PROJECT SYNOPSIS

This project is a Data Analysis project using python library Pandas Numpy Matplotlib and the topic is Crop Data Analysis for Farmers. In this project we will analyze the data of the crops that farmers cultivate throughout the year with the help of the Line Charts, Bar Charts and all different kinds of charts. This project will help the farmers to make data based decisions like which crop they should plant for their next harvest and which crop is grown at which area in abundant amount. This will help Farmers to identify which crop they should harvest throughout the year to earn more income.

CODES

# IMPORTING LIBRARIES

import sys

import numpy as np

import pandas as pd

import matplotlib.pyplot as plt

# Importing CSV

Top\_10\_crop="D:/PBL PROJECT FIRST YEAR/crops.csv"

Production="D:/PBL PROJECT FIRST YEAR/production\_crop.csv"

Primary="D:/PBL PROJECT FIRST YEAR/primary\_crop.csv"

Avg\_growth="D:/PBL PROJECT FIRST YEAR/average cost.csv"

Returns="D:/PBL PROJECT FIRST YEAR/returns.csv"

# LOGIN FUNCTION

def login():

login\_d={' Amit':' Amit123',' Rahul':' Rahul256',' Seema':' Seema897'}

print(" \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* ")

print(" \* \* ")

print(" \* FARMERS CROP DATA ANALYSIS \*")

print(" \* \* ")

print(" \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* ")

print()

while True:

print("""

=====================================

1. LOGIN

2. CREATE ACCOUNT

3. EXIT

=====================================""")

print()

choice=int(input("Enter your choice:"))

if choice==1:

id=input("Enter your username:")

if id in login\_d:

pwd=input("Enter your password:")

if pwd==login\_d[id]:

print()

print(" \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* ")

print(" \* \* ")

print(" \* LOGIN SUCCESFULLY \* ")

print(" \* \* ")

print(" \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* ")

print()

mainmenu()

else:

print()

print("\*\*\*\*\*\*\*\*\*\*INVALID PASSWORD\*\*\*\*\*\*\*\*\*\*")

sys.exit()

else:

print()

print("""\*\*\*\*\*\*\*\*INVALID USER NAME\*\*\*\*\*\*\*\*\*\*""")

sys.exit()

elif choice==2:

newuser=input("Enter your preferred username:")

newpwd=input("Enter your preferred password:")

login\_d[newuser]=newpwd

print()

print(" \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* ")

print(" \* \* ")

print(" \* ACCOUNT CREATED SUCCESFULLY \* ")

print(" \* \* ")

print(" \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* ")

print()

continue

else:

sys.exit()

# MAINMENU FUCTION

def mainmenu():

ans=True

while ans:

print(" 1. DATA VISUALIZATION")

print(" 2. DATA ANALYSIS")

print(" 3. READ CSV FILE AND DISPAY DATAFRAME")

print(" 4. EXIT")

print()

inp=int(input("Enter Your Choice:"))

print()

if inp==1:

submenu1()

elif inp==2:

submenu2()

elif inp==3:

submenu3()

else:

sys.exit()

# FUNCTION FOR PLOTTING GRAPH

def submenu1():

ans=True

while ans:

print(" 1. TOP 10 CROPS GROWN IN INDIA")

print(" 2. CROPS ANALYSIS")

print(" 3. PRIMARY CROPS OF INDIA")

print(" 4. AVERAGE GROWTH OF KHARIF CROPS")

print(" 5. PERCENTAGE OF CROPS")

print(" 6. BACK TO MAIN MENU")

print()

ans=int(input("Enter Your Choice:"))

print()

if ans==1:

print()

top()

if ans==2:

crop\_analysis()

if ans==3:

primary\_crop()

if ans==4:

avg\_growth()

if ans==5:

percent\_crop()

if ans==6:

mainmenu()

# DISPLAYING TOP 10 CROPS GROWN IN INDIA

def top():

df1=pd.read\_csv(Top\_10\_crop)

x=np.arange(len(df1))

Crop=df1['Crops']

year1=df1['2016-17']

year2=df1['2017-18']

year3=df1['2018-19']

year4=df1['2019-20']

plt.bar(x+0.15,year1,width=.15,label='2016-2017',color='gold')

plt.bar(x+0.30,year2,width=.15,label='2017-2018',color='red')

plt.bar(x+0.45,year3,width=.15,label='2018-2019',color='green')

plt.bar(x+0.60,year4,width=.15,label='2019-2020',color='blue')

plt.xticks(x,Crop,rotation=45)

plt.title('TOP 10 CROPS GROWN IN INDIA',color='blue',fontsize=20)

plt.xlabel('CROPS',fontsize=20,color='red')

plt.ylabel('QUANTITY',fontsize=20,color='red')

plt.grid()

plt.legend()

plt.show()

# PLOTTING LINE CHARTS

def crop\_analysis():

df=True

while df:

print(" 1. PRODUCTION VS YEAR OF RICE")

print(" 2. PRODUCTION VS YEAR OF CEREALS")

print(" 3. PRODUCTION VS YEAR OF JOWAR")

print(" 4. PRODUCTION VS YEAR OF GROUNDNUTS")

print(" 5. PRODUCTION VS YEAR OF COTTON")

print(" 6. PRODUCTION VS YEAR OF OILSEEDS")

print(" 7. PRODUCTION VS YEAR OF TEA")

print(" 8. PRODUCTION VS YEAR OF COFFEE")

print(" 9. BACK TO MAIN MENU")

print()

inp=int(input("Enter Your Choice:"))

print()

if inp==1:

print()

Rice()

elif inp==2:

Cereals()

elif inp==3:

Jowar()

elif inp==4:

Groundnuts()

elif inp==5:

Cotton()

elif inp==6:

Oilseeds()

elif inp==7:

Tea()

elif inp==8:

Coffee()

elif inp==9:

print()

submenu1()

else:

sys.exit

def Rice():

df=pd.read\_csv(Production)

df=df.tail(5)

year= df.Year

rice = df.Rice

plt.plot(year,rice,marker="\*",markersize='8',markeredgecolor='g',color='r',linewidth='1')

plt.xlabel("YEARS",fontsize=16,color='black')

plt.ylabel("PRODUCTION",fontsize=16,color='black')

plt.title("PRODUCTION VS YEAR OF RICE",color='blue',fontsize=18)

plt.xticks(year)

plt.show()

def Cereals():

df=pd.read\_csv(Production)

df=df.tail(5)

year= df.Year

cereals = df.Cereals

plt.plot(year,cereals,marker='\*',markeredgecolor='r',markersize='8',color='g',linewidth='1')

plt.xlabel("YEARS",fontsize=16,color='black')

plt.ylabel("PRODUCTION",fontsize=16,color='black')

plt.title("PRODUCTION VS YEAR OF CEREALS",color='blue',fontsize=18)

plt.xticks(year)

plt.show()

def Jowar():

df=pd.read\_csv(Production)

df=df.tail(5)

year= df.Year

jowar = df.Jowar

plt.plot(year,jowar,marker='+',markeredgecolor='r',markersize='10',color='c',linewidth='1')

plt.xlabel("YEARS",fontsize=16,color='k')

plt.ylabel("PRODUCTION",fontsize=16,color='k')

plt.title("PRODUCTION VS YEAR OF JOWAR",color='blue',fontsize=18)

plt.xticks(year)

plt.show()

def Groundnuts():

df=pd.read\_csv(Production)

df=df.tail(5)

year= df.Year

groundnuts = df.Groundnuts

plt.plot(year,groundnuts,marker='d',markeredgecolor='olive',markersize='10',color='firebrick',linewidth='1')

plt.xlabel("YEARS",fontsize=16,color='k')

plt.ylabel("PRODUCTION",fontsize=16,color='k')

plt.title("PRODUCTION VS YEAR OF GROUNDNUTS",color='blue',fontsize=18)

plt.xticks(year)

plt.show()

def Cotton():

df=pd.read\_csv(Production)

df=df.tail(5)

year= df.Year

cotton = df.Cotton

plt.plot(year,cotton,marker='\*',markeredgecolor='tomato',markersize='10',color='teal',linewidth='1')

plt.xlabel("YEARS",fontsize=16,color='k')

plt.ylabel("PRODUCTION",fontsize=16,color='k')

plt.title("PRODUCTION VS YEAR OF COTTON",color='blue',fontsize=18)

