 
 3   Branch       20 non-null     object 
 4   Attendence   20 non-null     int64  
 5   Phy_marks    19 non-null     float64
 6   Che_marks    17 non-null     float64
 7   EM1_marks    18 non-null     float64
 8   PPS_marks    19 non-null     float64
 9   SME_marks    20 non-null     int64  
 10  Total Marks  20 non-null     int64  
 11  Percentage   20 non-null     float64
dtypes: float64(5), int64(4), object(3)
memory usage: 2.0+ KB
```

In [14]:
```
df.dtypes.value_counts()
```

Out[14]:
```
float64    5
int64      4
object     3
Name: count, dtype: int64
```

In [15]:
```
df.isnull()
```

Out[15]:

	Rollno	Name	Gender	Branch	Attendence	Phy_marks	Che_marks	EM1_marks	PPS_n
0	False	False	False	False	False	False	False	False	
1	False	False	False	False	False	False	False	False	
2	False	False	False	False	False	False	False	True	
3	False	False	False	False	False	False	False	False	
4	False	False	False	False	False	False	True	False	
5	False	False	False	False	False	False	False	False	
6	False	False	False	False	False	False	False	False	
7	False	False	False	False	False	False	False	False	
8	False	False	False	False	False	True	True	False	
9	False	False	False	False	False	False	False	False	
10	False	False	False	False	False	False	False	False	
11	False	True	False	False	False	False	False	False	
12	False	False	False	False	False	False	False	True	
13	False	False	False	False	False	False	False	False	
14	False	False	False	False	False	False	False	False	
15	False	False	False	False	False	False	False	False	
16	False	False	False	False	False	False	True	False	
17	False	False	False	False	False	False	False	False	
18	False	False	False	False	False	False	False	False	
19	False	True	False	False	False	False	False	False	

In [16]:
```
df.notnull()
```

Out[16]:

	Rollno	Name	Gender	Branch	Attendence	Phy_marks	Che_marks	EM1_marks	PPS_n
0	True	True	True	True	True	True	True	True	
1	True	True	True	True	True	True	True	True	
2	True	True	True	True	True	True	True	False	
3	True	True	True	True	True	True	True	True	
4	True	True	True	True	True	True	False	True	
5	True	True	True	True	True	True	True	True	
6	True	True	True	True	True	True	True	True	
7	True	True	True	True	True	True	True	True	
