Step 1: Import Required Libraries

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns

from sklearn.model_selection import train_test_split
from sklearn.preprocessing import OneHotEncoder
from sklearn.compose import ColumnTransformer
from sklearn.ensemble import RandomForestClassifier
from sklearn.metrics import accuracy_score, confusion_matrix, classification_report
import pickle
```

STEP 2: Upload and Load Dataset

Upload CSV File From Your local system

```
from google.colab import files
uploaded = files.upload()
```

Choose files matches.csv

- **matches.csv**(text/csv) - 144135 bytes, last modified: 13/07/2025 - 100% done

```
Saving matches.csv to matches (6).csv
```

Loadin The Dataset of Matches

```
matches = pd.read_csv('matches.csv')
```

```
matches.head()
```

	id	Season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	win_by_runs	win_by_wi
0	1	IPL-2017	Hyderabad	05-04-2017	Sunrisers Hyderabad	Royal Challengers Bangalore	Royal Challengers Bangalore	field	normal	0	Sunrisers Hyderabad	35	
1	2	IPL-2017	Pune	06-04-2017	Mumbai Indians	Rising Pune Supergiant	Rising Pune Supergiant	field	normal	0	Rising Pune Supergiant	0	
2	3	IPL-2017	Rajkot	07-04-2017	Gujarat Lions	Kolkata Knight Riders	Kolkata Knight Riders	field	normal	0	Kolkata Knight Riders	0	
3	4	IPL-2017	Indore	08-04-2017	Rising Pune Supergiant	Kings XI Punjab	Kings XI Punjab	field	normal	0	Kings XI Punjab	0	
4	5	IPL-2017	Bangalore	08-04-2017	Royal Challengers Bangalore	Delhi Daredevils	Royal Challengers Bangalore	bat	normal	0	Royal Challengers Bangalore	15	

Next steps: Generate code with `matches` View recommended plots New interactive sheet

```
matches.describe()
```

	id	dl_applied	win_by_runs	win_by_wickets
count	756.000000	756.000000	756.000000	756.000000
mean	1792.178571	0.025132	13.283069	3.350529
std	3464.478148	0.156630	23.471144	3.387963
min	1.000000	0.000000	0.000000	0.000000
25%	189.750000	0.000000	0.000000	0.000000
50%	378.500000	0.000000	0.000000	4.000000
75%	567.250000	0.000000	19.000000	6.000000
max	11415.000000	1.000000	146.000000	10.000000

STEP 3: Data Cleaning

Droping the irrelevant columns

```
matches.drop(['umpire1', 'umpire2', 'umpire3', 'result', 'dl_applied', 'id'], axis=1, inplace=True)
```

Drop rows where 'winner' is null