plt.xticks(year)

plt.show()

def Oilseeds():

df=pd.read\_csv(Production)

df=df.tail(5)

year= df.Year

oilseeds = df.Oilseeds plt.plot(year,oilseeds,marker='\*',markeredgecolor='darkorange',markersize='10',color='grey',linewidth='1')

plt.xlabel("YEARS",fontsize=16,color='k')

plt.ylabel("PRODUCTION",fontsize=16,color='k')

plt.title("PRODUCTION VS YEAR OF OILSEEDS",color='blue',fontsize=18)

plt.xticks(year)

plt.show()

def Tea():

df=pd.read\_csv(Production)

df=df.tail(5)

year= df.Year

tea = df.Tea plt.plot(year,tea,marker='.',markeredgecolor='black',markersize='12',color='crimson',linewidth='2')

plt.xlabel("YEARS",fontsize=16,color='k')

plt.ylabel("PRODUCTION",fontsize=16,color='k')

plt.title("PRODUCTION VS YEAR OF TEA",color='blue',fontsize=18)

plt.xticks(year)

plt.show()

def Coffee():

df=pd.read\_csv(Production)

df=df.tail(5)

year= df.Year

coffee = df.Coffee

plt.plot(year,coffee,marker='>',markeredgecolor='green',markersize='10',color='red',linewidth='2')

plt.xlabel("YEARS",fontsize=16,color='k')

plt.ylabel("PRODUCTION",fontsize=16,color='k')

plt.title("PRODUCTION VS YEAR OF COFFEE",color='blue',fontsize=18)

plt.xticks(year)

plt.show()

# DISPLAYING PRIMARY CROPS OF INDIA

def primary\_crop():

df= pd.read\_csv("H:\\IP PROJECT\\primary\_crop.csv")

df.plot(kind='barh',x='Crop',title='PRIMARY CROPS OF INDIA')

plt.xlabel('Rate')

plt.show()

# DISPLAYING AVERAGE GROWTH OF KHARIF CROPS

def avg\_growth():

df= pd.read\_csv(Avg\_growth)

df.plot(kind='line',x='Kharif Crops',title='AVERAGE GROWTH OF KHARIF CROPS')

plt.ylabel("Rate")

plt.show()

# DISPLAYING PERCENTAGE OF CROPS

def percent\_crop():

df=pd.DataFrame({'2018-19':[49,63,41,70,87,364,173,101,111,145,99]}

,index=['Paddy','Jowar','Bajra','Ragi','Maize','Moong','Urad','Groundnut','Sunflower','Soyabean','Sesamum'])

df.plot(kind='pie',y='2018-19',title='PERCENTAGE OF CROPS',legend=False)

plt.show()

# FUNCTION FOR ANALYSING DATA

def submenu2():

print(" 1. TO PRINT THE MAXIMUM VALUES OF THE DATARAME")

print(" 2. TO PRINT THE MINIMUM VALUES OF THE DATAFRAME")

print(" 3. TO COUNT THE NUMBER OF RECORDS IN THE DTAFRAME")

print(" 4. TO DISPLAY THE MEAN OF RETURN OVER COST")

print(" 5. TO SUM THE COST OF PRODUCTION")

print(" 6. BACK TO MAIN MENU")

print()

choice=int(input("Enter Your Choice"))

print()

if choice==1:

max\_value()

print()

submenu2()

if choice==2:

min\_value()

print()

submenu2()

if choice==3:

count\_record()

print()

submenu2()

if choice==4:

mean\_return()

print()

submenu2()

if choice==5:

sum\_cost()

print()

submenu2()

if choice==6:

mainmenu()

# TO PRINT THE MAXIMUM VALUES OF THE DATARAME

def max\_value():

df= pd.read\_csv(Returns)

print(df.max())

# TO PRINT THE MINIMUM VALUES OF THE DATAFRAME

def min\_value():

df= pd.read\_csv(Returns)

print(df.min())

# TO COUNT THE NUMBER OF RECORDS IN THE DTAFRAME

def count\_record():

df= pd.read\_csv(Returns)

print(df.count())

# TO DISPLAY THE MEAN OF RETURN OVER COST

def mean\_return():

df= pd.read\_csv(Returns)

return1=df['Return over cost ( in percent)']

print(return1.mean())

# TO SUM THE COST OF PRODUCTION

def sum\_cost():

df= pd.read\_csv(Returns)

print(df.sum())

# READING CSV FILE AND DISPLAYING DATA FRAME

def submenu3():

print(" 1. Top\_10\_crop ")

print(" 2. Production")

print(" 3. Primary")

print(" 4. Avg\_growth")

print(" 5. Returns")

print(" 6. BACK TO MAIN MENU")

print()

choice=int(input("Enter your choice:"))

print()

if choice==1:

top\_10\_crop()

print()

submenu3()

elif choice==2:

production()

print()

submenu3()

elif choice==3:

primary()

print()

submenu3()

elif choice==4:

avg()

print()

submenu3()

elif choice==5:

returns()

print()

submenu3()

elif choice==6:

mainmenu()

else:

sys.exit()

# CSV FILES FUNCTIONS

def top\_10\_crop():

df1=pd.read\_csv(Top\_10\_crop)

print(df1)

def production():

df=pd.read\_csv(Production)

print(df)

def primary():

df=pd.read\_csv(Primary)

print(df)

def avg():

df=pd.read\_csv(Avg\_growth)

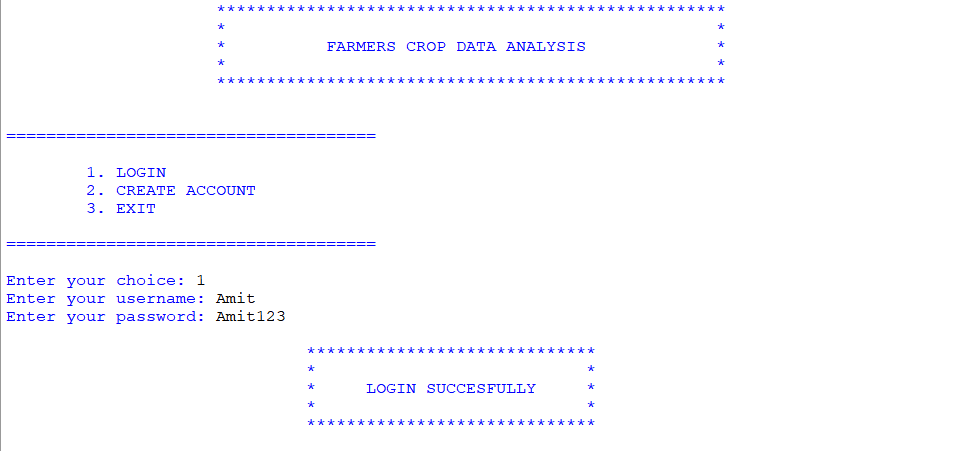
print(df)

def returns():

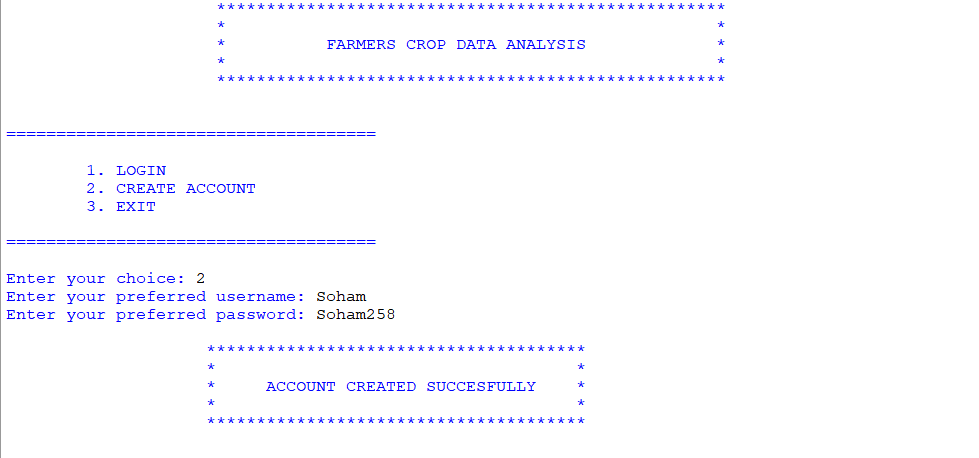
df=pd.read\_csv(Returns)

