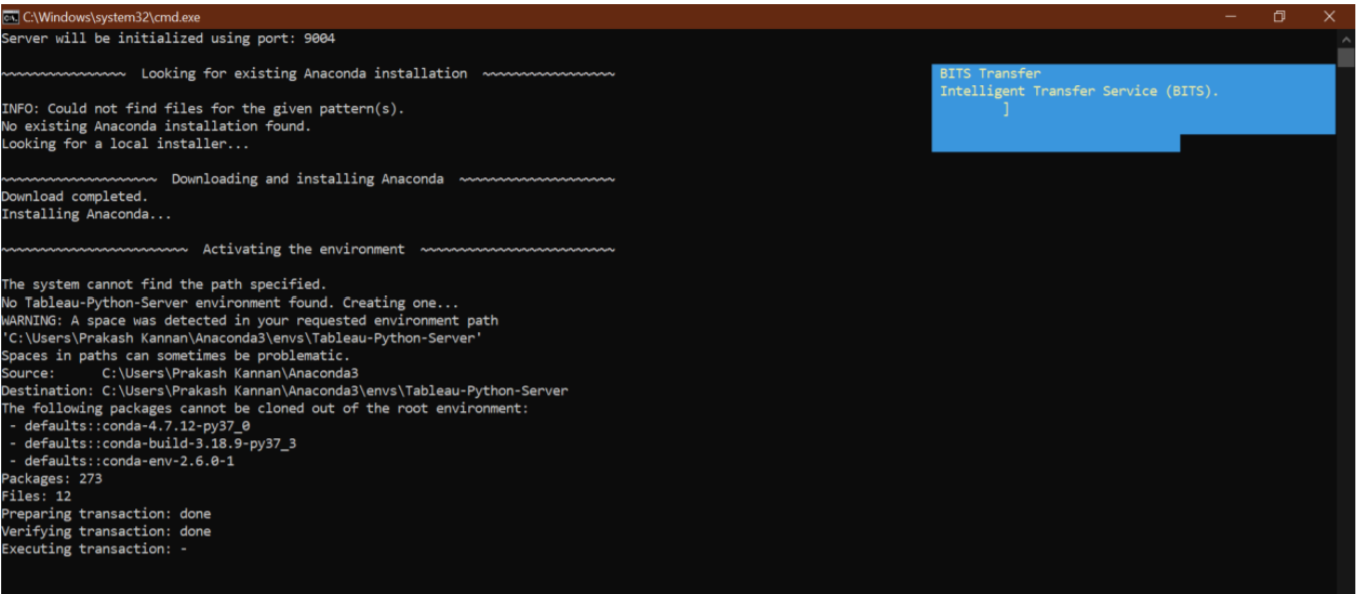
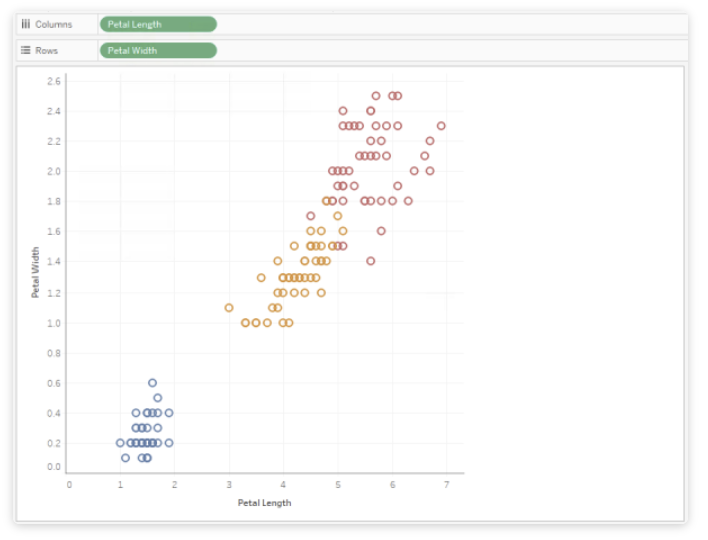
**Lab 13**

**R. Harini**

**18BCE1010**



**Using Naïve Bayes algorithm for Iris dataset:**



SCRIPT\_REAL("

import numpy as np

from sklearn.naive\_bayes import GaussianNB

# create the model

model = GaussianNB()

# transform input data

data\_x = np.transpose(np.array([\_arg1, \_arg2, \_arg3, \_arg4]))

data\_y = np.array(\_arg5)

# fit the model

model.fit(data\_x, data\_y)

# predict the category for input data

predicted\_category = model.predict(data\_x)

# transform output

return list(np.round(predicted\_category, decimals=2))