```
matches.dropna(subset=['winner'], inplace=True)
```

Standardize team names

```
matches.replace({'Kings XI Punjab': 'Punjab Kings', 'Delhi Daredevils': 'Delhi Capitals'}, inplace=True)
```

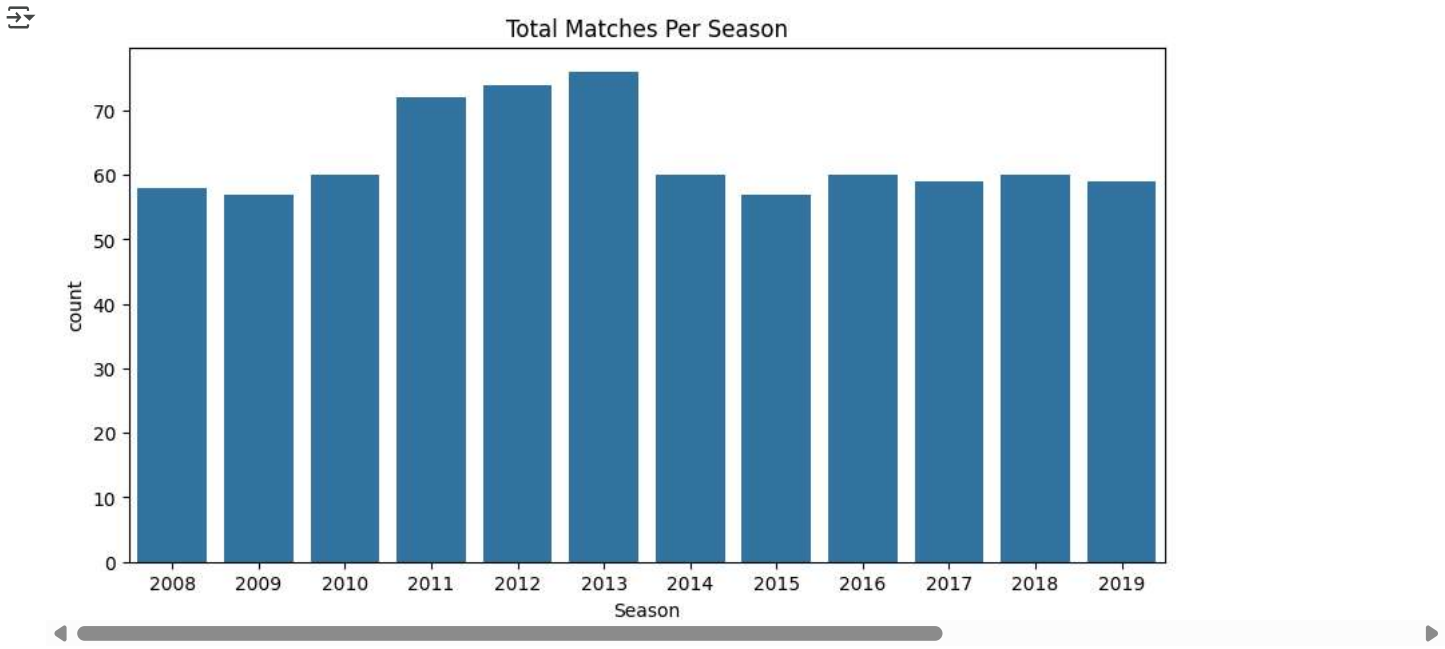
Double-click (or enter) to edit

```
matches['Season'] = matches['Season'].astype(str).str.extract('(\d+)').astype(int)
matches = matches[matches['Season'] <= 2019]
```

STEP 4: Visualizations (EDA)

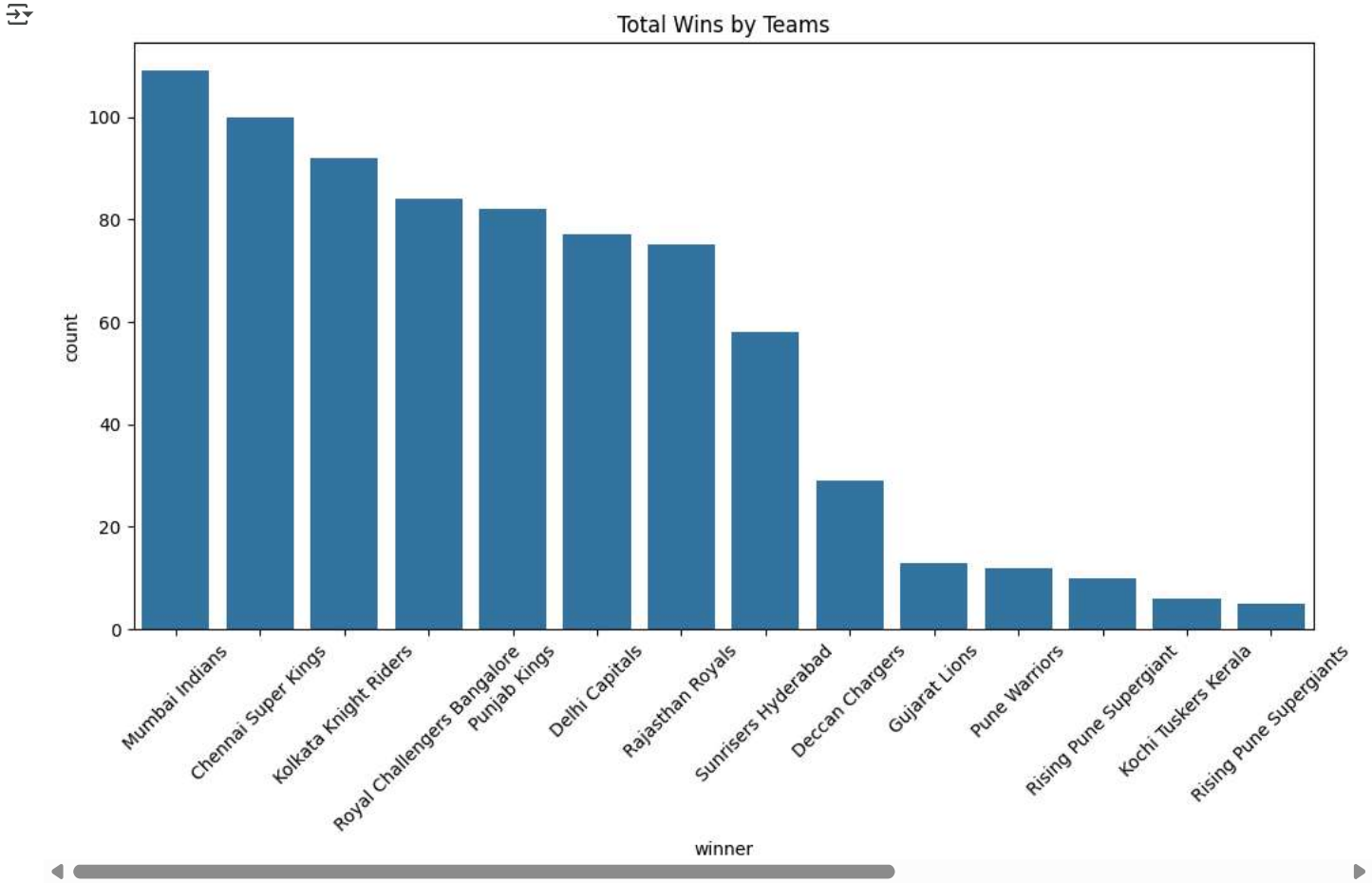
Matches per Season

