

Program :

Collecting Dataset :

First of all we want the data which we need to train our model. So we collected the IPL data from 2008-2022 from the website named Kaggle. There are two files in this data set: deliveries.csv and matches.csv. They include information like city, date, team1, team2, toss win, toss decision, winner, umpire1, umpire2, man of the match, batting team, over, balls, batter, bowler, and so on. This data is saved in a csv format in an excel file.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	wln_by_runs	wln_by_wickets	player_of_match	venue	umpire1	umpire2	umpire3
2	1	2017	Hyderabad	2017-04-05	Sunfers Hyderabad	Royal Challengers B	Royal Challengers B	field	normal	0	Sunfers Hyderabad	35	0	Yuvraj Singh	Rajiv Gandhi Internia AY Dandekar	NJ Liang		
3	2	2017	Pune	2017-04-06	Mumbai Indians	Rising Pune Supergl	Rising Pune Supergl	field	normal	0	Rising Pune Supergl	0	7	SPD Smith	Maharashtra Cricket A Nand Kishore	S Ravi		
4	3	2017	Rajkot	2017-04-07	Gujarat Lions	Kolkata Knight Rider	Kolkata Knight Rider	field	normal	0	Kolkata Knight Rider	0	10	CA Lynn	Saurashtra Cricket AJ Nitin Menon	CK Nandan		
5	4	2017	Indore	2017-04-08	Rising Pune Supergl	Kings XI Punjab	Kings XI Punjab	field	normal	0	Kings XI Punjab	0	6	GJ Maxwell	Holler Cricket Stadium AK Choudhary	C Shamsuddin		
6	5	2017	Bangalore	2017-04-09	Royal Challengers B	Dehli Daredevils	Royal Challengers B	bat	normal	0	Royal Challengers B	15	0	KM Jadevar	M Chinnaswamy Stadium			
7	6	2017	Hyderabad	2017-04-09	Gujarat Lions	Sunfers Hyderabad	Sunfers Hyderabad	field	normal	0	Sunfers Hyderabad	0	9	Rashid Khan	Rajiv Gandhi Internia A Dehmuh	NJ Liang		
8	7	2017	Mumbai	2017-04-09	Kolkata Knight Rider	Mumbai Indians	Mumbai Indians	field	normal	0	Mumbai Indians	0	4	N Rana	Wanhehe Stadium Nith Menon	CK Nandan		
9	8	2017	Indore	2017-04-10	Royal Challengers B	Kings XI Punjab	Royal Challengers B	bat	normal	0	Kings XI Punjab	0	8	AR Patel	Holler Cricket Stadium AK Choudhary	C Shamsuddin		
10	9	2017	Pune	2017-04-11	Dehli Daredevils	Rising Pune Supergl	Rising Pune Supergl	field	normal	0	Dehli Daredevils	97	0	SV Samson	Maharashtra Cricket AY Dandekar	S Ravi		
11	10	2017	Mumbai	2017-04-12	Sunfers Hyderabad	Mumbai Indians	Mumbai Indians	field	normal	0	Mumbai Indians	0	4	JJ Bumrah	Wanhehe Stadium Nith Menon	CK Nandan		
12	11	2017	Kolkata	2017-04-13	Kings XI Punjab	Kolkata Knight Rider	Kolkata Knight Rider	field	normal	0	Kolkata Knight Rider	0	8	SP Narine	Eden Gardens A Dehmuh	NJ Liang		
13	12	2017	Bangalore	2017-04-14	Royal Challengers B	Mumbai Indians	Mumbai Indians	field	normal	0	Mumbai Indians	0	4	KA Pollard	M Chinnaswamy Sta KN Ananthapadman	AK Chaudhary		
14	13	2017	Rajkot	2017-04-14	Rising Pune Supergl	Gujarat Lions	Gujarat Lions	field	normal	0	Gujarat Lions	0	7	AJ Tye	Saurashtra Cricket AJ A Nand Kishore	S Ravi		
15	14	2017	Kolkata	2017-04-15	Kolkata Knight Rider	Sunfers Hyderabad	Sunfers Hyderabad	field	normal	0	Kolkata Knight Rider	17	0	RV Uthappa	Eden Gardens AY Dandekar	NJ Liang		
16	15	2017	Dehli	2017-04-15	Dehli Daredevils	Kings XI Punjab	Dehli Daredevils	bat	normal	0	Dehli Daredevils	51	0	CJ Anderson	Feroz Shah Kotla YC Barte	Nitin Menon		
17	16	2017	Mumbai	2017-04-16	Gujarat Lions	Mumbai Indians	Mumbai Indians	field	normal	0	Mumbai Indians	0	6	N Rana	Wanhehe Stadium A Nand Kishore	S Ravi		