8	True	True	True	True	True	False	False	True	
9	True	True	True	True	True	True	True	True	
10	True	True	True	True	True	True	True	True	
11	True	False	True	True	True	True	True	True	
12	True	True	True	True	True	True	True	False	
13	True	True	True	True	True	True	True	True	
14	True	True	True	True	True	True	True	True	
15	True	True	True	True	True	True	True	True	
16	True	True	True	True	True	True	False	True	
17	True	True	True	True	True	True	True	True	
18	True	True	True	True	True	True	True	True	
19	True	False	True	True	True	True	True	True	

In [17]:
```
df.isna()
```

Out[17]:

	Rollno	Name	Gender	Branch	Attendence	Phy_marks	Che_marks	EM1_marks	PPS_n
0	False	False	False	False	False	False	False	False	
1	False	False	False	False	False	False	False	False	
2	False	False	False	False	False	False	False	True	
3	False	False	False	False	False	False	False	False	
4	False	False	False	False	False	False	True	False	
5	False	False	False	False	False	False	False	False	
6	False	False	False	False	False	False	False	False	
7	False	False	False	False	False	False	False	False	
8	False	False	False	False	False	True	True	False	
9	False	False	False	False	False	False	False	False	
10	False	False	False	False	False	False	False	False	
11	False	True	False	False	False	False	False	False	
12	False	False	False	False	False	False	False	True	
13	False	False	False	False	False	False	False	False	
14	False	False	False	False	False	False	False	False	
15	False	False	False	False	False	False	False	False	
16	False	False	False	False	False	False	True	False	
17	False	False	False	False	False	False	False	False	
18	False	False	False	False	False	False	False	False	
19	False	True	False	False	False	False	False	False	

In [18]:
```
df.isna().sum()
```

Out[18]:
```
Rollno          0
Name            2
Gender          0
Branch          0
Attendence      0
Phy_marks       1
Che_marks       3
EM1_marks       2
PPS_marks       1
SME_marks       0
Total Marks     0
Percentage      0
dtype: int64
```

In [19]:
```
df.isna().sum().sum()
```

Out[19]:
```
9
```

In [20]:
```
series=pd.isnull(df["Phy_marks"])
df[series]
```

Out[20]:

	Rollno	Name	Gender	Branch	Attendence	Phy_marks	Che_marks	EM1_marks	PPS_ma
8	9	Dhruv	M	ENTC	63	NaN	NaN	97.0	

In [21]:
```