```
plt.figure(figsize=(10,5))
sns.countplot(data=matches, x='Season')
plt.title("Total Matches Per Season")
plt.show()
```



Wins per Team

```
plt.figure(figsize=(12,6))
sns.countplot(data=matches, x='winner', order=matches['winner'].value_counts().index)
plt.title("Total Wins by Teams")
plt.xticks(rotation=45)
plt.show()
```



STEP 5: Prepare Features

```
df = matches[['Season', 'team1', 'team2', 'toss_winner', 'venue', 'city', 'winner']]
```

STEP 6: Encode Data (OneHotEncoder)

```
X = df.drop('winner', axis=1)
y = df['winner']

categorical_cols = ['team1', 'team2', 'toss_winner', 'venue', 'city']

# One-hot encoding for categorical columns
# Added handle_unknown='ignore' to the OneHotEncoder
ct = ColumnTransformer(transformers=[
    ('encoder', OneHotEncoder(drop='first', handle_unknown='ignore'), categorical_cols)
], remainder='passthrough')

X_encoded = ct.fit_transform(X)
```

STEP 7: Train-Test Split & Model Training

```
from sklearn.impute import SimpleImputer

# Impute missing values in the encoded features
# Use mean imputation as an example, you might choose a different strategy
imputer = SimpleImputer(strategy='mean')
X_encoded_imputed = imputer.fit_transform(X_encoded)


X_train, X_test, y_train, y_test = train_test_split(X_encoded_imputed, y, test_size=0.2, random_state=42)

model = RandomForestClassifier(n_estimators=100, random_state=42)
model.fit(X_train, y_train)
```

