Sprint-3 **Team ID: PNT2022TMID21513**

Functional Requirement (Epic): Dashboard

User Story Number: USN-7

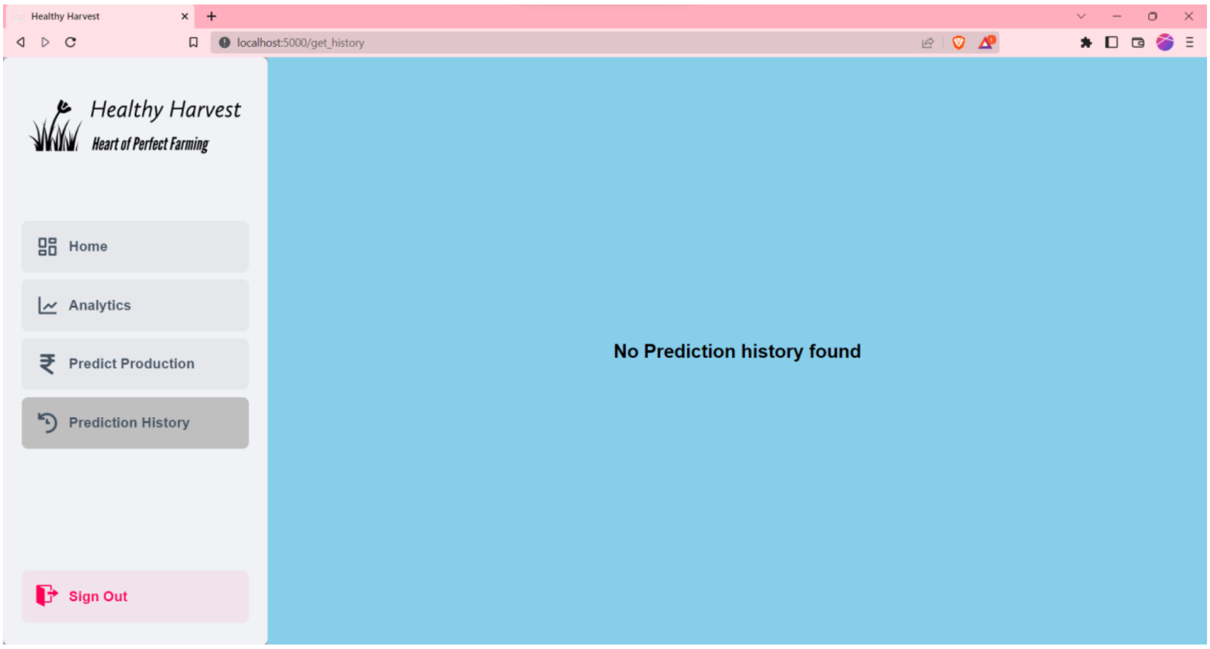
User Story / Task Story: As a user, I can view the previous results of predictions done by me.