18	17	2017	Bangalore	2017-04-16	Rising Pune Supergl	Royal Challengers B	Royal Challengers B	field	normal	0	Rising Pune Supergl	27	0	BA Stokes	M Chinnaswamy Sta KN Ananthapadman	C Shamsuddin		
19	18	2017	Dehli	2017-04-17	Dehli Daredevils	Kolkata Knight Rider	Dehli Daredevils	bat	normal	0	Kolkata Knight Rider	0	4	NM Coulter-Nile	Feroz Shah Kotla Nith Menon	CK Nandan		
20	19	2017	Hyderabad	2017-04-17	Sunfers Hyderabad	Kings XI Punjab	Kings XI Punjab	field	normal	0	Sunfers Hyderabad	5	0	B Kumar	Rajiv Gandhi Internia AY Dandekar	A Dehmuh		
21	20	2017	Rajkot	2017-04-18	Royal Challengers B	Gujarat Lions	Gujarat Lions	field	normal	0	Royal Challengers B	21	0	OH Gayle	Saurashtra Cricket AJ S Ravi	VK Sharma		
22	21	2017	Hyderabad	2017-04-19	Sunfers Hyderabad	Dehli Daredevils	Sunfers Hyderabad	bat	normal	0	Sunfers Hyderabad	15	0	KS Williamson	Rajiv Gandhi Internia CB Gaffney	NJ Liang		
23	22	2017	Indore	2017-04-20	Kings XI Punjab	Mumbai Indians	Mumbai Indians	field	normal	0	Mumbai Indians	0	8	JC Butler	Holler Cricket Stadium M Erasmus	C Shamsuddin		
24	23	2017	Kolkata	2017-04-21	Kolkata Knight Rider	Gujarat Lions	Gujarat Lions	field	normal	0	Gujarat Lions	0	4	SK Raina	Eden Gardens CB Gaffney	Nitin Menon		
25	24	2017	Mumbai	2017-04-22	Dehli Daredevils	Dehli Daredevils	Dehli Daredevils	field	normal	0	Mumbai Indians	14	0	MJ McClenaghan	Wanhehe Stadium A Nand Kishore	S Ravi		
26	25	2017	Pune	2017-04-23	Sunfers Hyderabad	Rising Pune Supergl	Rising Pune Supergl	field	normal	0	Rising Pune Supergl	0	6	MS Dhoni	Maharashtra Cricket AY Dandekar	A Dehmuh		
27	26	2017	Rajkot	2017-04-24	Kings XI Punjab	Gujarat Lions	Gujarat Lions	field	normal	0	Kings XI Punjab	26	0	HM Amla	Saurashtra Cricket AJ AK Choudhary	M Erasmus		
28	27	2017	Kolkata	2017-04-25	Kolkata Knight Rider	Royal Challengers B	Royal Challengers B	field	normal	0	Kolkata Knight Rider	82	0	NM Coulter-Nile	Eden Gardens CB Gaffney	CK Nandan		
29	28	2017	Mumbai	2017-04-26	Rising Pune Supergl	Mumbai Indians	Mumbai Indians	field	normal	0	Rising Pune Supergl	3	0	BA Stokes	Wanhehe Stadium A Nand Kishore	S Ravi		
30	29	2017	Pune	2017-04-26	Rising Pune Supergl	Kolkata Knight Rider	Kolkata Knight Rider	field	normal	0	Kolkata Knight Rider	0	7	RV Uthappa	Maharashtra Cricket AY Dandekar	NJ Liang		
31	30	2017	Bangalore	2017-04-27	Royal Challengers B	Gujarat Lions	Gujarat Lions	field	normal	0	Gujarat Lions	0	7	AJ Tye	M Chinnaswamy Sta AK Choudhary	C Shamsuddin		
32	31	2017	Kolkata	2017-04-28	Dehli Daredevils	Kolkata Knight Rider	Kolkata Knight Rider	field	normal	0	Kolkata Knight Rider	0	7	G Gambhir	Eden Gardens NJ Liang	S Ravi		
33	32	2017	Chandigarh	2017-04-28	Sunfers Hyderabad	Kings XI Punjab	Kings XI Punjab	field	normal	0	Sunfers Hyderabad	28	0	Rashid Khan	Punjab Cricket Assoc Nith Menon	CK Nandan		
34	33	2017	Pune	2017-04-29	Rising Pune Supergl	Royal Challengers B	Royal Challengers B	field	normal	0	Rising Pune Supergl	81	0	LH Ferguson	Maharashtra Cricket KN Ananthapadman	M Erasmus		
35	34	2017	Rajkot	2017-04-29	Gujarat Lions	Mumbai Indians	Gujarat Lions	bat	tie	0	Mumbai Indians	0	0	KH Panoya	Saurashtra Cricket AJ AK Choudhary	CB Gaffney		
36	35	2017	Chandigarh	2017-04-30	Dehli Daredevils	Kings XI Punjab	Kings XI Punjab	field	normal	0	Kings XI Punjab	0	10	Sandeep Sharma	Punjab Cricket Assoc YC Barte	CK Nandan		