ndf=df
ndf.fillna(0,inplace=True)
ndf
```

Out[21]:

	Rollno	Name	Gender	Branch	Attendence	Phy_marks	Che_marks	EM1_marks	P
0	1	Mohammed	M	Comp	72	62.0	98.0	63.0	
1	2	Reyansh	M	IT	58	62.0	83.0	83.0	
2	3	Aarav	M	IT	57	-20.0	100.0	0.0	
3	4	Atharv	M	IT	60	89.0	83.0	70.0	
4	5	Vivaan	M	Comp	85	90.0	0.0	78.0	
5	6	Advik	M	ENTC	94	99.0	84.0	100.0	
6	7	Ansh	M	ENTC	98	88.0	95.0	81.0	
7	8	Ishaan	M	ENTC	75	66.0	51.0	83.0	
8	9	Dhruv	M	ENTC	63	0.0	0.0	97.0	
9	10	Siddharth	M	ENTC	96	67.0	78.0	95.0	
10	11	Vihaan	M	ENTC	82	54.0	70.0	88.0	
11	12	0	M	IT	75	64.0	67.0	71.0	
12	13	Aarush	M	IT	67	56.0	81.0	0.0	
13	14	Leo	M	IT	98	-34.0	70.0	94.0	
14	15	Maryam	F	IT	64	87.0	60.0	90.0	
15	16	Saanvi	F	Comp	66	90.0	95.0	67.0	
16	17	Zaranew	F	Comp	93	54.0	0.0	75.0	
17	18	Inaya	F	Comp	74	67.0	93.0	93.0	
18	19	Aarya	F	Comp	72	88.0	84.0	81.0	
19	20	0	F	Comp	53	76.0	81.0	93.0	

In [22]:
```
df = pd.read_csv('Academic-Performance-Dataset.csv')
df
```

Out[22]:

	RollNo	Name	Gender	Branch	Attendence	Phy_marks	Che_marks	EM1_marks	P
0	1	Mohammed	M	Comp	72	62.0	98.0	63.0	
1	2	Reyansh	M	IT	58	62.0	83.0	83.0	
2	3	Aarav	M	IT	57	-20.0	100.0	NaN	
3	4	Atharv	M	IT	60	89.0	83.0	70.0	
4	5	Vivaan	M	Comp	85	90.0	NaN	78.0	
5	6	Advik	M	ENTC	94	99.0	84.0	100.0	
6	7	Ansh	M	ENTC	98	88.0	95.0	81.0	
7	8	Ishaan	M	ENTC	75	66.0	51.0	83.0	
8	9	Dhruv	M	ENTC	63	NaN	NaN	97.0	
9	10	Siddharth	M	ENTC	96	67.0	78.0	95.0	
10	11	Vihaan	M	ENTC	82	54.0	70.0	88.0	
11	12	NaN	M	IT	75	64.0	67.0	71.0	
12	13	Aarush	M	IT	67	56.0	81.0	NaN	
13	14	Leo	M	IT	98	-34.0	70.0	94.0	
14	15	Maryam	F	IT	64	87.0	60.0	90.0	
15	16	Saanvi	F	Comp	66	90.0	95.0	67.0	
16	17	Zaranew	F	Comp	93	54.0	NaN	75.0	
17	18	Inaya	F	Comp	74	67.0	93.0	93.0	
18	19	Aarya	F	Comp	72	88.0	84.0	81.0	
19	20	NaN	F	Comp	53	76.0	81.0	93.0	

In [23]:
```
ndf=df
ndf['Phy_marks']=ndf['Phy_marks'].replace(np.nan,0)
ndf
```

Out[23]:

	Rollno	Name	Gender	Branch	Attendence	Phy_marks	Che_marks	EM1_marks	F
0	1	Mohammed	M	Comp	72	62.0	98.0	63.0	
1	2	Reyansh	M	IT	58	62.0	83.0	83.0	
2	3	Aarav	M	IT	57	-20.0	100.0	NaN	
3	4	Atharv	M	IT	60	89.0	83.0	70.0	
4	5	Vivaan	M	Comp	85	90.0	NaN	78.0	
5	6	Advik	M	ENTC	94	99.0	84.0	100.0	
6	7	Ansh	M	ENTC	98	88.0	95.0	81.0	
7	8	Ishaan	M	ENTC	75	66.0	51.0	83.0	