Points: 2

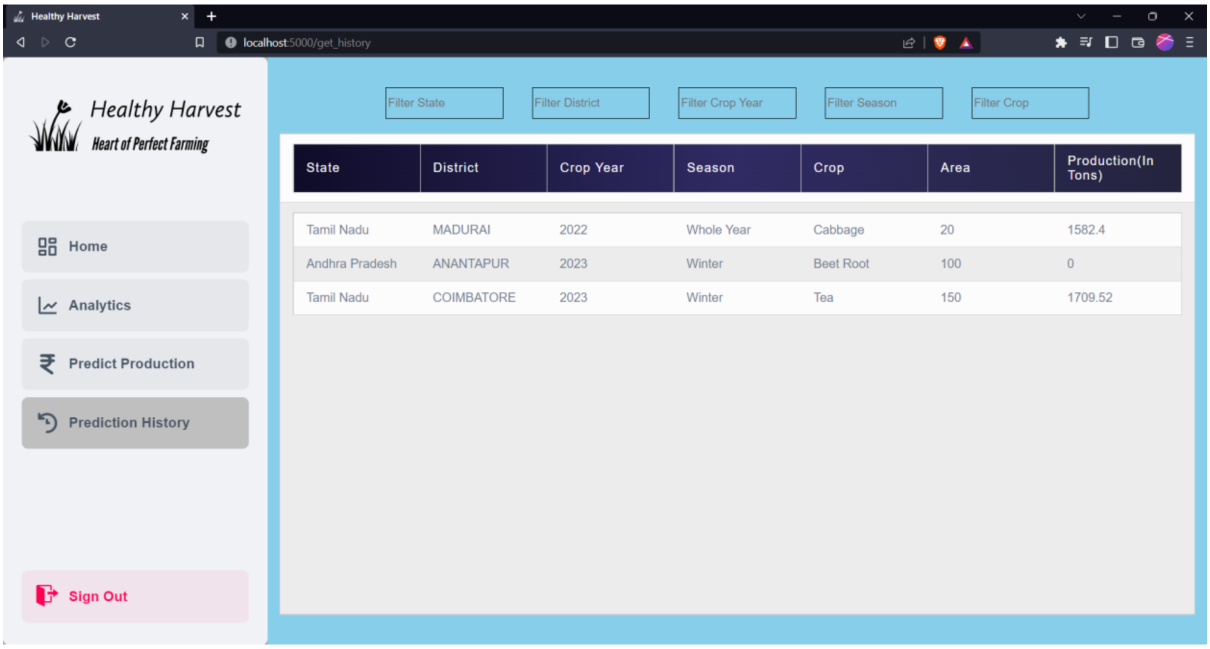
Priority: Low

Team Members: Marieswari M

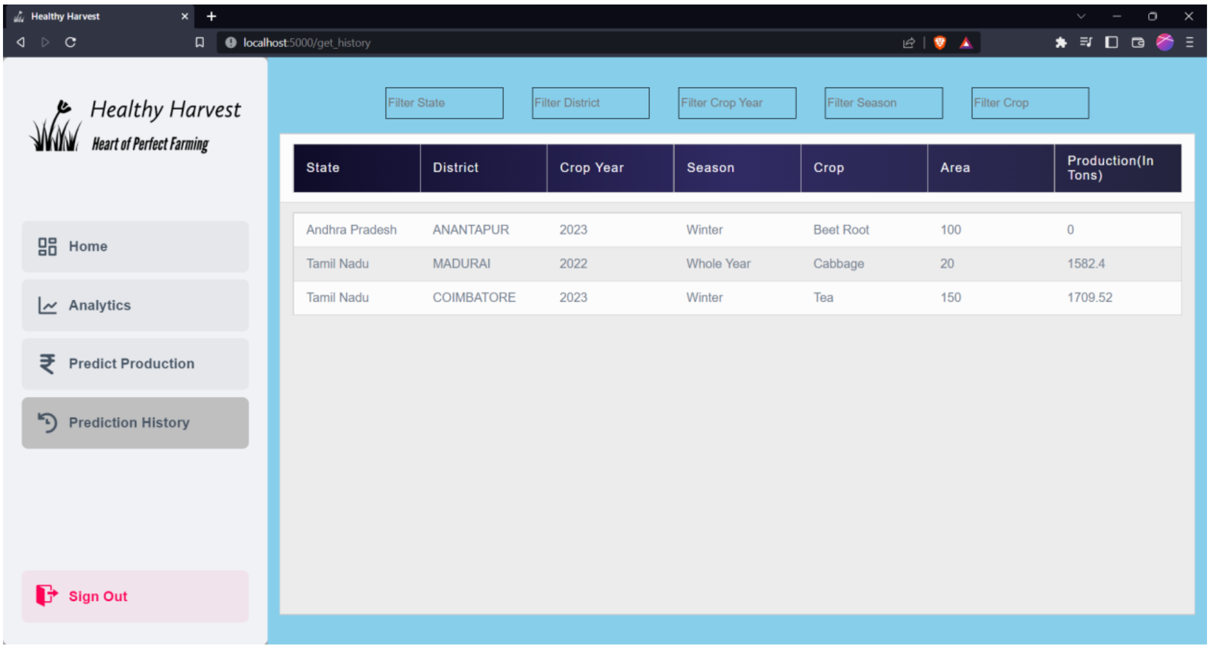
Screenshots:



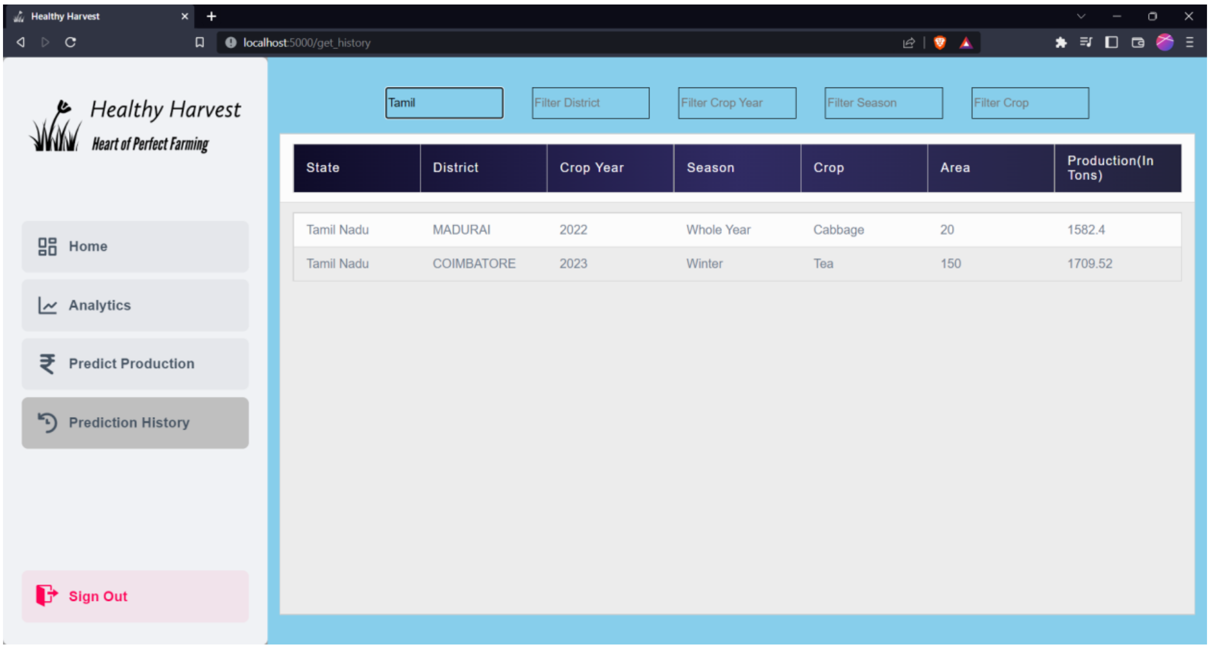
No Prediction history found



State	District	Crop Year	Season	Crop	Area	Production(In Tons)
Tamil Nadu	MADURAI	2022	Whole Year	Cabbage	20	1582.4
Andhra Pradesh	ANANTAPUR	2023	Winter	Beet Root	100	0
Tamil Nadu	COIMBATORE	2023	Winter	Tea	150	1709.52

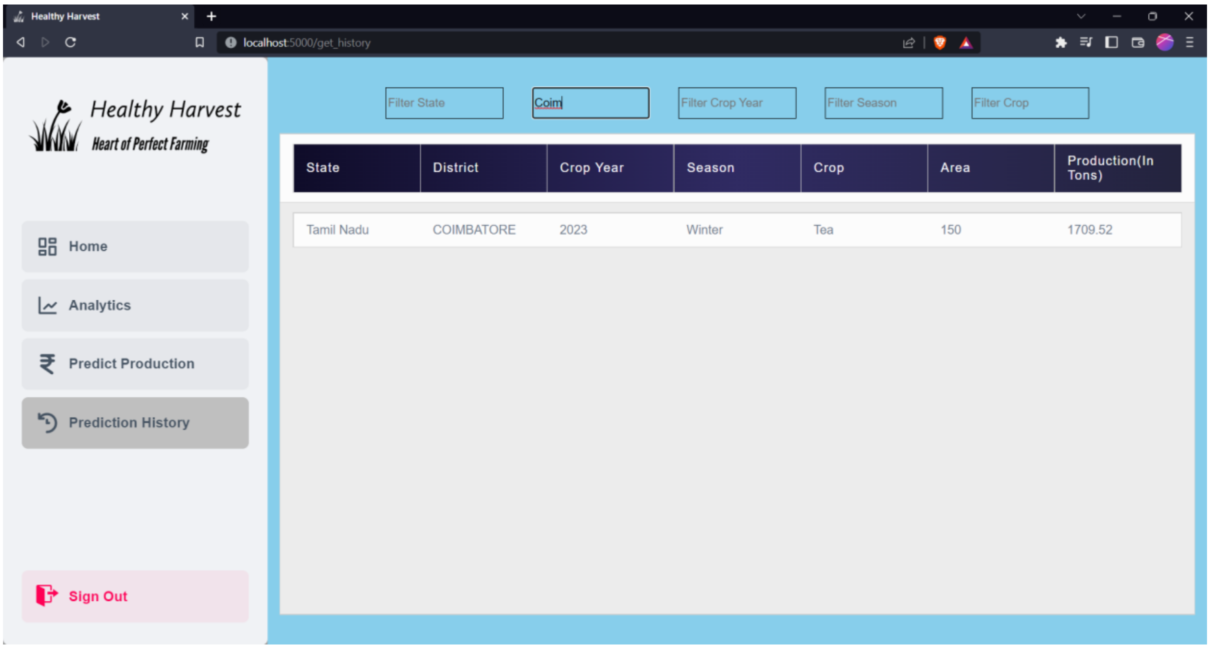


State	District	Crop Year	Season	Crop	Area	Production(In Tons)
Andhra Pradesh	ANANTAPUR	2023	Winter	Beet Root	100	0
Tamil Nadu	MADURAI	2022	Whole Year	Cabbage	20	1582.4
Tamil Nadu	COIMBATORE	2023	Winter	Tea	150	1709.52