```
RandomForestClassifier
RandomForestClassifier(random_state=42)
```

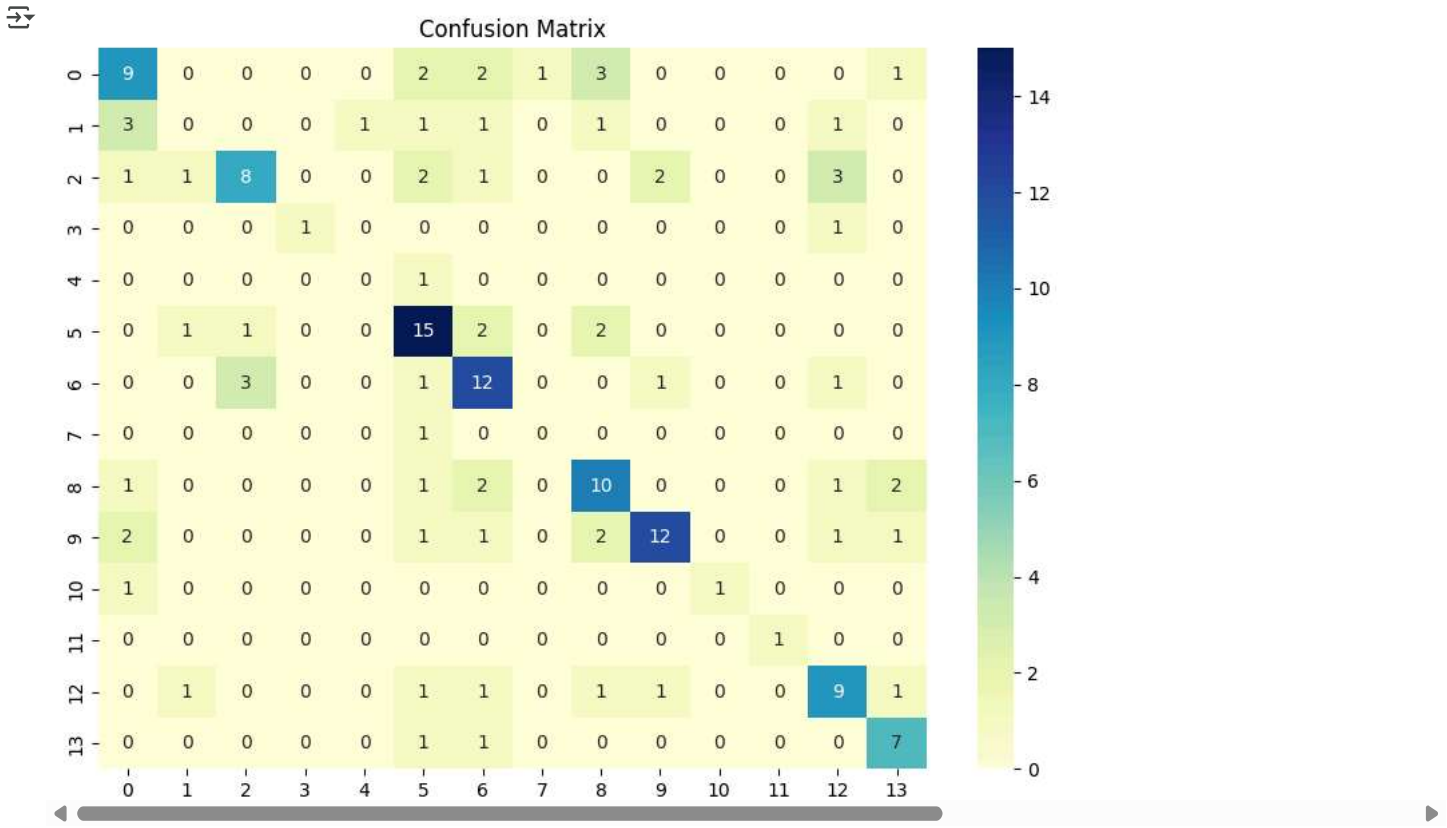
STEP 8: Evaluation

```
y_pred = model.predict(X_test)

print("Accuracy:", accuracy_score(y_test, y_pred))
print("\nClassification Report:\n", classification_report(y_test, y_pred))
```

```
Accuracy: 0.5629139072847682

Classification Report:
                              precision    recall  f1-score   support

