```
[1] #import necessary libraries
    import pandas as pd
    import numpy as np
    from sklearn.model_selection import train_test_split
    from sklearn.ensemble import RandomForestRegressor
    from sklearn.metrics import mean_squared_error
    import matplotlib.pyplot as plt
```

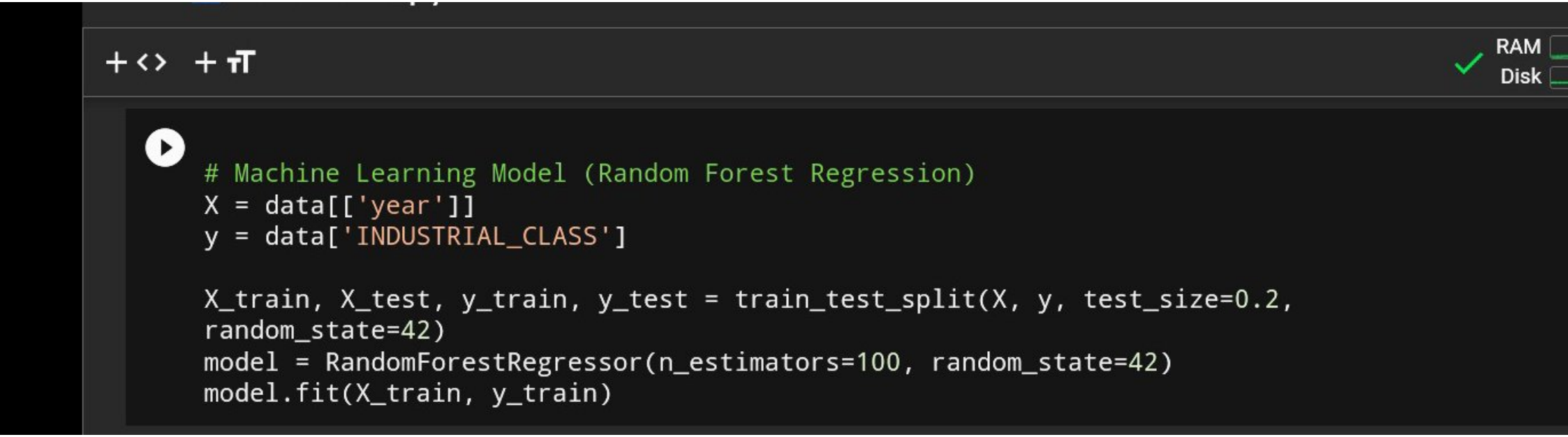
1s

```
[ ] # Load the CSV data
    data = pd.read_csv('/content/drive/MyDrive/DataGov_TamilNadu.csv',
    encoding = "ISO-8859-1")
```

```
# Data Preprocessing and Feature Engineering (customize this part based on
your data)
data['DATE_OF_REGISTRATION'] =
pd.to_datetime(data['DATE_OF_REGISTRATION'])
data['year'] = data['DATE_OF_REGISTRATION'].dt.year
```

```
[ ]
    #exploratory data analysis
    registrations_by_year = data.groupby('year').size()
```

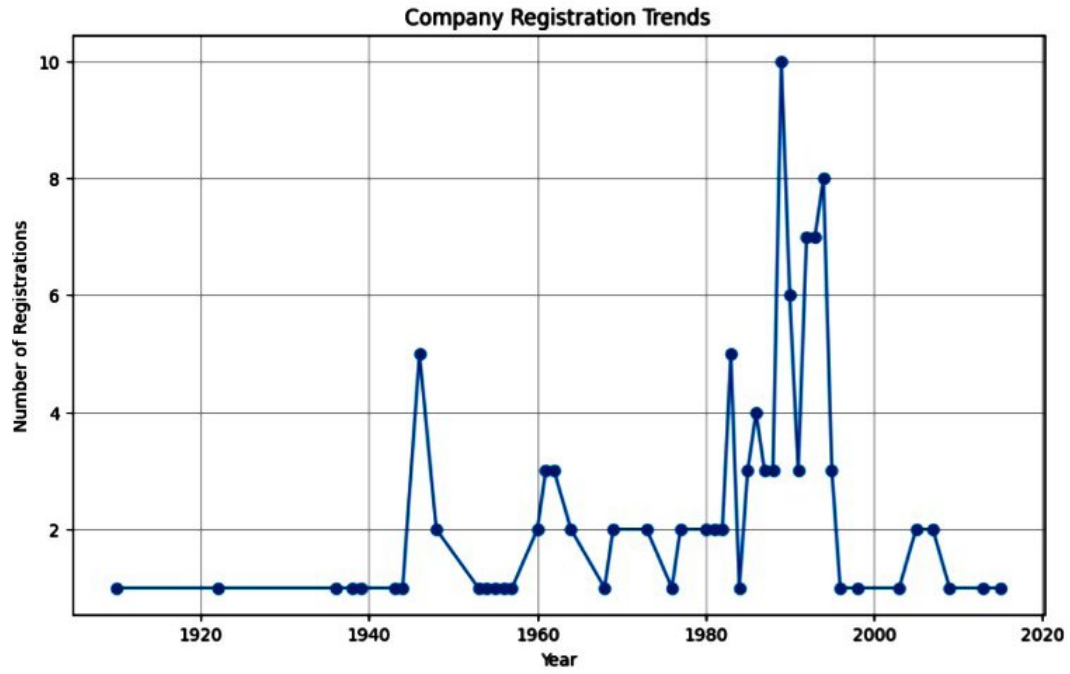
```
[ ] # Plot the number of registrations by year
    plt.figure(figsize=(10, 6))
    plt.plot(registrations_by_year.index, registrations_by_year.values,
    marker='o')
    plt.xlabel('Year')
    plt.ylabel('Number of Registrations')
    plt.title('Company Registration Trends')
    plt.grid(True)
    plt.show()
```


RAM
Disk
# Machine Learning Model (Random Forest Regression)
X = data[['year']]
y = data['INDUSTRIAL_CLASS']
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2,
random_state=42)
model = RandomForestRegressor(n_estimators=100, random_state=42)
model.fit(X_train, y_train)

```
[ ] # Model Evaluation
    y_pred = model.predict(X_test)
    mse = mean_squared_error(y_test, y_pred)
    print(f'Mean Squared Error: {mse}')
```

```
[ ]
    # Prediction (Predict registrations for future years)
    future_years = pd.DataFrame({'year': [2023, 2024, 2025]})
    future_registrations = model.predict(future_years)
    print(f'Predicted Registrations for 2023: {future_registrations[0]}')
    print(f'Predicted Registrations for 2024: {future_registrations[1]}')
    print(f'Predicted Registrations for 2025: {future_registrations[2]}')
```

OUTPUT:


Company Registration Trends
Number of Registrations
Year
10
8
6
4
2
1920
1940
1960
1980
2000
2020

```
Mean Squared Error: 38259115.42978392
Predicted Registrations for 2023: 16442.636666666665
Predicted Registrations for 2024: 16442.636666666665
Predicted Registrations for 2025: 16442.636666666665
```