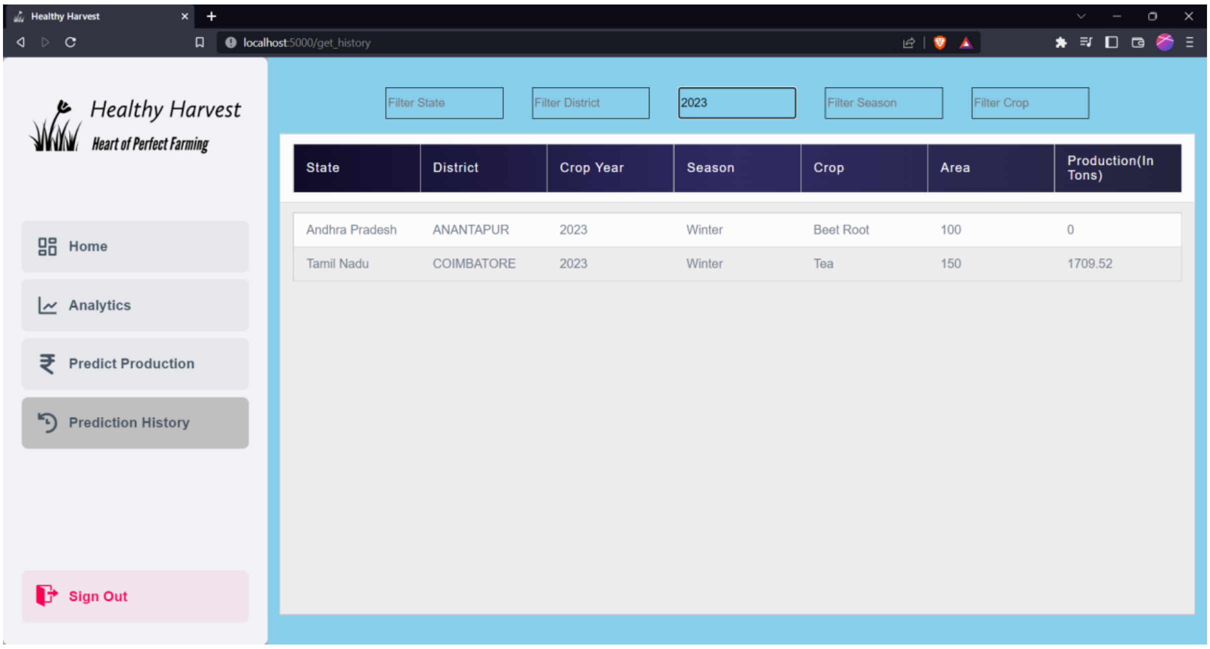
Tamil

State	District	Crop Year	Season	Crop	Area	Production(In Tons)
Tamil Nadu	MADURAI	2022	Whole Year	Cabbage	20	1582.4
Tamil Nadu	COIMBATORE	2023	Winter	Tea	150	1709.52