8	9	Dhruv	M	ENTC	63	0.0	NaN	97.0	
9	10	Siddharth	M	ENTC	96	67.0	78.0	95.0	
10	11	Vihaan	M	ENTC	82	54.0	70.0	88.0	
11	12	NaN	M	IT	75	64.0	67.0	71.0	
12	13	Aarush	M	IT	67	56.0	81.0	NaN	
13	14	Leo	M	IT	98	-34.0	70.0	94.0	
14	15	Maryam	F	IT	64	87.0	60.0	90.0	
15	16	Saanvi	F	Comp	66	90.0	95.0	67.0	
16	17	Zaranew	F	Comp	93	54.0	NaN	75.0	
17	18	Inaya	F	Comp	74	67.0	93.0	93.0	
18	19	Aarya	F	Comp	72	88.0	84.0	81.0	
19	20	NaN	F	Comp	53	76.0	81.0	93.0	

In [24]:
```
ndf.replace(np.nan,0)
```

Out[24]:

	Rollno	Name	Gender	Branch	Attendence	Phy_marks	Che_marks	EM1_marks	F
0	1	Mohammed	M	Comp	72	62.0	98.0	63.0	
1	2	Reyansh	M	IT	58	62.0	83.0	83.0	
2	3	Aarav	M	IT	57	-20.0	100.0	0.0	
3	4	Atharv	M	IT	60	89.0	83.0	70.0	
4	5	Vivaan	M	Comp	85	90.0	0.0	78.0	
5	6	Advik	M	ENTC	94	99.0	84.0	100.0	
6	7	Ansh	M	ENTC	98	88.0	95.0	81.0	
7	8	Ishaan	M	ENTC	75	66.0	51.0	83.0	
8	9	Dhruv	M	ENTC	63	0.0	0.0	97.0	
9	10	Siddharth	M	ENTC	96	67.0	78.0	95.0	
10	11	Vihaan	M	ENTC	82	54.0	70.0	88.0	
11	12	0	M	IT	75	64.0	67.0	71.0	
12	13	Aarush	M	IT	67	56.0	81.0	0.0	
13	14	Leo	M	IT	98	-34.0	70.0	94.0	
14	15	Maryam	F	IT	64	87.0	60.0	90.0	
15	16	Saanvi	F	Comp	66	90.0	95.0	67.0	
16	17	Zaranew	F	Comp	93	54.0	0.0	75.0	
17	18	Inaya	F	Comp	74	67.0	93.0	93.0	
18	19	Aarya	F	Comp	72	88.0	84.0	81.0	
19	20	0	F	Comp	53	76.0	81.0	93.0	

In [25]:
```
ndf=df
ndf.dropna()
```

Out[25]:

	Rollno	Name	Gender	Branch	Attendence	Phy_marks	Che_marks	EM1_marks	P
0	1	Mohammed	M	Comp	72	62.0	98.0	63.0	
1	2	Reyansh	M	IT	58	62.0	83.0	83.0	
3	4	Atharv	M	IT	60	89.0	83.0	70.0	
5	6	Advik	M	ENTC	94	99.0	84.0	100.0	
6	7	Ansh	M	ENTC	98	88.0	95.0	81.0	
7	8	Ishaan	M	ENTC	75	66.0	51.0	83.0	
10	11	Vihaan	M	ENTC	82	54.0	70.0	88.0	
13	14	Leo	M	IT	98	-34.0	70.0	94.0	
14	15	Maryam	F	IT	64	87.0	60.0	90.0	
15	16	Saanvi	F	Comp	66	90.0	95.0	67.0	
17	18	Inaya	F	Comp	74	67.0	93.0	93.0	
18	19	Aarya	F	Comp	72	88.0	84.0	81.0	

In [26]:
```
ndf1=df
ndf1.dropna(how='any')
```

Out[26]:

	Rollno	Name	Gender	Branch	Attendence	Phy_marks	Che_marks	EM1_marks	P
0	1	Mohammed	M	Comp	72	62.0	98.0	63.0	
1	2	Reyansh	M	IT	58	62.0	83.0	83.0	
3	4	Atharv	M	IT	60	89.0	83.0	70.0	
5	6	Advik	M	ENTC	94	99.0	84.0	100.0	
6	7	Ansh	M	ENTC	98	88.0	95.0	81.0	
