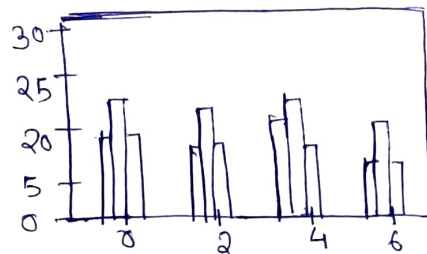
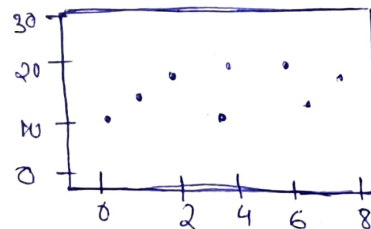
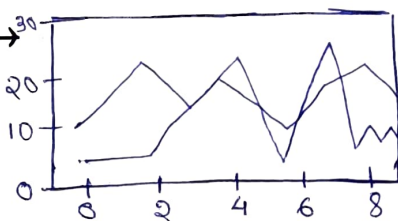


ASSIGNMENT - 3

```
1. CODE: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
df = pd.DataFrame(data = {'a': np.random.randint(0, 30, 10),
                           'b': np.random.randint(0, 30, 10),
                           'c': np.random.randint(0, 30, 10)})
fig, (ax1, ax2) = plt.subplots(2, 1, figsize = (10, 5))
ax1.plot(df['a'], color = 'green', label = 'Green')
ax1.plot(df['b'], color = 'orange', label = 'Orange')
ax1.legend(loc = 'upper center')
ax2.scatter(df.index, df['a'], color = 'green', label = 'a')
ax2.scatter(df.index, df['b'], color = 'orange', label = 'b')
ax2.scatter(df.index, df['c'], color = 'blue', label = 'c')
ax2.legend()
plt.show()
df.plot(kind = 'bar', figsize = (10, 5))
plt.show()
```

OUTPUT →



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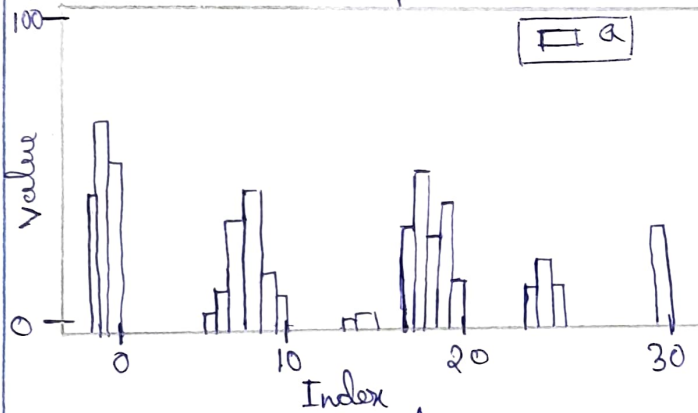
```

2. CODE → fig(ax1, ax2) = plt.subplots(2, 1, figsize=(10, 5))
ax1.plot(df['a'], color='green', label='Green')
ax1.plot(df['b'], color='orange', label='Orange')
ax1.legend(loc='upper center')
ax2.scatter(df.index, df['a'], color='green', label='a')
ax2.scatter(df.index, df['b'], color='orange', label='b')
ax2.scatter(df.index, df['c'], color='blue', label='c')
ax2.legend()
plt.show()

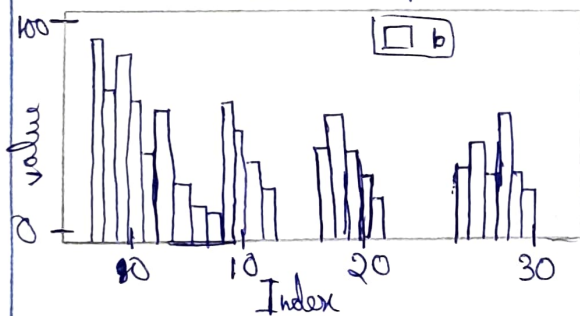
```

OUTPUT →

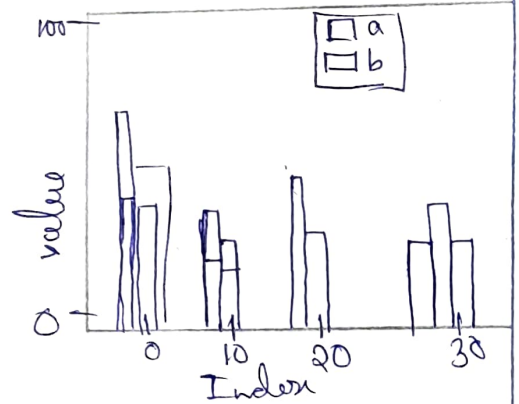
Bar Graph



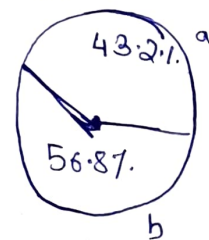
Bar Graph



Stacked Bar Graph



Pie Chart



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3. CODE → import matplotlib as plt

import numpy as np

Data

languages = ['Java', 'Python', 'PHP', 'Javascript', 'C #', 'C++']

popularity = [22.2, 17.6, 8.8, 8, 7.7, 6.7]

fig, ax1 = plt.subplots (figsize = (2, 3))

colors = plt.cm.tab20.colors

bars = ax1.bar (languages, popularity, color = colors[:len(languages)])

ax1.set_title ('Popularity of Programming Languages')

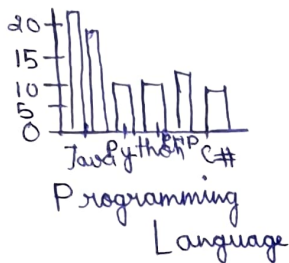
ax1.set_xlabel ('Programming Languages')

ax1.set_ylabel ('Popularity (%)')

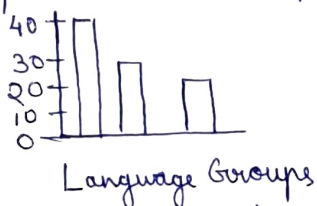
plt.tight_layout()

plt.show()

OUTPUT → Popularity of Programming Languages



Grouped Bar Chart of Programming Languages



Stacked Bar Chart of Programming Language Groups



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