           Chennai Super Kings       0.53      0.50      0.51        18
               Deccan Chargers       0.00      0.00      0.00         8
                Delhi Capitals       0.67      0.44      0.53        18
                  Gujarat Lions       1.00      0.50      0.67         2
          Kochi Tuskers Kerala       0.00      0.00      0.00         1
        Kolkata Knight Riders       0.56      0.71      0.62        21
               Mumbai Indians       0.52      0.67      0.59        18
                Pune Warriors       0.00      0.00      0.00         1
                 Punjab Kings       0.53      0.59      0.56        17
            Rajasthan Royals       0.75      0.60      0.67        20
     Rising Pune Supergiant       1.00      0.50      0.67         2
    Rising Pune Supergiants       1.00      1.00      1.00         1
Royal Challengers Bangalore       0.53      0.60      0.56        15
        Sunrisers Hyderabad       0.58      0.78      0.67         9

                   accuracy                           0.56       151
                  macro avg       0.55      0.49      0.50       151
               weighted avg       0.56      0.56      0.55       151
```

Double-click (or enter) to edit

```
# Confusion Matrix
plt.figure(figsize=(10,7))
sns.heatmap(confusion_matrix(y_test, y_pred), annot=True, cmap="YlGnBu", fmt='d')
plt.title("Confusion Matrix")
plt.show()
```



STEP 9: Predicting Past Champions (2008–2019)

```
winners = matches.groupby(['Season', 'winner']).size().reset_index(name='wins')
Season_winner = winners.sort_values(['Season', 'wins'], ascending=[True, False]).drop_duplicates('Season')

print(Season_winner)
```

```
    Season                winner  wins
6     2008      Rajasthan Royals    13
10    2009        Delhi Capitals    10
20    2010        Mumbai Indians    11
24    2011   Chennai Super Kings    11
37    2012  Kolkata Knight Riders    12
46    2013        Mumbai Indians    13
56    2014          Punjab Kings    12
60    2015   Chennai Super Kings    10
75    2016   Sunrisers Hyderabad    11
79    2017        Mumbai Indians    12
84    2018   Chennai Super Kings    11
95    2019        Mumbai Indians    11
```

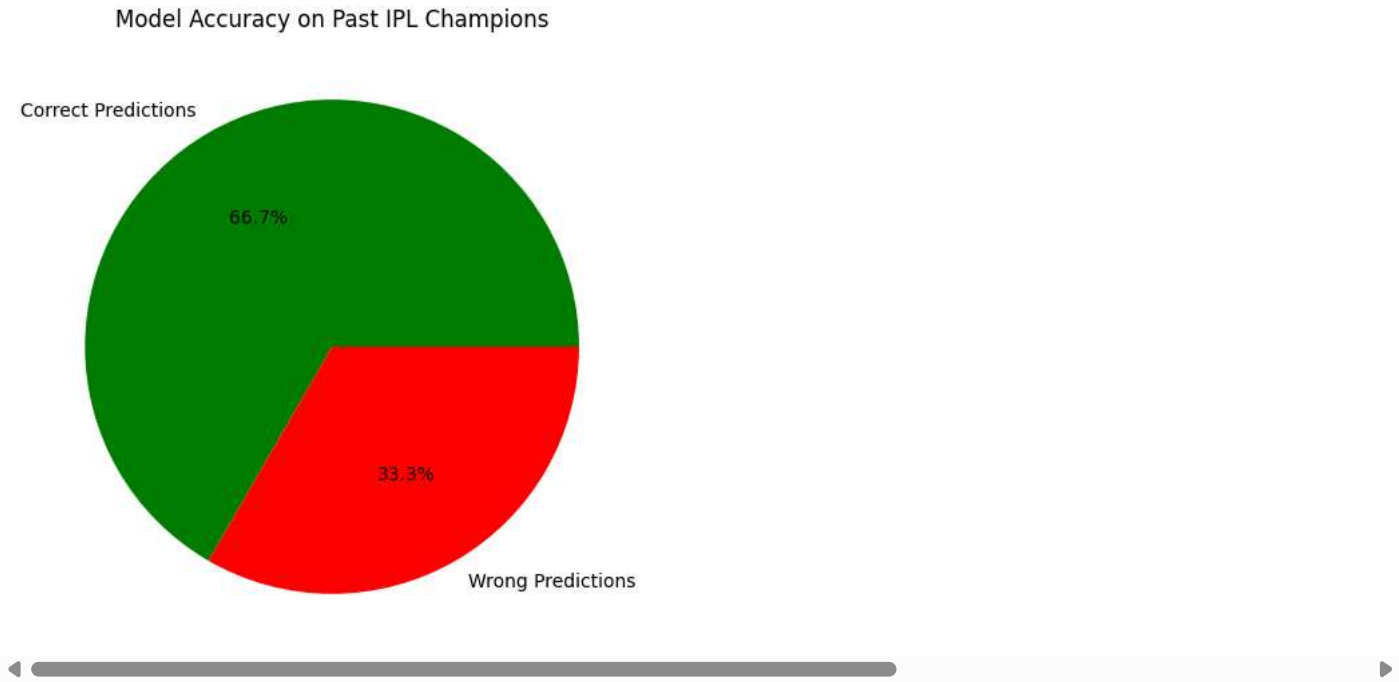
```
actual_winners_dict = {
    2008: "Rajasthan Royals",
    2009: "Deccan Chargers",
    2010: "Chennai Super Kings",
    2011: "Chennai Super Kings",
    2012: "Kolkata Knight Riders",
    2013: "Mumbai Indians",
    2014: "Kolkata Knight Riders",
    2015: "Mumbai Indians",
    2016: "Sunrisers Hyderabad",
    2017: "Mumbai Indians",
    2018: "Chennai Super Kings",
    2019: "Mumbai Indians"
}
```