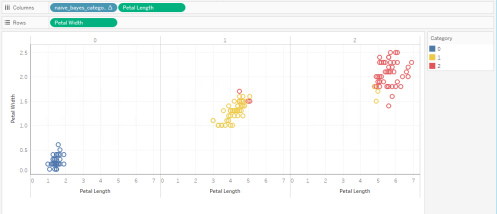
", ATTR([Petal Length]),

   ATTR([Petal Width]),

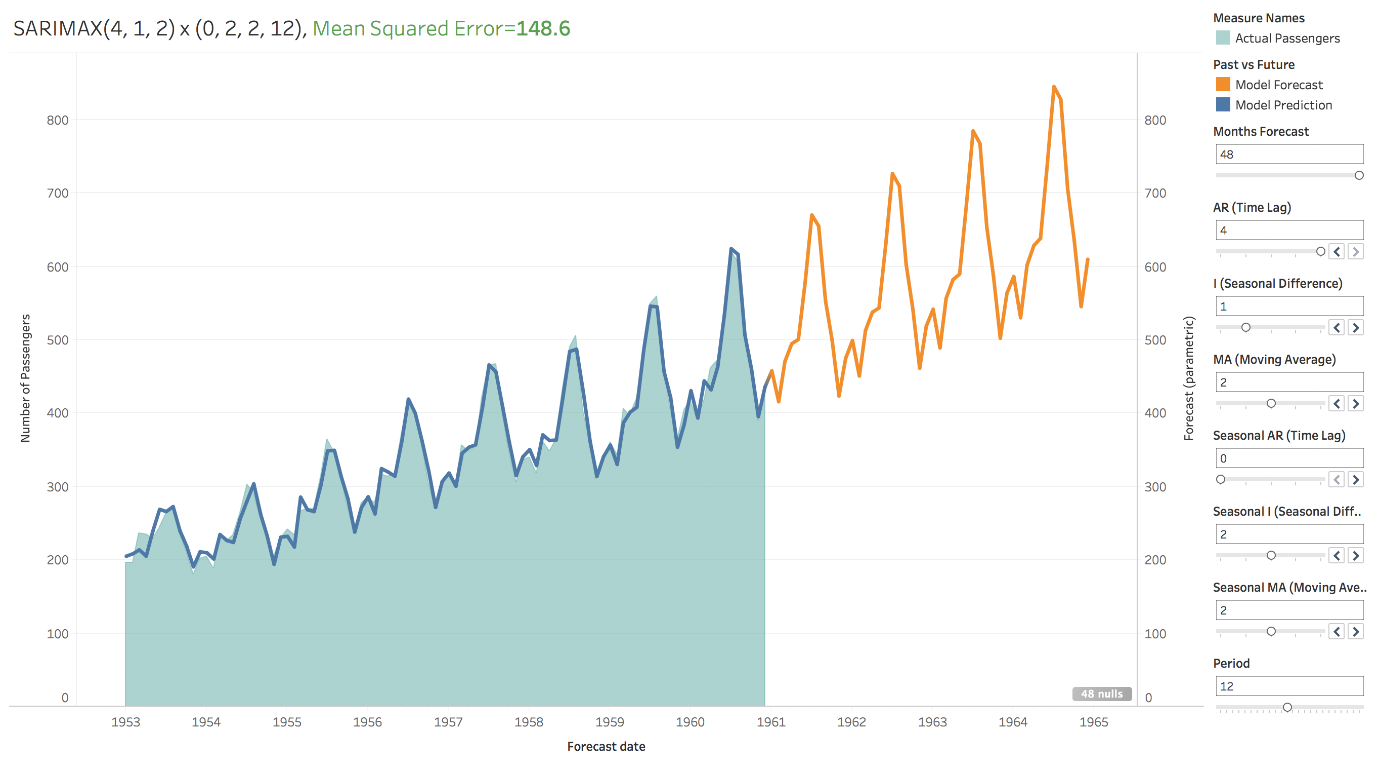
   ATTR([Sepal Length]),

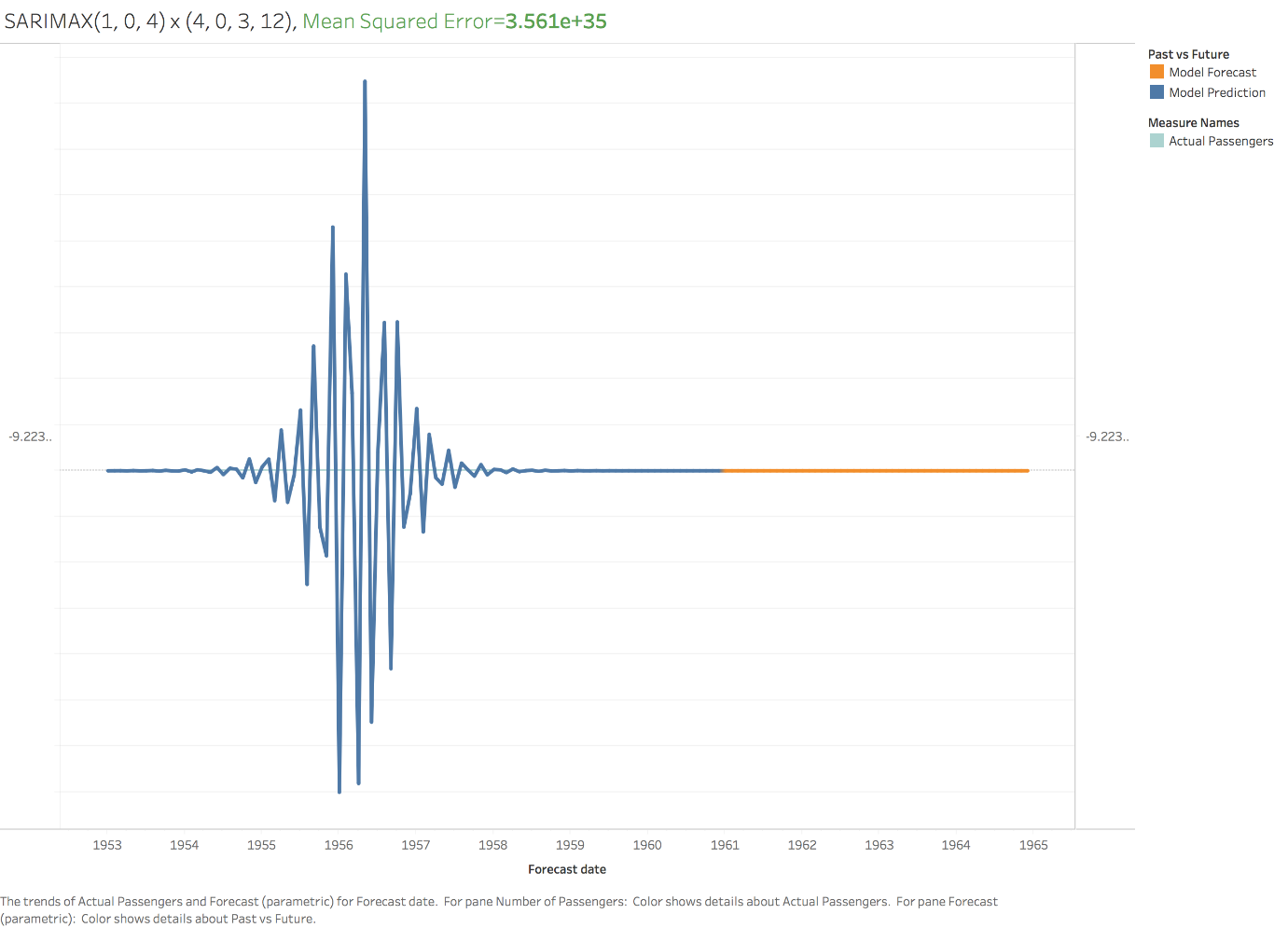
   ATTR([Sepal Width]),

   ATTR([Category]))



**Regression model for Air Passengers data:**





|  |
| --- |
| SCRIPT\_REAL( |
|  | ' |
|  | import pandas as pd |
|  | import statsmodels.api as sm |
|  |  |
|  | dates = \_arg1 |
|  | passengers = \_arg2 |
|  | order\_ar = min(\_arg3) |
|  | order\_i = min(\_arg4) |
|  | order\_ma = min(\_arg5) |
|  | months\_forecast = min(\_arg6) |
|  | seasonal\_ar = min(\_arg7) |
|  | seasonal\_i = min(\_arg8) |
|  | seasonal\_ma = min(\_arg9) |
|  | period = min(\_arg10) |
|  |  |
|  | y = pd.Series(data=passengers, index=dates) |
|  |  |
|  | mod = sm.tsa.statespace.SARIMAX(y, |
|  | order=(order\_ar, order\_i, order\_ma), |
|  | seasonal\_order=(seasonal\_ar, seasonal\_i, seasonal\_ma, period), |
|  | enforce\_stationarity=False, |
|  | enforce\_invertibility=False) |
|  |  |
|  | results = mod.fit() |
|  |  |
|  | pred\_uc = results.get\_forecast(steps=months\_forecast) |
|  |  |
|  | pred = results.get\_prediction(start=(pd.to\_datetime("1949-01-01")) + pd.DateOffset(months=months\_forecast), dynamic=False) |
|  |  |
|  | data = list(pred.predicted\_mean) |
|  | data.extend(pred\_uc.predicted\_mean) |
|  |  |
|  | return data |
|  | ', |
|  | ATTR([Month]), |
|  | ATTR([#Passengers]), |
|  | MIN([AR (Time Lag)]), |
|  | MIN([I (Seasonal Difference)]), |
|  | MIN([MA (Moving Average)]), |
|  | MIN([Months Forecast]), |
|  | MIN([Seasonal AR (Time Lag)]), |
|  | MIN([Seasonal I (Seasonal Difference)]), |
|  | MIN([Seasonal MA (Moving Average)]), |
|  | MIN([Period])) |