match_id	Inning	batting_team	bowling_team	over	ball	batman	non_striker	bowler	is_super_over	wide_runs	bye_runs	legbye_runs	noball_runs
1	1	Sunfers Hyderabad	Royal Challengers B	1	1	DA Warner	S Dhawan	TS Mills	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	1	2	DA Warner	S Dhawan	TS Mills	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	1	3	DA Warner	S Dhawan	TS Mills	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	1	4	DA Warner	S Dhawan	TS Mills	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	1	5	DA Warner	S Dhawan	TS Mills	0	2	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	1	6	S Dhawan	DA Warner	TS Mills	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	1	7	S Dhawan	DA Warner	TS Mills	0	0	0	1	0
1	1	Sunfers Hyderabad	Royal Challengers B	2	1	S Dhawan	DA Warner	A Choudhary	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	2	2	DA Warner	S Dhawan	A Choudhary	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	2	3	DA Warner	S Dhawan	A Choudhary	0	0	0	0	1
1	1	Sunfers Hyderabad	Royal Challengers B	2	4	DA Warner	S Dhawan	A Choudhary	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	2	5	DA Warner	S Dhawan	A Choudhary	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	2	6	MC Henriques	S Dhawan	A Choudhary	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	2	7	MC Henriques	S Dhawan	A Choudhary	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	3	1	S Dhawan	MC Henriques	TS Mills	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	3	2	MC Henriques	S Dhawan	TS Mills	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	3	3	MC Henriques	S Dhawan	TS Mills	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	3	4	MC Henriques	S Dhawan	TS Mills	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	3	5	S Dhawan	MC Henriques	TS Mills	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	3	6	MC Henriques	S Dhawan	TS Mills	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	4	1	MC Henriques	S Dhawan	YS Chahal	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	4	2	MC Henriques	S Dhawan	YS Chahal	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	4	3	S Dhawan	MC Henriques	YS Chahal	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	4	4	S Dhawan	MC Henriques	YS Chahal	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	4	5	MC Henriques	S Dhawan	YS Chahal	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	4	6	S Dhawan	MC Henriques	YS Chahal	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	5	1	S Dhawan	MC Henriques	S Aravind	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	5	2	MC Henriques	S Dhawan	S Aravind	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	5	3	S Dhawan	MC Henriques	S Aravind	0	0	0	0	0
1	1	Sunfers Hyderabad	Royal Challengers B	5	4	MC Henriques	S Dhawan	S Aravind	0	0	0	0	0

Data pre-processing :

```
import pandas as pd
import numpy as np
from google.colab import drive
drive.mount("/content/drive")
```

Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mount("/content/drive", force_remount=True).

```
M = pd.read_csv('/content/drive/My Drive/projects/matches.csv')
```

```
D = pd.read_csv('/content/drive/My Drive/projects/deliveries.csv')
```

```
match.head()
```

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

```
M.shape
```

```
(756, 18)
```

```
D.head()
```

	match_id	inning	batting_team	bowling_team	over	ball	batsman	non_striker	bowler	is_super_over	...	bye_runs	legbye_runs	noball_runs	penalty_runs	batsman_runs
0	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	1	1	DA Warner	S Dhawan	TS Mills	0	...	0	0	0	0	0
1	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	1	2	DA Warner	S Dhawan	TS Mills	0	...	0	0	0	0	0
2	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	1	3	DA Warner	S Dhawan	TS Mills	0	...	0	0	0	0	4
3	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	1	4	DA Warner	S Dhawan	TS Mills	0	...	0	0	0	0	0
4	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	1	5	DA Warner	S Dhawan	TS Mills	0	...	0	0	0	0	0

```
D.shape
```

```
(179078, 21)
```

```
total_score_df = delivery.groupby(['match_id', 'inning']).sum()['total_runs'].reset_index()
total_score_df = total_score_df[total_score_df['inning'] == 1]
total_score_df
```

	match_id	inning	total_runs
0	1	1	207
2	2	1	184
4	3	1	183
6	4	1	163
8	5	1	157
...
1518	11347	1	143
1520	11412	1	136
1522	11413	1	171
1524	11414	1	155
1526	11415	1	152

```
M_df = M.merge(total_score_df[['match_id', 'total_runs']], left_on='id', right_on='match_id')
M_df
```