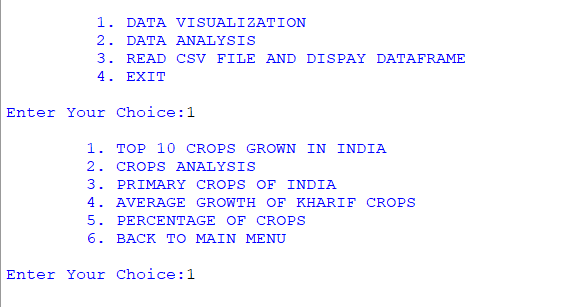
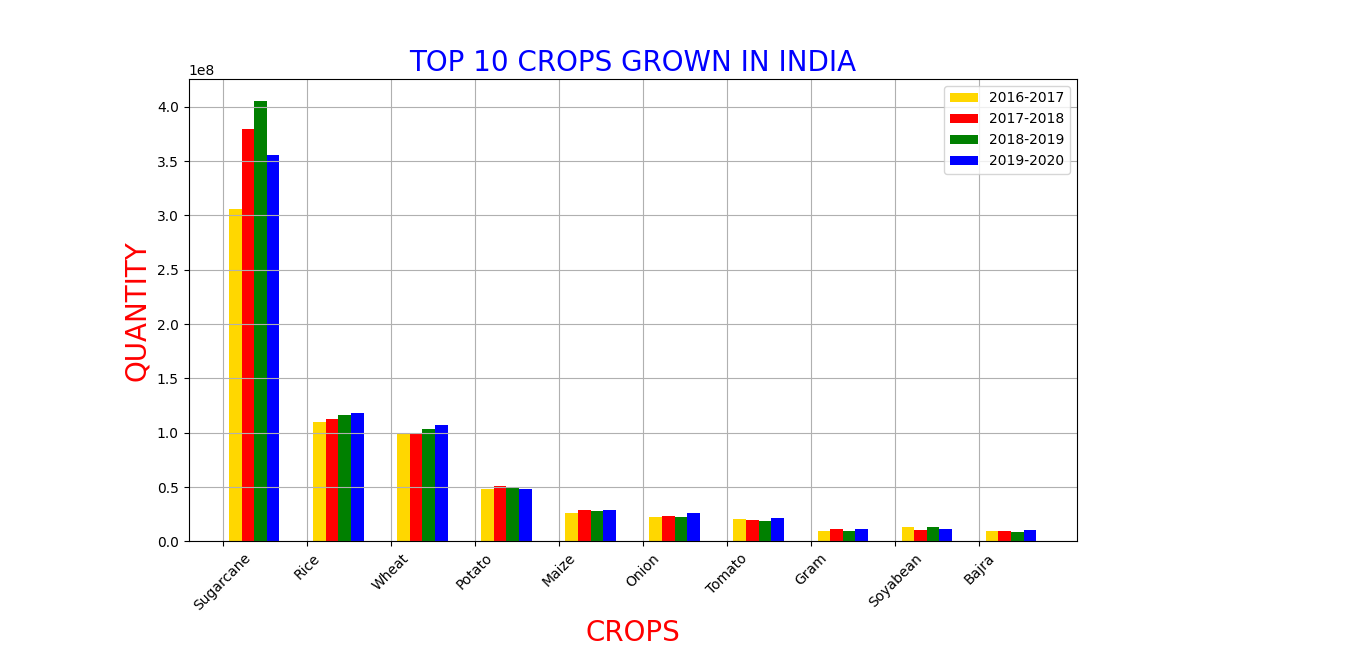
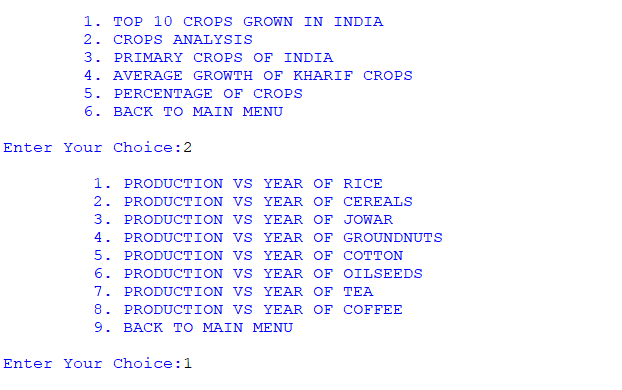
print(df)

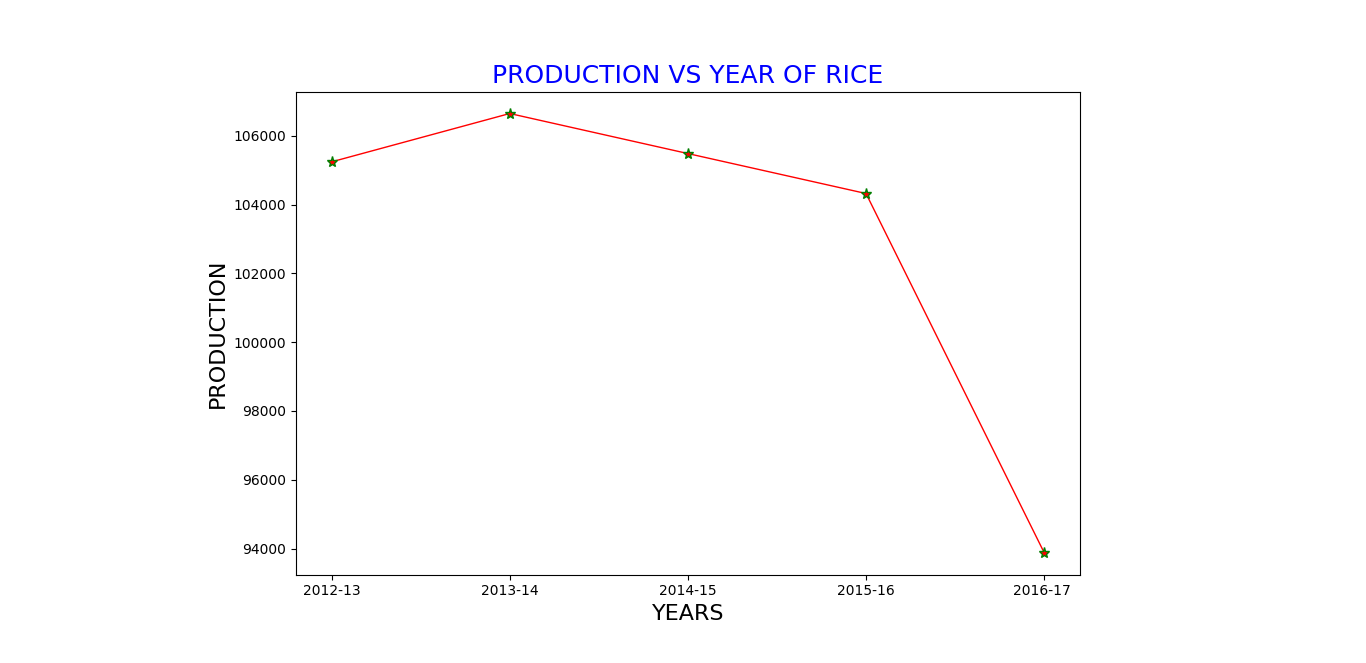
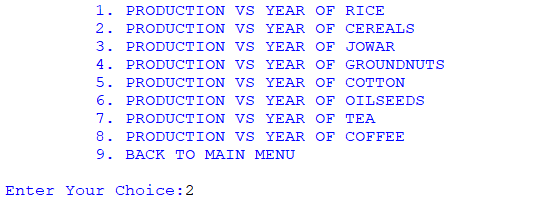
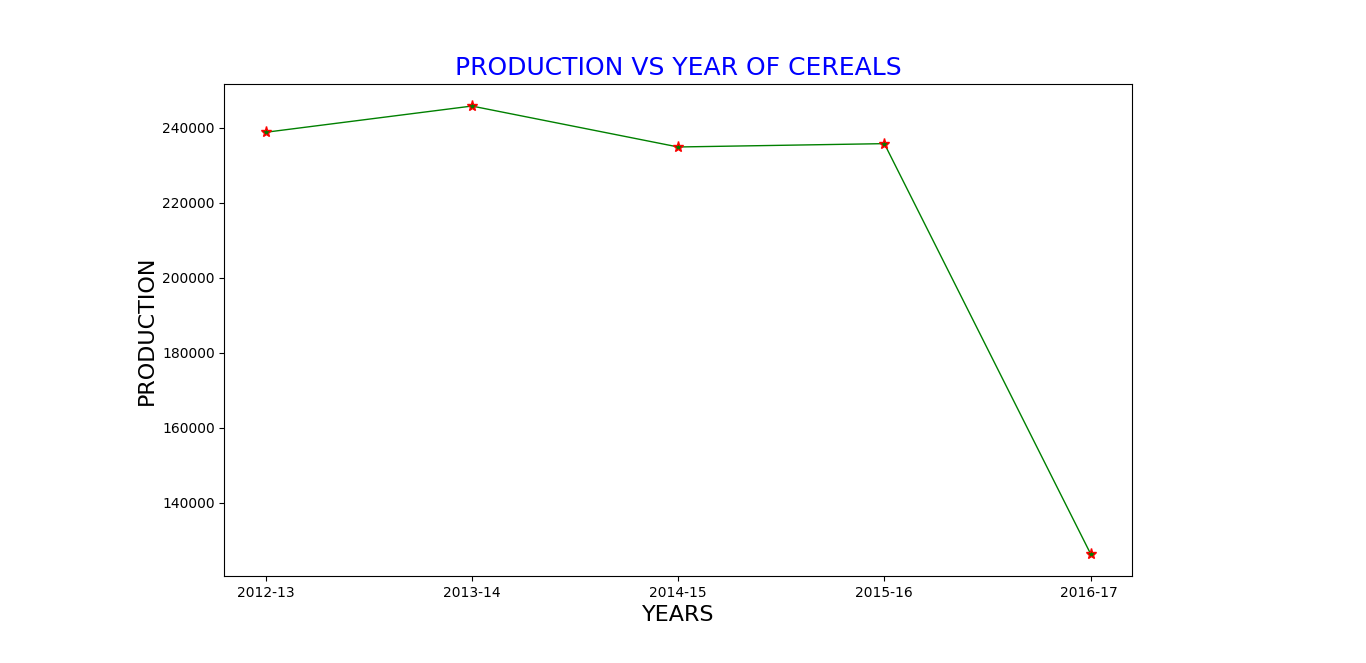
**SCREENSHOTS**