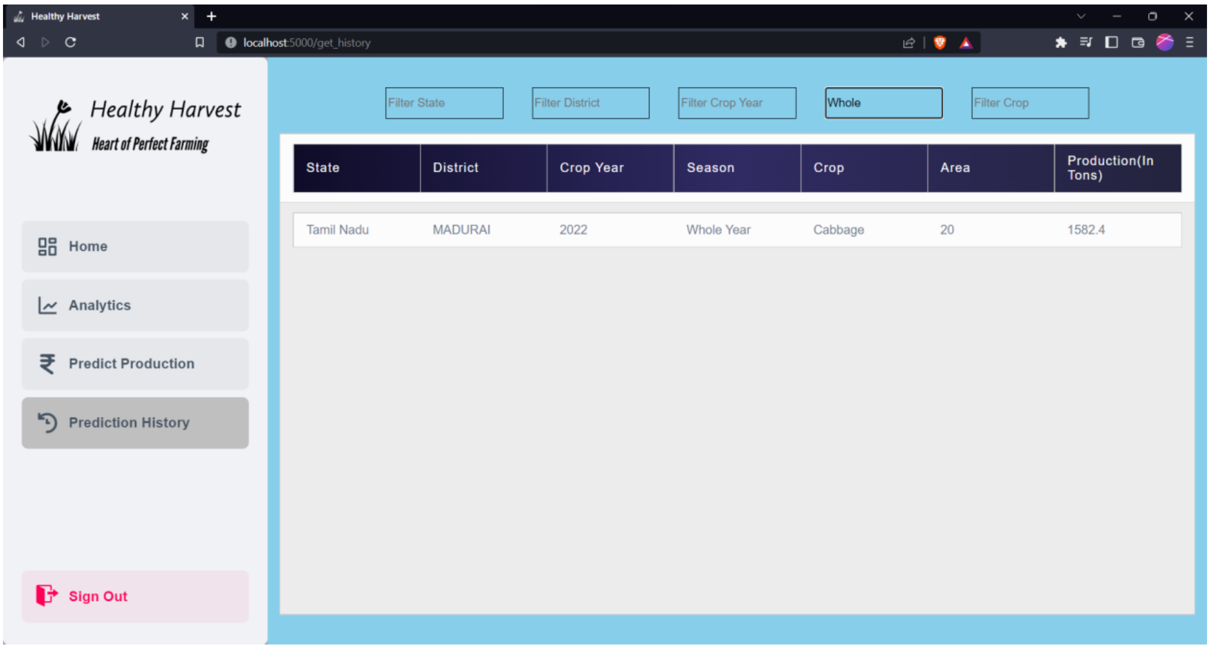
Coim

State	District	Crop Year	Season	Crop	Area	Production(In Tons)
Tamil Nadu	COIMBATORE	2023	Winter	Tea	150	1709.52



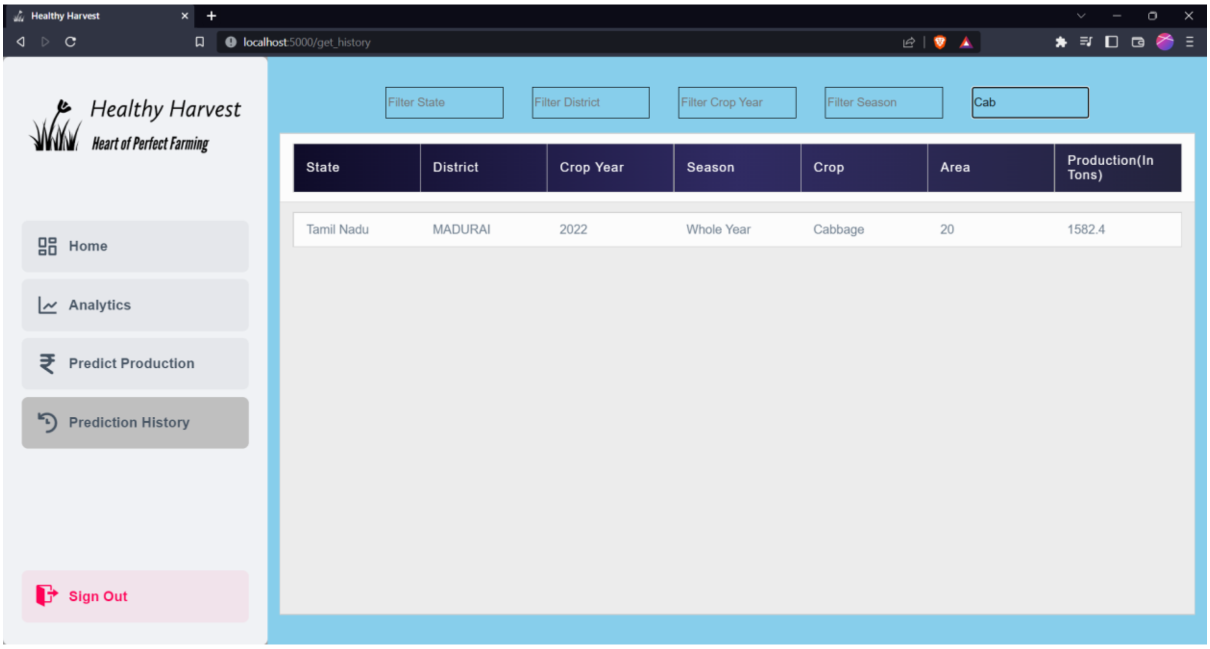
2023

State	District	Crop Year	Season	Crop	Area	Production(In Tons)
Andhra Pradesh	ANANTAPUR	2023	Winter	Beet Root	100	0
Tamil Nadu	COIMBATORE	2023	Winter	Tea	150	1709.52



Whole

State	District	Crop Year	Season	Crop	Area	Production(In Tons)
Tamil Nadu	MADURAI	2022	Whole Year	Cabbage	20	1582.4