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	win_by_runs	win_by_wickets	play
0	1	2017	Hyderabad	2017-04-05	Sunrisers Hyderabad	Royal Challengers Bangalore	Royal Challengers Bangalore	field	normal	0	Sunrisers Hyderabad	35	0	
1	2	2017	Pune	2017-04-06	Mumbai Indians	Rising Pune Supergiant	Rising Pune Supergiant	field	normal	0	Rising Pune Supergiant	0	7	
2	3	2017	Rajkot	2017-04-07	Gujarat Lions	Kolkata Knight Riders	Kolkata Knight Riders	field	normal	0	Kolkata Knight Riders	0	10	
3	4	2017	Indore	2017-04-08	Rising Pune Supergiant	Kings XI Punjab	Kings XI Punjab	field	normal	0	Kings XI Punjab	0	6	
4	5	2017	Bangalore	2017-04-08	Royal Challengers Bangalore	Delhi Daredevils	Royal Challengers Bangalore	bat	normal	0	Royal Challengers Bangalore	15	0	
...
751	11347	2019	Mumbai	05/05/19	Kolkata Knight Riders	Mumbai Indians	Mumbai Indians	field	normal	0	Mumbai Indians	0	9	
752	11412	2019	Chennai	07/05/19	Chennai Super Kings	Mumbai Indians	Chennai Super Kings	bat	normal	0	Mumbai Indians	0	6	
753	11413	2019	Visakhapatnam	08/05/19	Sunrisers Hyderabad	Delhi Capitals	Delhi Capitals	field	normal	0	Delhi Capitals	0	2	

```
M_df['team1'].unique()
```

```
array(['Sunrisers Hyderabad', 'Mumbai Indians', 'Gujarat Lions',  
      'Rising Pune Supergiant', 'Royal Challengers Bangalore',  
      'Kolkata Knight Riders', 'Delhi Daredevils', 'Kings XI Punjab',  
      'Chennai Super Kings', 'Rajasthan Royals', 'Deccan Chargers',  
      'Kochi Tuskers Kerala', 'Pune Warriors', 'Rising Pune Supergiants',  
      'Delhi Capitals'], dtype=object)
```

```
teams = [ 'Sunrisers Hyderabad','Mumbai Indians','Royal Challengers  
Bangalore','KolkataKnight Riders','Kings XI Punjab','Chennai Super Kings','Rajasthan  
Royals','Delhi Capitals']
```

```
M_df['team1'] = M_df['team1'].str.replace('Delhi Daredevils', 'Delhi Capitals')
```

```
M_df['team2'] = M_df['team2'].str.replace('Delhi Daredevils', 'Delhi Capitals')
```

```
M_df['team1'] = M_df['team1'].str.replace('Deccan Chargers', 'Sunrisers Hyderabad')
```

```
M_df['team2'] = M_df['team2'].str.replace('Deccan Chargers', 'Sunrisers Hyderabad')
```

```
M_df = M_df[M_df['team1'].isin(teams)]
```

```
M_df = M_df[M_df['team2'].isin(teams)]
```

```
M_df.shape
```

```
(602, 21)
```

```
M_df
```

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	...	win_by_runs	win_by_wickets	p
0	1	2017	Hyderabad	2017-04-05	Sunrisers Hyderabad	Royal Challengers Bangalore	Royal Challengers Bangalore	field	normal	0	...	35	0	
4	5	2017	Bangalore	2017-04-08	Royal Challengers Bangalore	Delhi Capitals	Royal Challengers Bangalore	bat	normal	0	...	15	0	
6	7	2017	Mumbai	2017-04-09	Kolkata Knight Riders	Mumbai Indians	Mumbai Indians	field	normal	0	...	0	4	
7	8	2017	Indore	2017-04-10	Royal Challengers Bangalore	Kings XI Punjab	Royal Challengers Bangalore	bat	normal	0	...	0	8	
9	10	2017	Mumbai	2017-04-12	Sunrisers Hyderabad	Mumbai Indians	Mumbai Indians	field	normal	0	...	0	4	
...	
751	11347	2019	Mumbai	05/05/19	Kolkata Knight Riders	Mumbai Indians	Mumbai Indians	field	normal	0	...	0	9	
752	11412	2019	Chennai	07/05/19	Chennai Super Kings	Mumbai Indians	Chennai Super Kings	bat	normal	0	...	0	6	
753	11413	2019	Visakhapatnam	08/05/19	Sunrisers Hyderabad	Delhi Capitals	Delhi Capitals	field	normal	0	...	0	2	
754	11414	2019	Visakhapatnam	10/05/19	Delhi Capitals	Chennai Super Kings	Chennai Super Kings	field	normal	0	...	0	6	
755	11415	2019	Hyderabad	12/05/19	Mumbai Indians	Chennai Super Kings	Mumbai Indians	bat	normal	0	...	1	0	

```
M_df = M_df[M_df['dl_applied'] == 0]
```

```
M_df
```