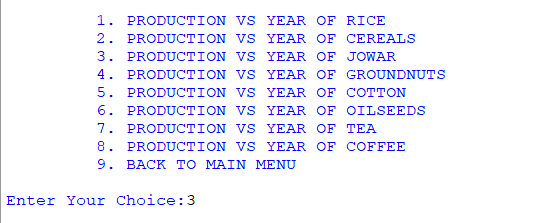
  
**1.** **LOGIN**

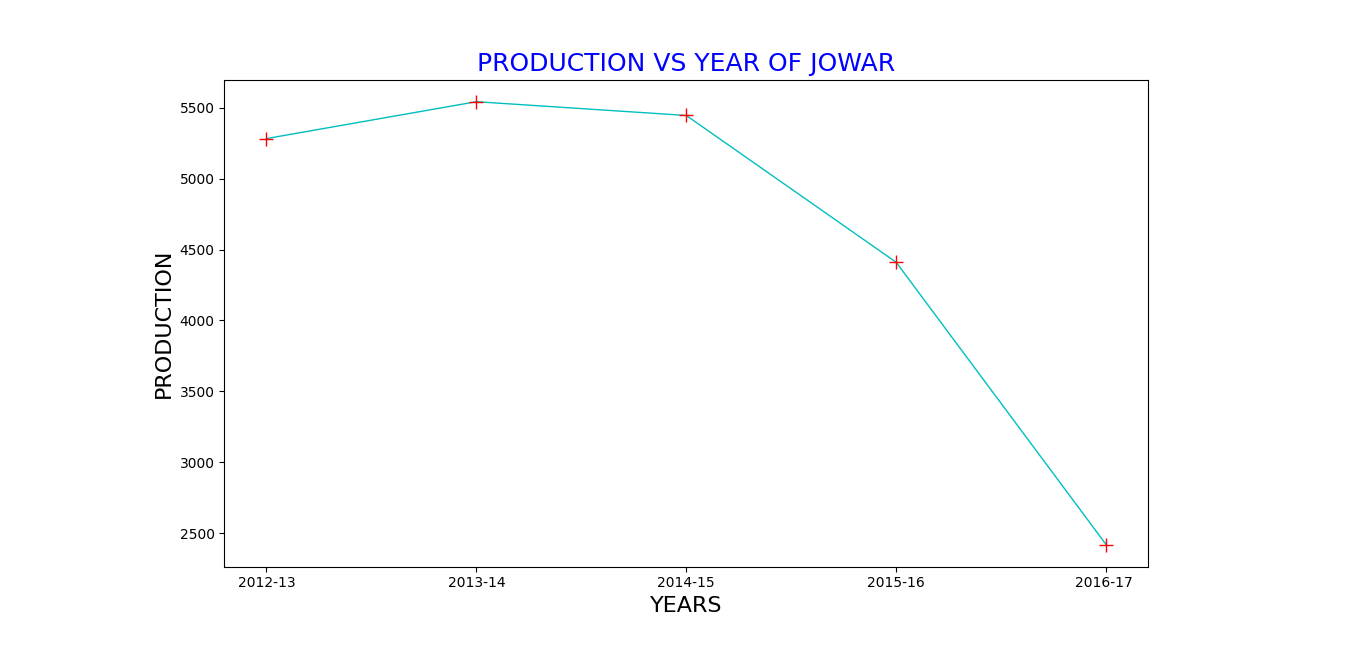
**2. CREATING ACCOUNT**

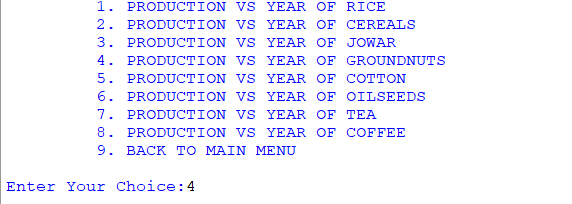
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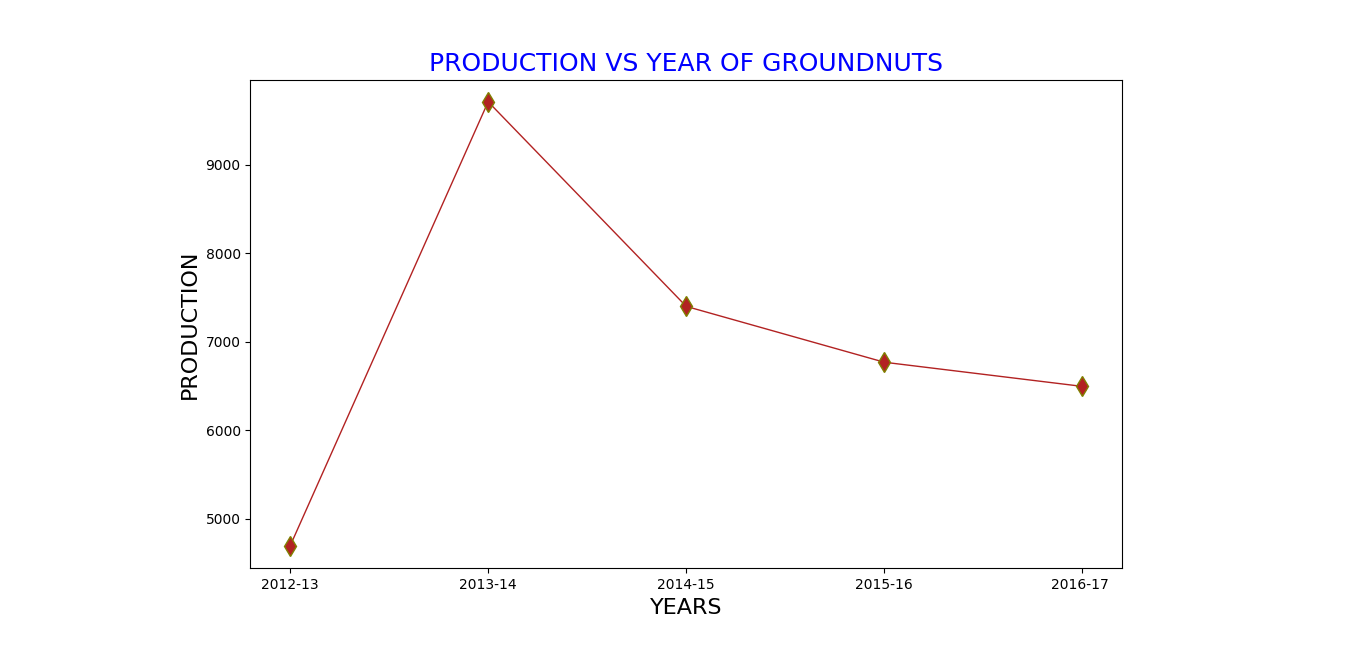