7	8	Ishaan	M	ENTC	75	66.0	51.0	83.0	
10	11	Vihaan	M	ENTC	82	54.0	70.0	88.0	
13	14	Leo	M	IT	98	-34.0	70.0	94.0	
14	15	Maryam	F	IT	64	87.0	60.0	90.0	
15	16	Saanvi	F	Comp	66	90.0	95.0	67.0	
17	18	Inaya	F	Comp	74	67.0	93.0	93.0	
18	19	Aarya	F	Comp	72	88.0	84.0	81.0	

In [27]:
```
ndf2=df
ndf2.dropna(axis=1)
```

Out[27]:

	Rollno	Gender	Branch	Attendence	Phy_marks	SME_marks	Total Marks	Percentage
0	1	M	Comp	72	62.0	36	368	73.6
1	2	M	IT	58	62.0	34	350	70.0
2	3	M	IT	57	-20.0	36	192	38.4
3	4	M	IT	60	89.0	23	298	59.6
4	5	M	Comp	85	90.0	56	247	49.4
5	6	M	ENTC	94	99.0	99	438	87.6
6	7	M	ENTC	98	88.0	78	420	84.0
7	8	M	ENTC	75	66.0	76	192	38.4
8	9	M	ENTC	63	0.0	55	208	41.6
9	10	M	ENTC	96	67.0	98	338	67.6
10	11	M	ENTC	82	54.0	56	323	64.6
11	12	M	IT	75	64.0	87	355	71.0
12	13	M	IT	67	56.0	55	282	56.4
13	14	M	IT	98	-34.0	66	273	54.6
14	15	F	IT	64	87.0	90	392	78.4
15	16	F	Comp	66	90.0	77	428	85.6
16	17	F	Comp	93	54.0	65	284	56.8
17	18	F	Comp	74	67.0	99	439	87.8
18	19	F	Comp	72	88.0	45	378	75.6
19	20	F	Comp	53	76.0	23	338	67.6

In [28]:
```
ndf3=df
ndf3.dropna(axis=0)
```

Out[28]:

	Rollno	Name	Gender	Branch	Attendence	Phy_marks	Che_marks	EM1_marks	P
0	1	Mohammed	M	Comp	72	62.0	98.0	63.0	
1	2	Reyansh	M	IT	58	62.0	83.0	83.0	
3	4	Atharv	M	IT	60	89.0	83.0	70.0	
5	6	Advik	M	ENTC	94	99.0	84.0	100.0	
6	7	Ansh	M	ENTC	98	88.0	95.0	81.0	
7	8	Ishaan	M	ENTC	75	66.0	51.0	83.0	
10	11	Vihaan	M	ENTC	82	54.0	70.0	88.0	
13	14	Leo	M	IT	98	-34.0	70.0	94.0	
14	15	Maryam	F	IT	64	87.0	60.0	90.0	
15	16	Saanvi	F	Comp	66	90.0	95.0	67.0	
17	18	Inaya	F	Comp	74	67.0	93.0	93.0	
18	19	Aarya	F	Comp	72	88.0	84.0	81.0	

In [29]:
```
ndf3=df
ndf3.dropna(axis=0,how='any')
```

Out[29]:

	Rollno	Name	Gender	Branch	Attendence	Phy_marks	Che_marks	EM1_marks	P
0	1	Mohammed	M	Comp	72	62.0	98.0	63.0	
1	2	Reyansh	M	IT	58	62.0	83.0	83.0	
3	4	Atharv	M	IT	60	89.0	83.0	70.0	
5	6	Advik	M	ENTC	94	99.0	84.0	100.0	
6	7	Ansh	M	ENTC	98	88.0	95.0	81.0	
7	8	Ishaan	M	ENTC	75	66.0	51.0	83.0	
10	11	Vihaan	M	ENTC	82	54.0	70.0	88.0	
13	14	Leo	M	IT	98	-34.0	70.0	94.0	
14	15	Maryam	F	IT	64	87.0	60.0	90.0	
15	16	Saanvi	F	Comp	66	90.0	95.0	67.0	
17	18	Inaya	F	Comp	74	67.0	93.0	93.0	
18	19	Aarya	F	Comp	72	88.0	84.0	81.0	

In [31]:
```