```
# Create comparison_df from Season_winner and rename the winner column
comparison_df = Season_winner.rename(columns={'winner': 'predicted_winner'})


comparison_df['actual_winner'] = comparison_df['Season'].map(actual_winners_dict)

# Add a column to show match status
comparison_df['correct'] = comparison_df['actual_winner'] == comparison_df['predicted_winner']

print(comparison_df[['Season', 'actual_winner', 'predicted_winner', 'correct']])
```

```
    Season          actual_winner       predicted_winner  correct
6     2008       Rajasthan Royals       Rajasthan Royals     True
10    2009        Deccan Chargers         Delhi Capitals    False
20    2010    Chennai Super Kings         Mumbai Indians    False
24    2011    Chennai Super Kings    Chennai Super Kings     True
37    2012  Kolkata Knight Riders  Kolkata Knight Riders     True
46    2013         Mumbai Indians         Mumbai Indians     True
56    2014  Kolkata Knight Riders           Punjab Kings    False
60    2015         Mumbai Indians    Chennai Super Kings    False
75    2016    Sunrisers Hyderabad    Sunrisers Hyderabad     True
79    2017         Mumbai Indians         Mumbai Indians     True
84    2018    Chennai Super Kings    Chennai Super Kings     True
95    2019         Mumbai Indians         Mumbai Indians     True
```

```
correct_preds = comparison_df['correct'].sum()
total_preds = comparison_df.shape[0]

accuracy = (correct_preds / total_preds) * 100
print(f"🏆 Model Accuracy on Past IPL Champions (2008–2019): {accuracy:.2f}%")

# Pie Chart to show correct vs incorrect
labels = ['Correct Predictions', 'Wrong Predictions']
values = [correct_preds, total_preds - correct_preds]

plt.figure(figsize=(6,6))
plt.pie(values, labels=labels, autopct='%1.1f%%', colors=['green', 'red'])
plt.title("Model Accuracy on Past IPL Champions")
plt.show()
```

```
🏆 Model Accuracy on Past IPL Champions (2008–2019): 66.67%
```



STEP 10: Simulate IPL 2025 Final – Custom Input

```
# Simulate 2025 Final: RCB vs PBK
final_2025 = pd.DataFrame({
    'team1': ['Royal Challengers Bangalore'],
    'team2': ['Punjab Kings'],
```

```
    'toss_winner': ['Punjab Kings'],
    'venue': ['Narendra Modi Stadium'],
    'city': ['Ahmedabad'],
    'Season': [2025]
})

final_encoded = ct.transform(final_2025)
prediction = model.predict(final_encoded)
print("🏆 Predicted 2025 IPL Winner:", prediction[0])
```

```
🏆 Predicted 2025 IPL Winner: Royal Challengers Bangalore
/usr/local/lib/python3.11/dist-packages/sklearn/preprocessing/_encoders.py:246: UserWarning: Found unknown categories in columns [3] dur
  warnings.warn(
```