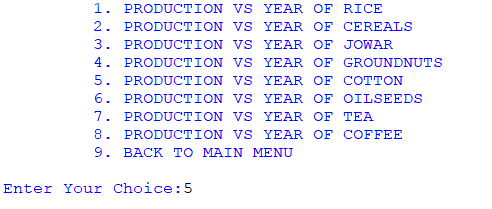
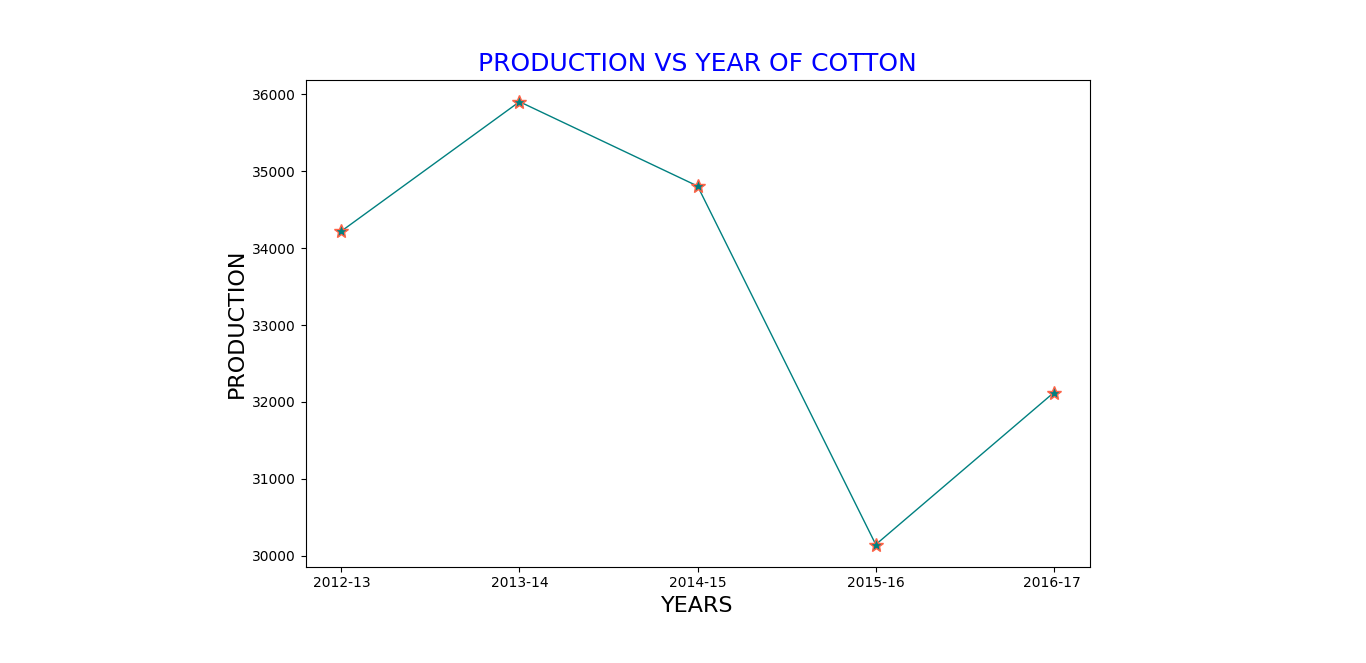


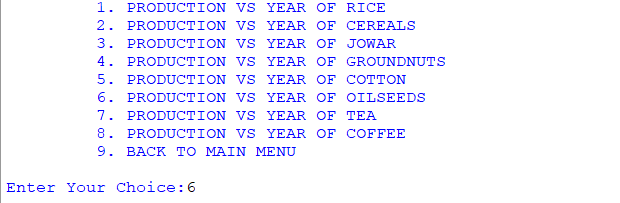
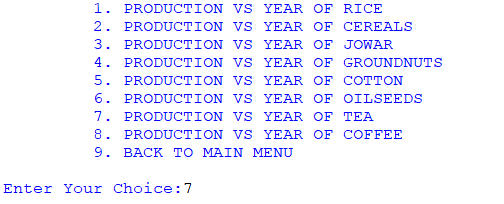


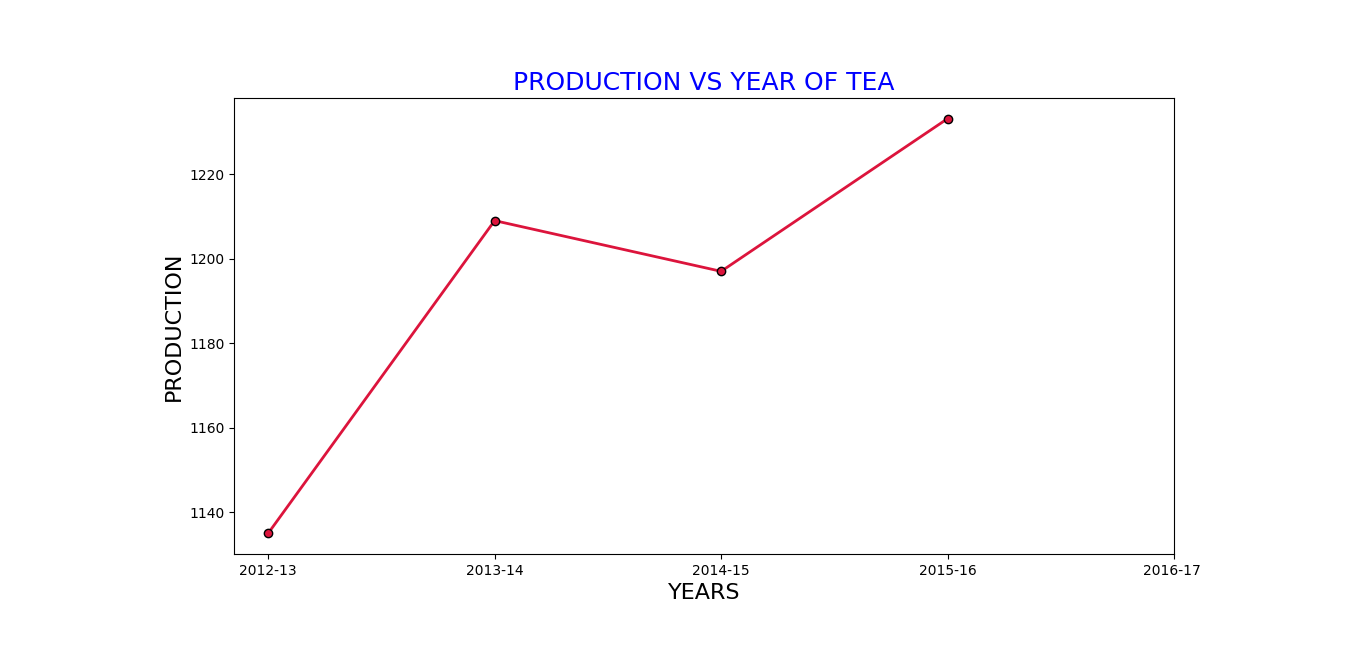
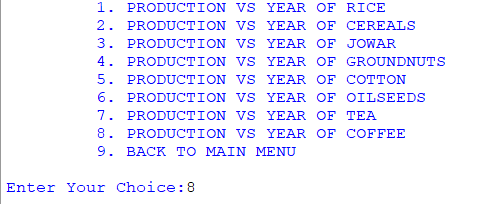
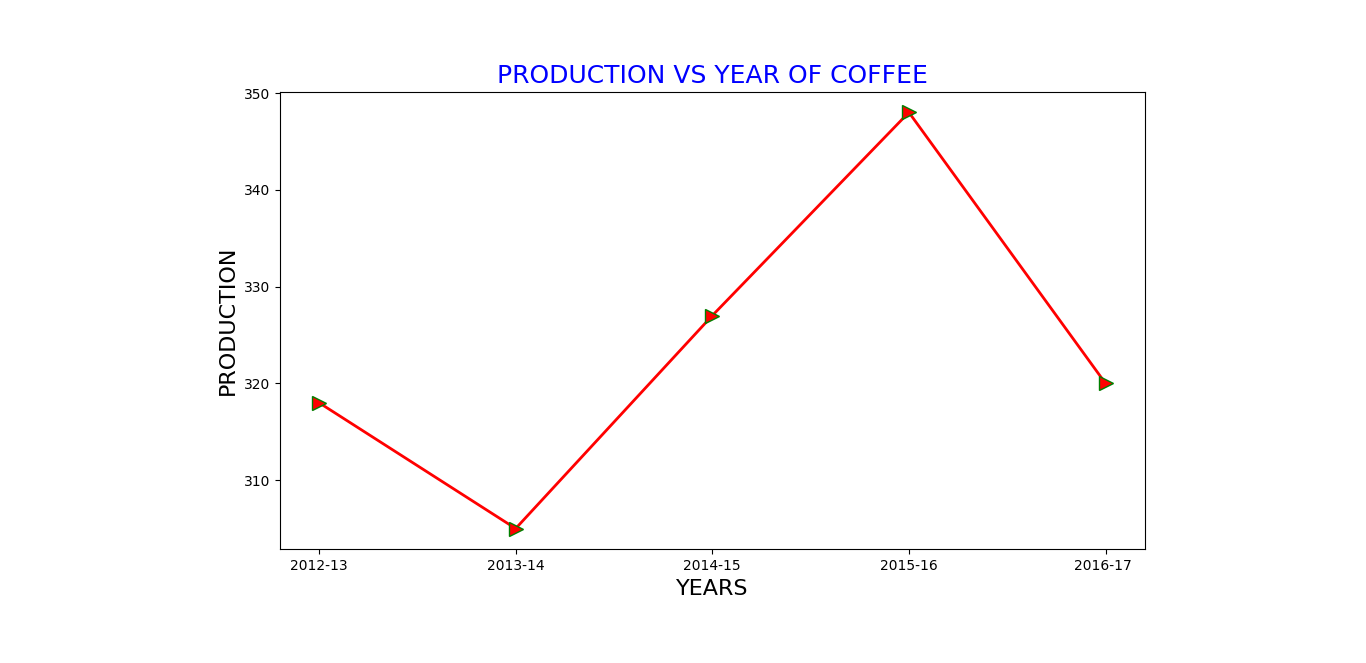