cols_with_na=[]
for col in df.columns:
    if df[col].isna().sum()>0:
        cols_with_na.append(col)
cols_with_na
```

Out[31]:
```
['Name', 'Che_marks', 'EM1_marks', 'PPS_marks']
```

In [32]:

```
pd.options.mode.chained_assignment = None
for col in cols_with_na:
    col_dt = df[col].dtypes
    if (col_dt == 'int64' or col_dt == 'float64'):
        df_col = df[col]
        for i in range(df.shape[0]):
            if (df_col[i] < 0 or df_col[i] > 100):
                df_col[i] = np.nan
        df_col.fillna(df_col.mean(), inplace=True)
    else:
        df[col] = df[col].fillna(method='ffill')
df
```

Out[32]:

	Rollno	Name	Gender	Branch	Attendence	Phy_marks	Che_marks	EM1_marks	P
0	1	Mohammed	M	Comp	72	62.0	98.000000	63.000000	
1	2	Reyansh	M	IT	58	62.0	83.000000	83.000000	
2	3	Aarav	M	IT	57	-20.0	100.000000	83.444444	
3	4	Atharv	M	IT	60	89.0	83.000000	70.000000	
4	5	Vivaan	M	Comp	85	90.0	80.764706	78.000000	
5	6	Advik	M	ENTC	94	99.0	84.000000	100.000000	
6	7	Ansh	M	ENTC	98	88.0	95.000000	81.000000	
7	8	Ishaan	M	ENTC	75	66.0	51.000000	83.000000	
8	9	Dhruv	M	ENTC	63	0.0	80.764706	97.000000	
9	10	Siddharth	M	ENTC	96	67.0	78.000000	95.000000	
10	11	Vihaan	M	ENTC	82	54.0	70.000000	88.000000	
11	12	Vihaan	M	IT	75	64.0	67.000000	71.000000	
12	13	Aarush	M	IT	67	56.0	81.000000	83.444444	
13	14	Leo	M	IT	98	-34.0	70.000000	94.000000	
14	15	Maryam	F	IT	64	87.0	60.000000	90.000000	
15	16	Saanvi	F	Comp	66	90.0	95.000000	67.000000	
16	17	Zaranew	F	Comp	93	54.0	80.764706	75.000000	
17	18	Inaya	F	Comp	74	67.0	93.000000	93.000000	
18	19	Aarya	F	Comp	72	88.0	84.000000	81.000000	
19	20	Aarya	F	Comp	53	76.0	81.000000	93.000000	

In [33]:

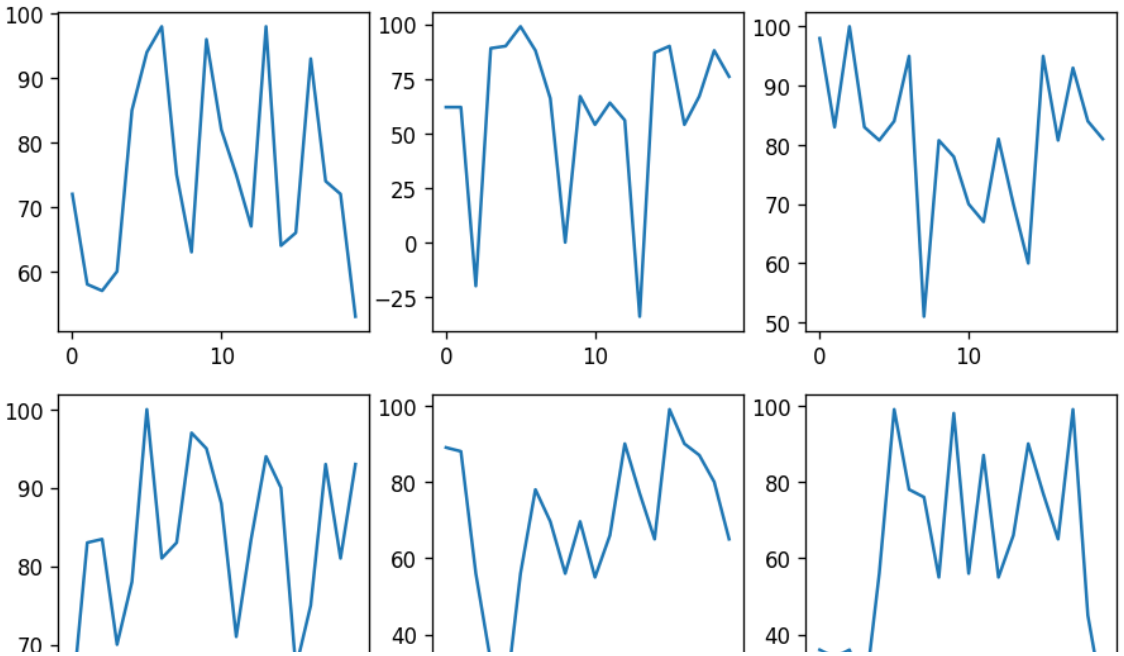
```
df['Total Marks']=df['Phy_marks']+df['Che_marks']+df['EM1_marks']+df
df['Percentage']=df['Total Marks']/5
df
```

Out[33]:

	Rollno	Name	Gender	Branch	Attendence	Phy_marks	Che_marks	EM1_marks	P
0	1	Mohammed	M	Comp	72	62.0	98.000000	63.000000	
1	2	Reyansh	M	IT	58	62.0	83.000000	83.000000	
2	3	Aarav	M	IT	57	-20.0	100.000000	83.444444	
3	4	Atharv	M	IT	60	89.0	83.000000	70.000000	
4	5	Vivaan	M	Comp	85	90.0	80.764706	78.000000	
5	6	Advik	M	ENTC	94	99.0	84.000000	100.000000	
6	7	Ansh	M	ENTC	98	88.0	95.000000	81.000000	