Cab

State	District	Crop Year	Season	Crop	Area	Production(In Tons)
Tamil Nadu	MADURAI	2022	Whole Year	Cabbage	20	1582.4

Functional Requirement (Epic): Data Maintenance

User Story Number: USN-10

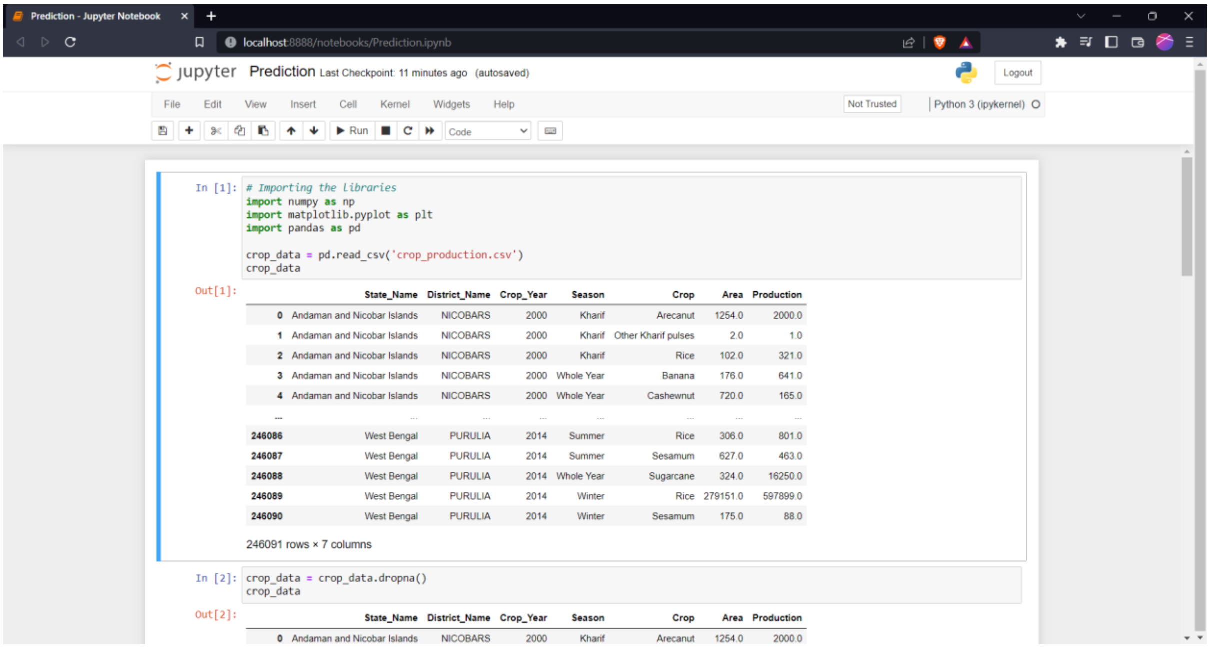
User Story / Task Story: As an administrator, I can collect Data and maintain it and update whenever necessary

Points: 1

Priority: Medium

Team Members: Marieswari M

Screenshots:

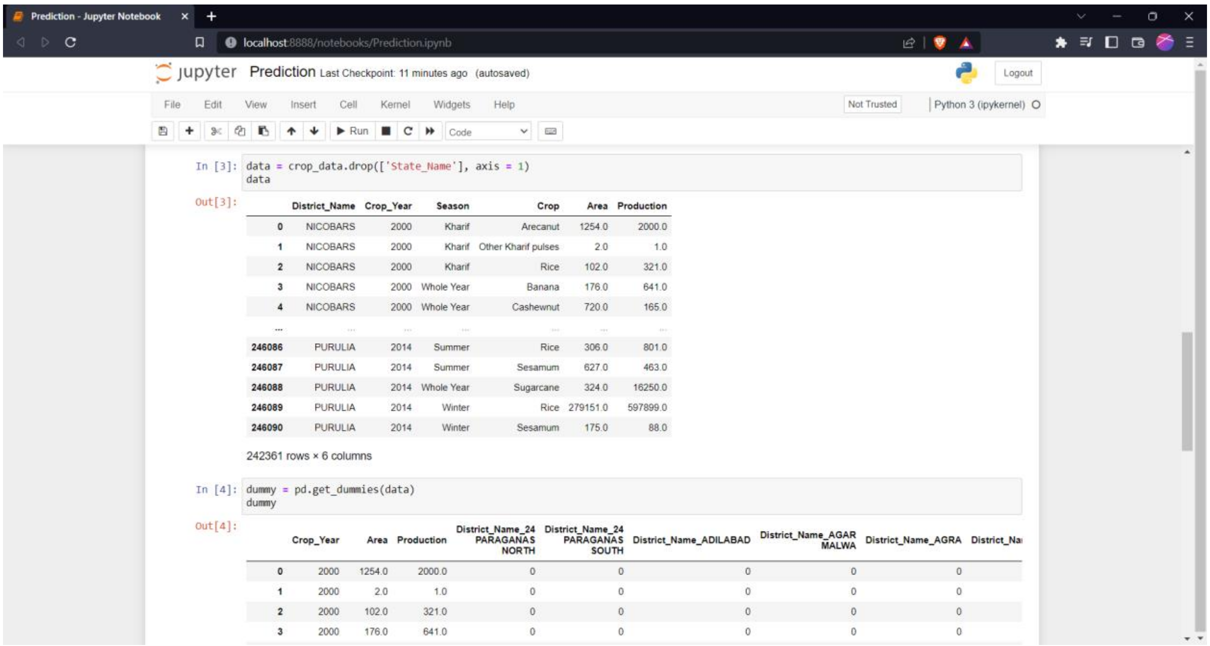

Prediction - Jupyter Notebook
localhost:8888/notebooks/Prediction.ipynb
jupyter Prediction Last Checkpoint: 11 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Not Trusted
Python 3 (ipykernel)
Run
Code

```
In [1]: # Importing the Libraries
        import numpy as np
        import matplotlib.pyplot as plt
        import pandas as pd

        crop_data = pd.read_csv('crop_production.csv')
        crop_data
```

```
Out[1]:
                        State_Name  District_Name  Crop_Year      Season                Crop      Area  Production
      0  Andaman and Nicobar Islands     NICOBARS       2000      Kharif            Arecanut    1254.0      2000.0
      1  Andaman and Nicobar Islands     NICOBARS       2000      Kharif  Other Kharif pulses      2.0         1.0
      2  Andaman and Nicobar Islands     NICOBARS       2000      Kharif                Rice     102.0       321.0
      3  Andaman and Nicobar Islands     NICOBARS       2000  Whole Year              Banana     176.0       641.0
      4  Andaman and Nicobar Islands     NICOBARS       2000  Whole Year           Cashewnut     720.0       165.0
    ...                          ...          ...        ...         ...                 ...       ...         ...
 246086                  West Bengal      PURULIA       2014      Summer                Rice     306.0       801.0
 246087                  West Bengal      PURULIA       2014      Summer             Sesamum     627.0       463.0
 246088                  West Bengal      PURULIA       2014  Whole Year           Sugarcane     324.0     16250.0
 246089                  West Bengal      PURULIA       2014      Winter                Rice  279151.0    597899.0
 246090                  West Bengal      PURULIA       2014      Winter             Sesamum     175.0        88.0

246091 rows × 7 columns
```

```
In [2]: crop_data = crop_data.dropna()
        crop_data
```

```
Out[2]:
                        State_Name  District_Name  Crop_Year      Season                Crop      Area  Production
      0  Andaman and Nicobar Islands     NICOBARS       2000      Kharif            Arecanut    1254.0      2000.0
```