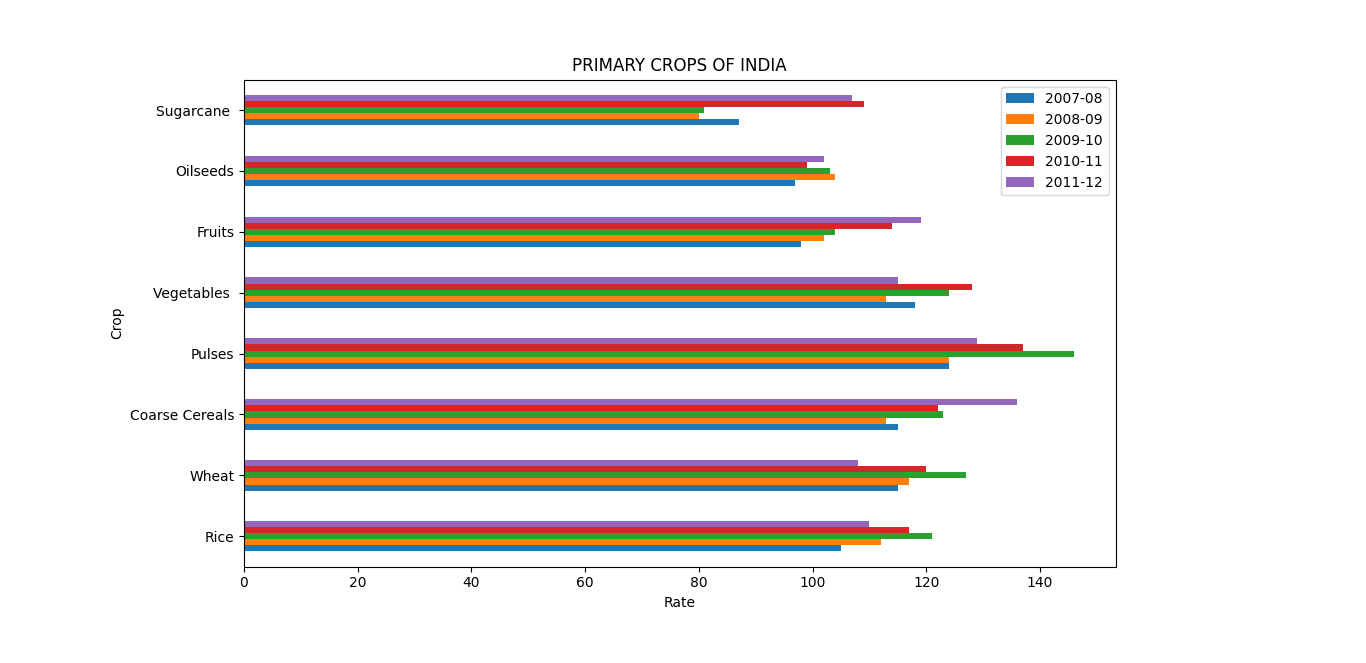
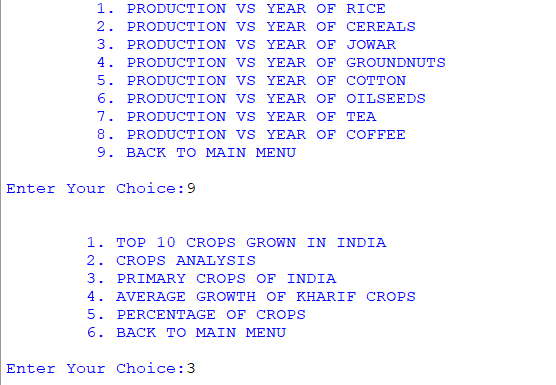


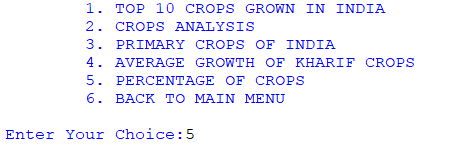
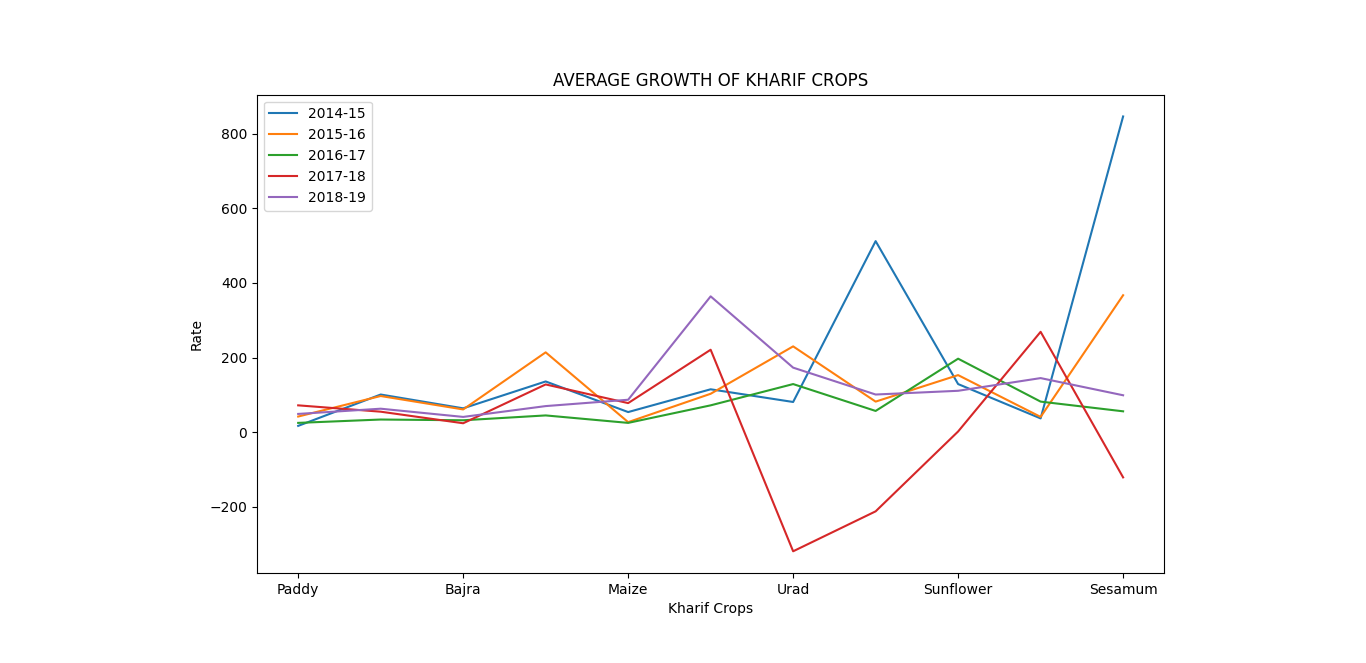
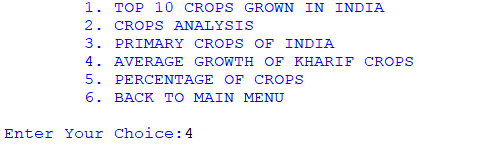