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	...	win_by_runs	win_by_wickets
0	1	2017	Hyderabad	2017-04-05	Sunrisers Hyderabad	Royal Challengers Bangalore	Royal Challengers Bangalore		field normal	0	...	35	0
4	5	2017	Bangalore	2017-04-08	Royal Challengers Bangalore	Delhi Capitals	Royal Challengers Bangalore		bat normal	0	...	15	0
6	7	2017	Mumbai	2017-04-09	Kolkata Knight Riders	Mumbai Indians	Mumbai Indians		field normal	0	...	0	4
7	8	2017	Indore	2017-04-10	Royal Challengers Bangalore	Kings XI Punjab	Royal Challengers Bangalore		bat normal	0	...	0	8
9	10	2017	Mumbai	2017-04-12	Sunrisers Hyderabad	Mumbai Indians	Mumbai Indians		field normal	0	...	0	4
...
751	11347	2019	Mumbai	05/05/19	Kolkata Knight Riders	Mumbai Indians	Mumbai Indians		field normal	0	...	0	9
752	11412	2019	Chennai	07/05/19	Chennai Super Kings	Mumbai Indians	Chennai Super Kings		bat normal	0	...	0	6
753	11413	2019	Visakhapatnam	08/05/19	Sunrisers Hyderabad	Delhi Capitals	Delhi Capitals		field normal	0	...	0	2
754	11414	2019	Visakhapatnam	10/05/19	Delhi Capitals	Chennai Super Kings	Chennai Super Kings		field normal	0	...	0	6
755	11415	2019	Hyderabad	12/05/19	Mumbai Indians	Chennai Super Kings	Mumbai Indians		bat normal	0	...	1	0

```
M_df = M_df[['match_id','city','winner','total_runs']]
```

```
D_df = M_df.merge(D,on='match_id')
```

```
D_df = d_df[D_df['inning'] == 2]
```

```
D_df.shape
```

```
(67825, 24)
```

D_df['current_score'] = D_df.groupby('match_id').cumsum()['total_runs_y']

D_df

match_id	city	winner	total_runs_x	inning	batting_team	bowling_team	over	ball	batsman	...	legbye_runs	noball_runs	penalty_runs	batsman_runs	extra_runs	total_runs_y	p
125	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	1	CH Gayle	...	0	0	0	1	0	1
126	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	2	Mandeep Singh	...	0	0	0	0	0	0
127	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	3	Mandeep Singh	...	0	0	0	0	0	0
128	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	4	Mandeep Singh	...	0	0	0	2	0	2
129	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	5	Mandeep Singh	...	0	0	0	4	0	4
...
40194	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	2	RA Jadeja	...	0	0	0	1	0	1
40195	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	3	SR Watson	...	0	0	0	2	0	2
40196	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	4	SR Watson	...	0	0	0	1	0	1
40197	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	5	SN Thakur	...	0	0	0	2	0	2
40198	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	6	SN Thakur	...	0	0	0	0	0	0

D_df['runs_left'] = D_df['total_runs_x'] - D_df['current_score']

D_df

match_id	city	winner	total_runs_x	inning	batting_team	bowling_team	over	ball	batsman	...	noball_runs	penalty_runs	batsman_runs	extra_runs	total_runs_y	player_dismissed	dis
125	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	1	CH Gayle	...	0	0	1	0	1	NaN
126	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	2	Mandeep Singh	...	0	0	0	0	0	NaN
127	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	3	Mandeep Singh	...	0	0	0	0	0	NaN
128	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	4	Mandeep Singh	...	0	0	2	0	2	NaN
129	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	5	Mandeep Singh	...	0	0	4	0	4	NaN
...
140194	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	2	RA Jadeja	...	0	0	1	0	1	NaN
140195	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	3	SR Watson	...	0	0	2	0	2	NaN
140196	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	4	SR Watson	...	0	0	1	0	1	SR Watson
140197	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	5	SN Thakur	...	0	0	2	0	2	NaN
140198	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	6	SN Thakur	...	0	0	0	0	0	SN Thakur

D_df['balls_left']= 126 - (D_df['over']*6 + D_df['ball'])

D_df

	match_id	city	winner	total_runs_x	inning	batting_team	bowling_team	over	ball	batsman	...	penalty_runs	batsman_runs	extra_runs	total_runs_y	player_dismissed	dismissal_kind	f	
	125	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	1	CH Gayle	...	0	1	0	1	NaN	NaN	
	126	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	2	Mandeep Singh	...	0	0	0	0	NaN	NaN	
	127	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	3	Mandeep Singh	...	0	0	0	0	NaN	NaN	
	128	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	4	Mandeep Singh	...	0	2	0	2	NaN	NaN	
	129	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	5	Mandeep Singh	...	0	4	0	4	NaN	NaN	
...	
140194	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	2	RA Jadeja	...	0	1	0	1	NaN	NaN		
140195	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	3	SR Watson	...	0	2	0	2	NaN	NaN		
140196	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	4	SR Watson	...	0	1	0	1	SR Watson	run out		
140197	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	5	SN Thakur	...	0	2	0	2	NaN	NaN		
140198	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kinas	Mumbai Indians	20	6	SN Thakur	...	0	0	0	0	SN Thakur	lbw		

