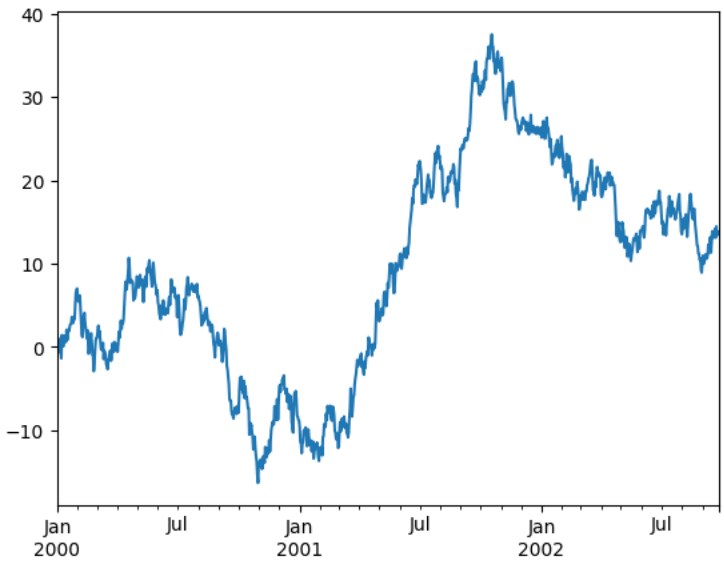
Q1 Done upto plotting

```
ts = pd.Series(np.random.randn(1000), index=pd.date_range("1/1/2000", periods=1000))

ts = ts.cumsum()

ts.plot();
```



Q2

```
import pandas as pd
data = {'cities' : ['lahore','karachi'], 'provinces' : ['punjab','sindh']}
frame1=pd.DataFrame(data)
data2 = {"cities": ["islamabad","karachi","peshawar","quetta"], "provinces": ["capital","sindh", "KPK","Balochistan"]}
frame2=pd.DataFrame(data2)
frame3 = pd.concat([frame1, frame2], axis=0)
frame3no = frame3.drop_duplicates()
sorted = frame3no.sort_values(by='provinces')
resetindex = sorted.reset_index(drop=True)
print(resetindex)
```

```
      cities    provinces
0     quetta  Balochistan
1   peshawar          KPK
2  islamabad      capital
3     lahore       punjab
4    karachi        sindh
```

Q3

```
import pandas as pd
import numpy as np
dat = {'Name':[' ', 'Ali', 'Ahmed', 'Nida', ' '], 'Field':['C', 'E', 'E', 'C', 'C'], 'Age':[' ', ' ', ' ', ' ', ' '], 'Marks': [-90,60,-10,70
df=pd.DataFrame(dat)
df = df.drop(columns='Age')
df['Name']=df['Name'].replace(' ', '---')
stnp={'C':0, 'E':1}
df['Field']=df['Field'].replace(stnp)
df['Marks'] = df['Marks'].apply(lambda x: np.nan if x < 0 else x)
mval = df['Marks'].mean()
df['Marks'].fillna(mval, inplace=True)
df["Marks"]=df["Marks"].round(1)
print(df)
```

```
    Name  Field  Marks
0    ---      0   68.3
1    Ali      1   60.0
2  Ahmed      1   68.3
```

```
3   Nida      0   70.0
4    ---      0   75.0
```

Connected to Python 3 Google Compute Engine backend