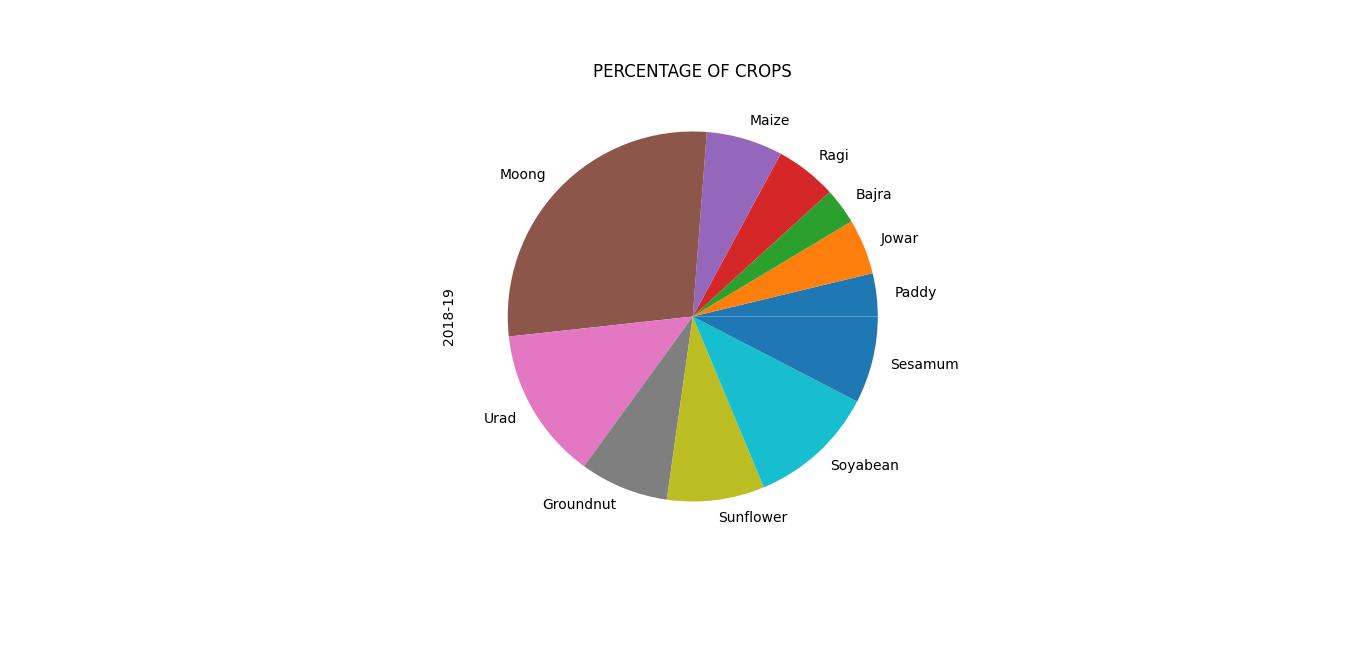


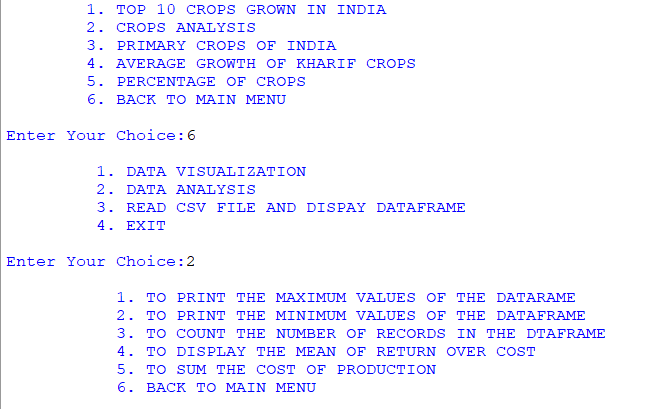


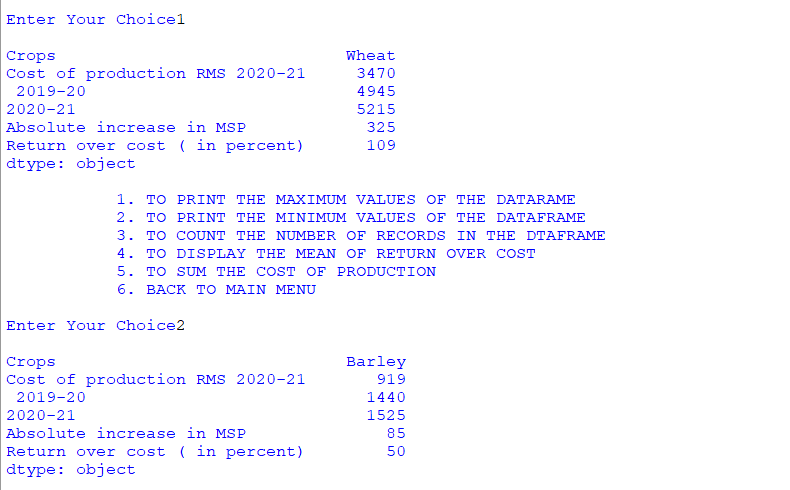
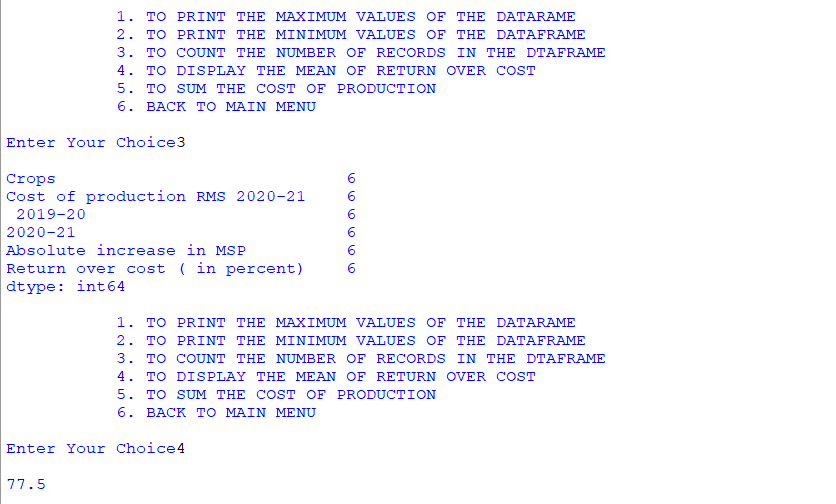