D_df['player_dismissed'] = D_df['player_dismissed'].fillna("0")

D_df['player_dismissed'] = D_df['player_dismissed'].apply(lambda x:x if x == "0" else "1")

D_df['player_dismissed'] = D_df['player_dismissed'].astype('int')

wickets = D_df.groupby('match_id').cumsum()['player_dismissed'].values

D_df['wickets'] = 10 - wickets

D_df.head()

	match_id	city	winner	total_runs_x	inning	batting_team	bowling_team	over	ball	batsman	...	batsman_runs	extra_runs	total_runs_y	player_dismissed	dismissal_kind	fielder	cu	
	125	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	1	CH Gayle	...	1	0	1	0	NaN	NaN	
	126	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	2	Mandeep Singh	...	0	0	0	0	NaN	NaN	
	127	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	3	Mandeep Singh	...	0	0	0	0	NaN	NaN	
	128	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	4	Mandeep Singh	...	2	0	2	0	NaN	NaN	
	129	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	5	Mandeep Singh	...	4	0	4	0	NaN	NaN	

D_df

	match_id	city	winner	total_runs_x	inning	battling_team	bowling_team	over	ball	batsman	...	player_dismissed	dismissa
125	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	1	CH Gayle	...	0	
126	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	2	Mandeep Singh	...	0	
127	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	3	Mandeep Singh	...	0	
128	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	4	Mandeep Singh	...	0	
129	1	Hyderabad	Sunrisers Hyderabad	207	2	Royal Challengers Bangalore	Sunrisers Hyderabad	1	5	Mandeep Singh	...	0	
...
140194	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	2	RA Jadeja	...	0	
140195	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	3	SR Watson	...	0	
140196	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	4	SR Watson	...	1	
140197	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	5	SN Thakur	...	0	
140198	11415	Hyderabad	Mumbai Indians	152	2	Chennai Super Kings	Mumbai Indians	20	6	SN Thakur	...	1	

D_df['crr'] = (D_df['current_score']*6)/(120 - D_df['balls_left'])

D_df['rrr'] = (D_df['runs_left']*6)/D_df['balls_left']

def result(row):

return 1 if row['battling_team'] == row['winner'] else 0

D_df['result'] = D_df.apply(result,axis=1)

final_df =

D_df[['battling_team','bowling_team','city','runs_left','balls_left','wickets','total_runs_x','crr','rrr','result']]

final_df = final_df.sample(final_df.shape[0])

final_df.sample()

	battling_team	bowling_team	city	runs_left	balls_left	wickets	total_runs_x	crr	rrr	result
16332	Chennai Super Kings	Royal Challengers Bangalore	Chennai	76	81	10	126	7.692308	5.62963	0

final_df.dropna(inplace = True)

final_df = final_df[final_df['balls_left']!= 0]

final_df

	batting_team	bowling_team	city	runs_left	balls_left	wickets	total_runs_x	crr	rrr	result
98182	Kolkata Knight Riders	Chennai Super Kings	Chennai	98	100	9	134	10.800000	5.880000	0
100285	Mumbai Indians	Delhi Daredevils	Mumbai	102	72	6	152	6.250000	8.500000	1
56318	Chennai Super Kings	Kings XI Punjab	Chennai	73	47	7	156	6.821918	9.319149	0
79232	Sunrisers Hyderabad	Kings XI Punjab	Sharjah	193	118	10	193	0.000000	9.813559	0
71038	Kings XI Punjab	Chennai Super Kings	Chennai	169	101	9	186	5.368421	10.039604	0
...
51790	Kings XI Punjab	Rajasthan Royals	Jaipur	39	5	2	191	7.930435	46.800000	0
48532	Mumbai Indians	Kings XI Punjab	Chandigarh	83	48	3	163	6.666667	10.375000	0
43872	Kolkata Knight Riders	Rajasthan Royals	Jaipur	151	110	9	159	4.800000	8.236364	1
2844	Delhi Daredevils	Sunrisers Hyderabad	Hyderabad	114	69	9	191	9.058824	9.913043	0
96163	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	147	91	8	181	7.034483	9.692308	0

Training and Testing Splitting the data set:

```
X = final_df.iloc[:, :-1]
```

```
y = final_df.iloc[:, -1]
```

```
from sklearn.model_selection import train_test_split
```

```
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.2, random_state=1)
```