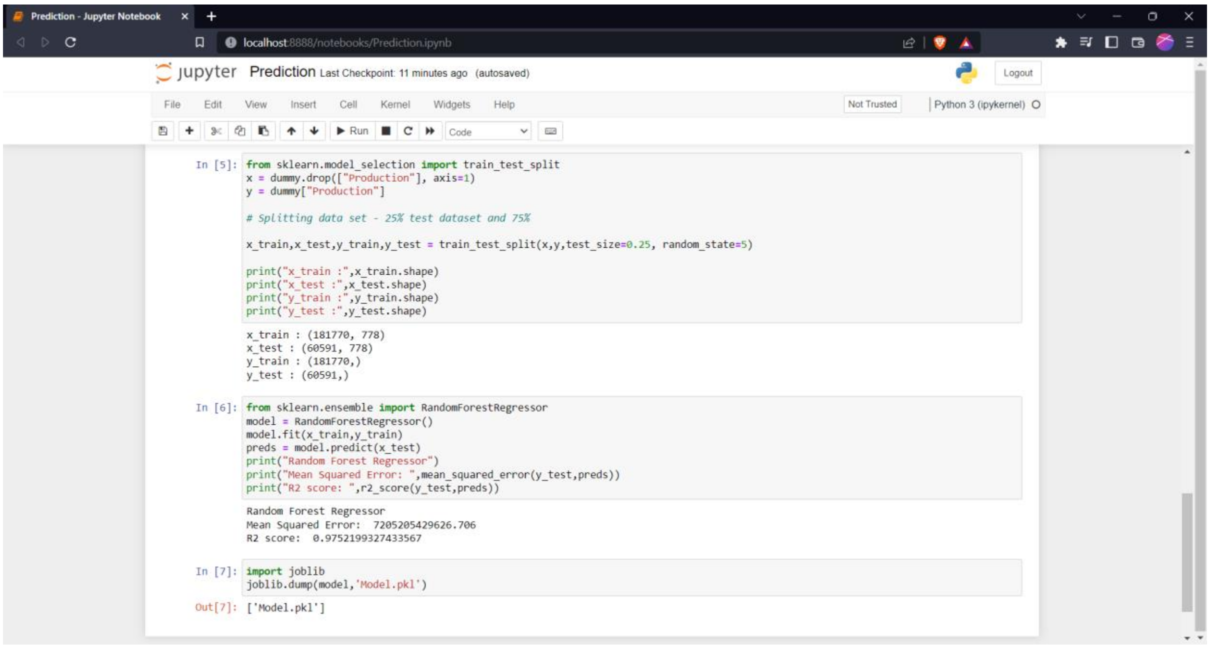

Prediction - Jupyter Notebook
localhost:8888/notebooks/Prediction.ipynb
jupyter Prediction Last Checkpoint: 11 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Not Trusted
Python 3 (ipykernel)
Run
Code

```
In [3]: data = crop_data.drop(['State_Name'], axis = 1)
        data
```

```
Out[3]:
         District_Name  Crop_Year      Season                 Crop      Area  Production
      0       NICOBARS       2000      Kharif             Arecanut    1254.0      2000.0
      1       NICOBARS       2000      Kharif  Other Kharif pulses       2.0         1.0
      2       NICOBARS       2000      Kharif                 Rice     102.0       321.0
      3       NICOBARS       2000  Whole Year               Banana     176.0       641.0
      4       NICOBARS       2000  Whole Year            Cashewnut     720.0       165.0
    ...            ...        ...         ...                  ...       ...         ...
 246086        PURULIA       2014      Summer                 Rice     306.0       801.0
 246087        PURULIA       2014      Summer              Sesamum     627.0       463.0
 246088        PURULIA       2014  Whole Year            Sugarcane     324.0     16250.0
 246089        PURULIA       2014      Winter                 Rice  279151.0    597899.0
 246090        PURULIA       2014      Winter              Sesamum     175.0        88.0

242361 rows × 6 columns
```

```
In [4]: dummy = pd.get_dummies(data)
        dummy
```

```
Out[4]:
                                  District_Name_24  District_Name_24                           District_Name_AGAR
    Crop_Year    Area  Production        PARAGANAS         PARAGANAS  District_Name_ADILABAD             MALWA  District_Name_AGRA  District_Na
                                              NORTH             SOUTH
 0       2000  1254.0      2000.0                0                 0                       0                 0                   0
 1       2000     2.0         1.0                0                 0                       0                 0                   0
 2       2000   102.0       321.0                0                 0                       0                 0                   0
 3       2000   176.0       641.0                0                 0                       0                 0                   0
```


Prediction - Jupyter Notebook
localhost:8888/notebooks/Prediction.ipynb
jupyter Prediction Last Checkpoint: 11 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Not Trusted
Python 3 (ipykernel)
Run
Code

```
In [5]: from sklearn.model_selection import train_test_split
        x = dummy.drop(["Production"], axis=1)
        y = dummy["Production"]

        # Splitting data set - 25% test dataset and 75%

        x_train,x_test,y_train,y_test = train_test_split(x,y,test_size=0.25, random_state=5)

        print("x_train :",x_train.shape)
        print("x_test :",x_test.shape)
        print("y_train :",y_train.shape)
        print("y_test :",y_test.shape)

        x_train : (181770, 778)
        x_test : (60591, 778)
        y_train : (181770,)
        y_test : (60591,)

In [6]: from sklearn.ensemble import RandomForestRegressor
        model = RandomForestRegressor()
        model.fit(x_train,y_train)
        preds = model.predict(x_test)
        print("Random Forest Regressor")
        print("Mean Squared Error: ",mean_squared_error(y_test,preds))
        print("R2 score: ",r2_score(y_test,preds))

        Random Forest Regressor
        Mean Squared Error:  7205205429626.706
        R2 score:  0.9752199327433567

In [7]: import joblib
        joblib.dump(model,'Model.pkl')

Out[7]: ['Model.pkl']
```

Whenever the dataset gets updated, the model will be trained again and the pickle file will be updated at the latest.