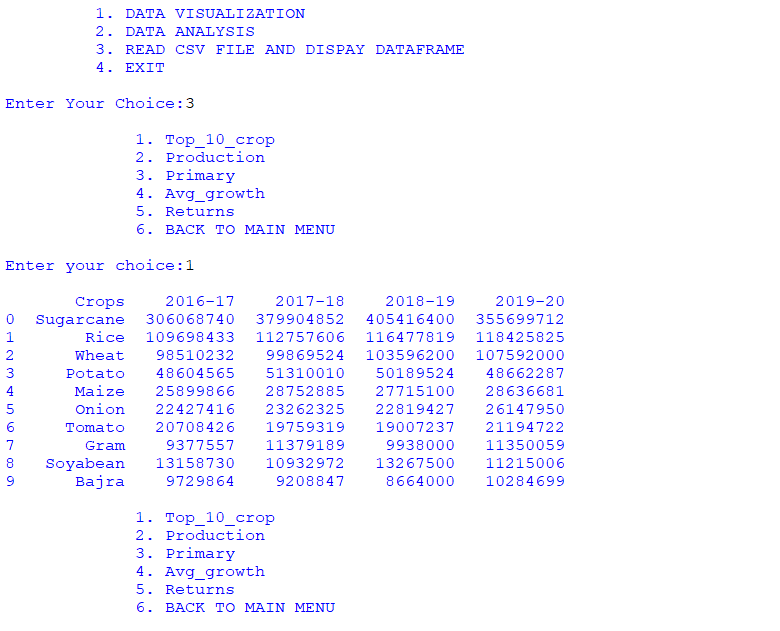
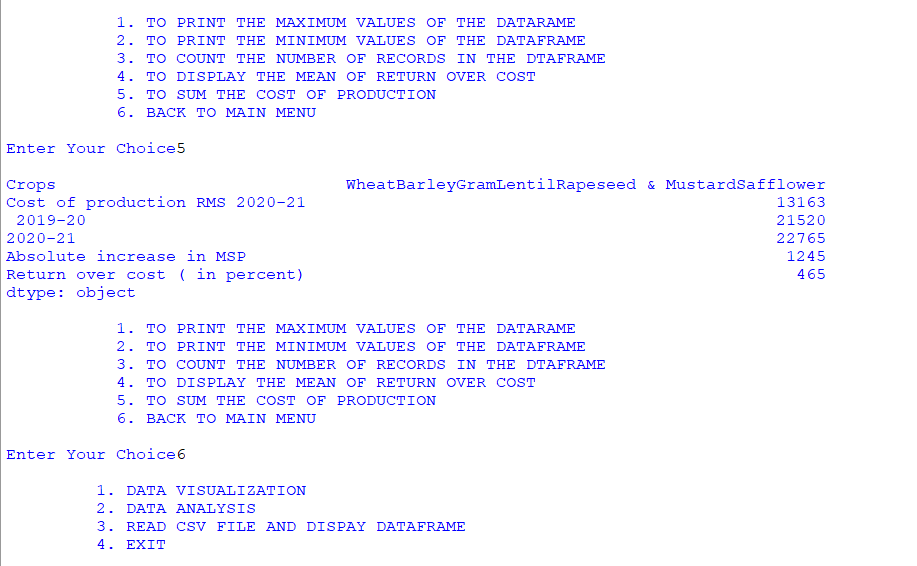


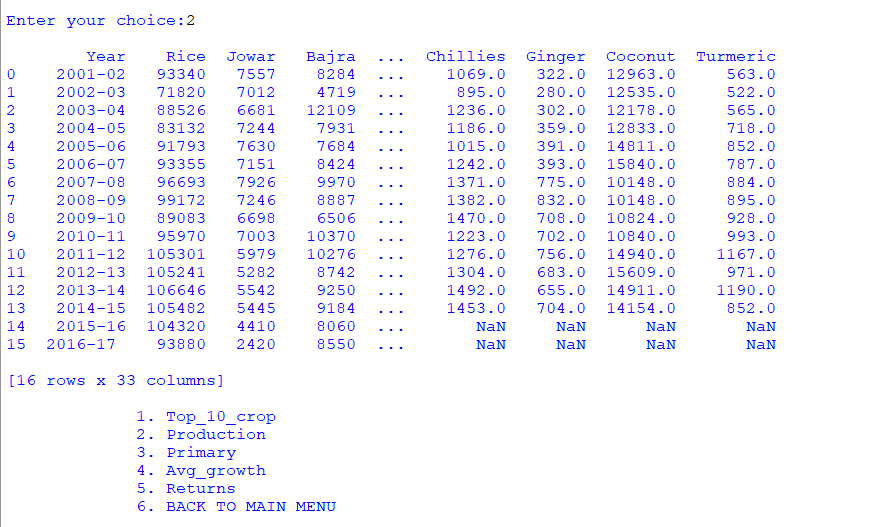
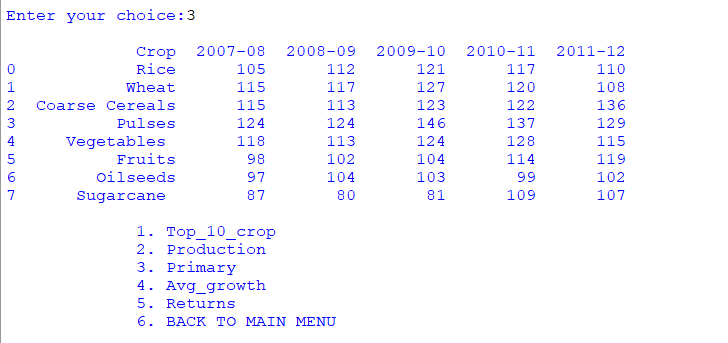


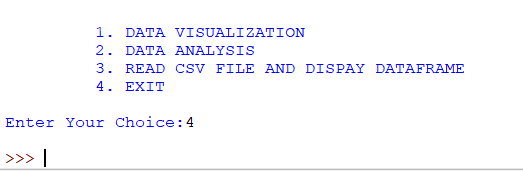
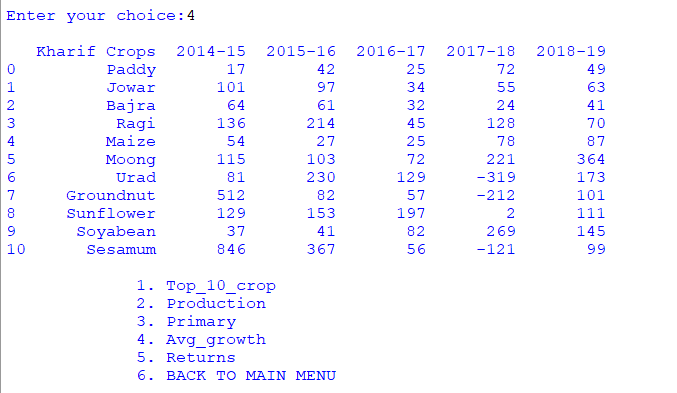
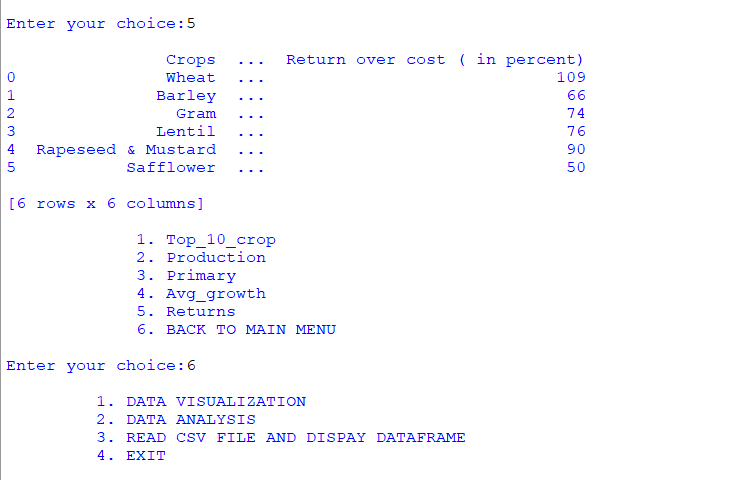












FUTURE ENHANCEMENT

This project can be further modified into a mobile application or a website which will provide a better user experience to the farmers and hence help them in a better way for there cultivation. In the mobile application or website we can provide farmers more data based visualization charts. We can also add filters in it so that it will help them to choose different parameters of their choice. We can also add some extra features to the mobile application or website like which government schemes are provided by the government to the farmers, Insurance, Subsidiary and many other things.

BIBLIOGRAPHY

* *Python for Data Analysis**McKinney*
* [***www.kaggle.com***](http://www.kaggle.com)
* [***https://data.gov.in/***](https://data.gov.in/)
* *Google Search Engine*