X_train

	batting_team	bowling_team	city	runs_left	balls_left	wickets	total_runs_x	crr	rrr
131672	Mumbai Indians	Kings XI Punjab	Mumbai	61	29	5	204	9.428571	12.620690
133070	Sunrisers Hyderabad	Delhi Capitals	Hyderabad	131	94	10	164	7.615385	8.361702
106272	Sunrisers Hyderabad	Mumbai Indians	Hyderabad	86	66	9	142	6.222222	7.818182
130024	Kolkata Knight Riders	Royal Challengers Bangalore	Bengaluru	37	14	5	210	9.792453	15.857143
114512	Royal Challengers Bangalore	Rajasthan Royals	Bengaluru	64	15	5	231	9.542857	25.600000
...
45371	Kings XI Punjab	Delhi Daredevils	Delhi	85	31	7	231	9.842697	16.451613
2082	Kings XI Punjab	Delhi Daredevils	Delhi	157	92	7	188	6.642857	10.239130
84265	Rajasthan Royals	Sunrisers Hyderabad	Ahmedabad	122	105	9	134	4.800000	6.971429
45294	Kings XI Punjab	Delhi Daredevils	Delhi	206	106	10	231	10.714286	11.660377
83780	Kolkata Knight Riders	Delhi Daredevils	Delhi	145	108	10	160	7.500000	8.055556

```

from sklearn.compose import ColumnTransformer
from sklearn.preprocessing import OneHotEncoder
trf = ColumnTransformer([
    ('trf', OneHotEncoder(sparse=False, drop='first'),
    ['batting_team', 'bowling_team', 'city'])
], remainder='passthrough')
from sklearn.linear_model import LogisticRegression
from sklearn.ensemble import RandomForestClassifier
from sklearn.pipeline import Pipeline

```

```

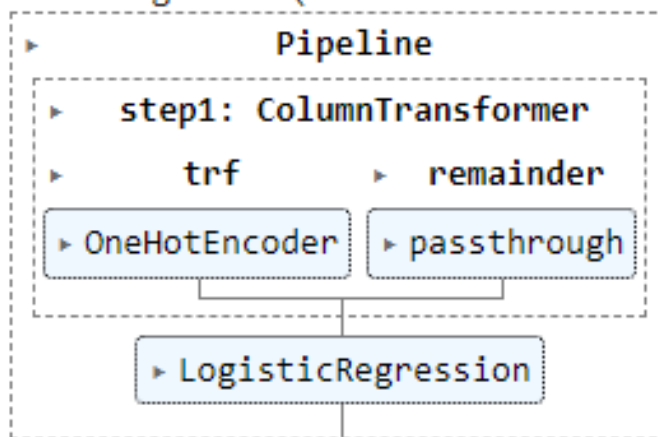
pipe = Pipeline(steps=[('step1', trf), ('step2', LogisticRegression(solver='liblinear'))])
pipe.fit(X_train,y_train)

```

```

/usr/local/lib/python3.9/dist-package
warnings.warn(

```



```

y_pred = pipe.predict(X_test)

```

```

from sklearn.metrics import accuracy_score
accuracy_score(y_test,y_pred)

```

```

0.8082971394338775

```

```

pipe.predict_proba(X_test)[10]

```

```

array([0.37125211, 0.62874789])

```

```

def match_summary(row):
    print("Batting Team-" + row['batting_team'] + " | Bowling Team-" +
row['bowling_team'] + " | Target- " + row['total_runs_x'])

def match_progression(x_df,match_id,pipe):
    match = x_df[x_df['match_id'] == match_id]
    match = match[(match['ball'] == 6)]

    temp_df =
match[['batting_team','bowling_team','city','runs_left','balls_left','wickets','total_runs_x','crr',
'rrr']].dropna()
    temp_df = temp_df[temp_df['balls_left'] != 0]
    result = pipe.predict_proba(temp_df)
    temp_df['lose'] = np.round(result.T[0]*100,1)
    temp_df['win'] = np.round(result.T[1]*100,1)
    temp_df['end_of_over'] = range(1,temp_df.shape[0]+1)

    target = temp_df['total_runs_x'].values[0]
    runs = list(temp_df['runs_left'].values)
    new_runs = runs[:]
    runs.insert(0,target)
    temp_df['runs_after_over'] = np.array(runs)[: -1] - np.array(new_runs)

    wickets = list(temp_df['wickets'].values)
    new_wickets = wickets[:]
    new_wickets.insert(0,10)
    wickets.append(0)
    w = np.array(wickets)
    nw = np.array(new_wickets)
    temp_df['wickets_in_over'] = (nw - w)[0:temp_df.shape[0]]