7	8	Ishaan	M	ENTC	75	66.0	51.000000	83.000000	
8	9	Dhruv	M	ENTC	63	0.0	80.764706	97.000000	
9	10	Siddharth	M	ENTC	96	67.0	78.000000	95.000000	
10	11	Vihaan	M	ENTC	82	54.0	70.000000	88.000000	
11	12	Vihaan	M	IT	75	64.0	67.000000	71.000000	
12	13	Aarush	M	IT	67	56.0	81.000000	83.444444	
13	14	Leo	M	IT	98	-34.0	70.000000	94.000000	
14	15	Maryam	F	IT	64	87.0	60.000000	90.000000	
15	16	Saanvi	F	Comp	66	90.0	95.000000	67.000000	
16	17	Zaranew	F	Comp	93	54.0	80.764706	75.000000	
17	18	Inaya	F	Comp	74	67.0	93.000000	93.000000	
18	19	Aarya	F	Comp	72	88.0	84.000000	81.000000	
19	20	Aarya	F	Comp	53	76.0	81.000000	93.000000	

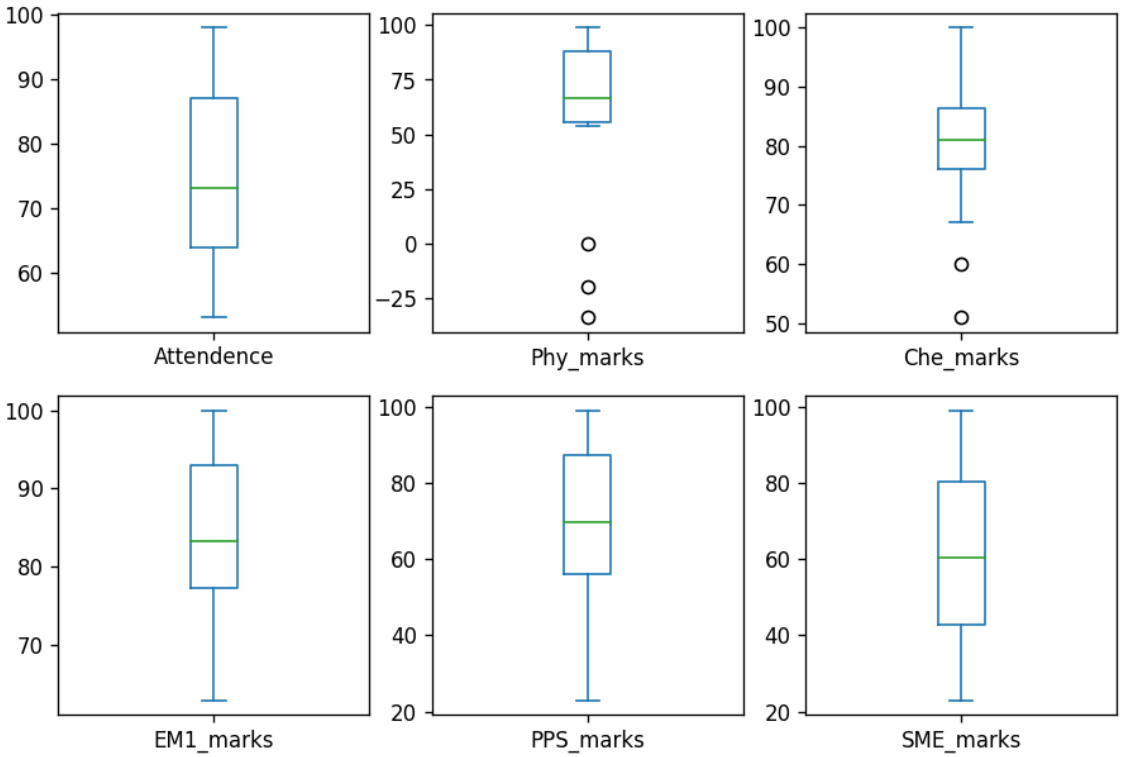
In [35]:

```
import matplotlib.pyplot as plt
plt.rcParams["figure.figsize"] = (9, 6)
df_list = ['Attendence', 'Phy_marks', 'Che_marks', 'EM1_marks', 'PPS_
fig, axes = plt.subplots(2, 3)
fig.set_dpi(120)

count=0
for r in range(2):
    for c in range(3):
        df[df_list[count]].plot(kind = 'line', ax=axes[r,c])
        count+=1
```



In [36]:

```
import matplotlib.pyplot as plt
plt.rcParams["figure.figsize"] = (9, 6)
df_list = ['Attendence', 'Phy_marks', 'Che_marks', 'EM1_marks', 'PPS_
fig, axes = plt.subplots(2, 3)
fig.set_dpi(120)

count=0
for r in range(2):
    for c in range(3):
        df[df_list[count]].plot(kind = 'box', ax=axes[r,c])
        count+=1
```



In [ ]:

In [42]:

```
Q1 = df['Che_marks'].quantile(0.25)
Q3 = df['Che_marks'].quantile(0.75)
IQR = Q3 - Q1
Lower_limit = Q1 - 1.5 * IQR
Upper_limit = Q3 + 1.5 * IQR

print(f'Q1 = {Q1}, Q3 = {Q3}, IQR = {IQR}, Lower_limit = {Lower_limit
```

```
Q1 = 76.0, Q3 = 86.25, IQR = 10.25, Lower_limit = 60.625, Upper_lim
it = 101.625
```

In [43]:
```
outlier =[]
for x in df['Che_marks']:
    if ((x > Upper_limit) or (x < Lower_limit)):
         outlier.append(x)
print(' outlier in the dataset is', outlier)
```

```
 outlier in the dataset is [51.0, 60.0]
```

In [44]:
```
df[(df['Che_marks'] < Lower_limit) | (df['Che_marks'] > Upper_limit)]
```

Out[44]:

	RollNo	Name	Gender	Branch	Attendence	Phy_marks	Che_marks	EM1_marks	PPS_
7	8	Ishaan	M	ENTC	75	66.0	51.0	83.0	69.
14	15	Maryam	F	IT	64	87.0	60.0	90.0	65.

In [ ]:
```

```