```

```

print("Target-",target)

temp_df[['end_of_over','runs_after_over','wickets_in_over','lose','win']]

return temp_df,target

temp_df,target = match_progression(D_df,74,pipe)

temp_df

```

Target- 178

	batting_team	bowling_team	city	runs_left	balls_left	wickets	total_runs_x	crr	rrr	lose	win	end_of_over	runs_after_over	wickets_in_over
9766	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	174	114	10	178	4.000000	9.157895	57.8	42.2	1	4	0
9774	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	166	108	10	178	6.000000	9.222222	52.5	47.5	2	8	0
9780	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	165	102	10	178	4.333333	9.705882	59.4	40.6	3	1	0
9786	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	158	96	9	178	5.000000	9.875000	70.7	29.3	4	7	1
9792	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	146	90	9	178	6.400000	9.733333	60.9	39.1	5	12	0
9798	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	133	84	9	178	7.500000	9.500000	48.7	51.3	6	13	0
9804	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	124	78	9	178	7.714286	9.538462	42.9	57.1	7	9	0
9812	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	109	72	9	178	8.625000	9.083333	29.0	71.0	8	15	0
9818	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	102	66	9	178	8.444444	9.272727	26.8	73.2	9	7	0
9825	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	85	60	9	178	9.300000	8.500000	14.9	85.1	10	17	0
9831	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	76	54	8	178	9.272727	8.444444	20.6	79.4	11	9	1
9837	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	67	48	8	178	9.250000	8.375000	17.0	83.0	12	9	0
9843	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	59	42	8	178	9.153846	8.428571	14.8	85.2	13	8	0
9849	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	51	36	8	178	9.071429	8.500000	12.8	87.2	14	8	0
9855	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	46	30	7	178	8.800000	9.200000	22.0	78.0	15	5	1
9862	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	38	24	6	178	8.750000	9.500000	30.9	69.1	16	8	1
9868	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	30	18	4	178	8.705882	10.000000	57.3	42.7	17	8	2
9874	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	24	12	3	178	8.555556	12.000000	72.0	28.0	18	6	1
9880	Royal Challengers Bangalore	Chennai Super Kings	Bangalore	16	6	1	178	8.526316	16.000000	89.8	10.2	19	8	2

```

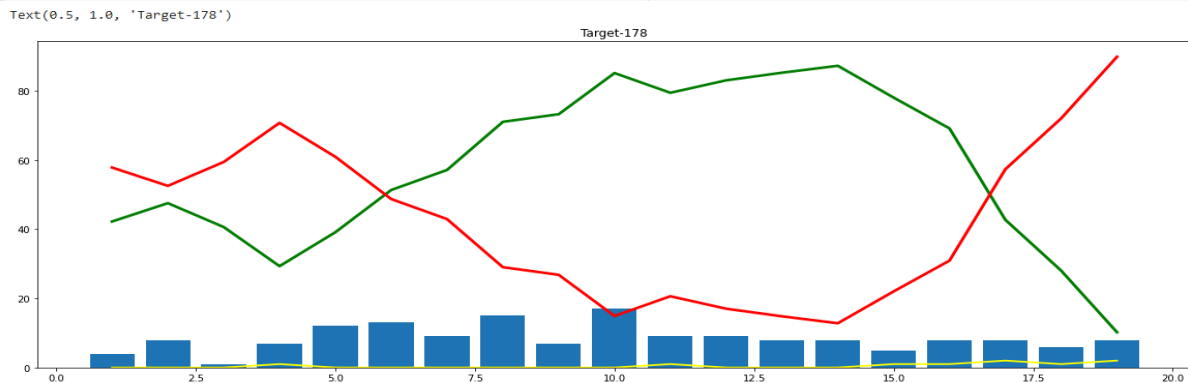
import matplotlib.pyplot as plt

plt.figure(figsize = (20,7))

plt.plot(temp_df['end_of_over'],temp_df['wickets_in_over'],color="yellow",linewidth=2)
plt.plot(temp_df['end_of_over'],temp_df['win'],color="green",linewidth=3)
plt.plot(temp_df['end_of_over'],temp_df['lose'],color="red",linewidth=3)
plt.bar(temp_df['end_of_over'],temp_df['runs_after_over'])

plt.title('Target-' + str(target))

```



teams

```
['Sunrisers Hyderabad',  
 'Mumbai Indians',  
 'Royal Challengers Bangalore',  
 'Kolkata Knight Riders',  
 'Kings XI Punjab',  
 'Chennai Super Kings',  
 'Rajasthan Royals',  
 'Delhi Capitals']
```

D_df['city'].unique()

```
array(['Hyderabad', 'Bangalore', 'Mumbai', 'Indore', 'Kolkata', 'Delhi',  
      'Chandigarh', 'Jaipur', 'Chennai', 'Cape Town', 'Port Elizabeth',  
      'Durban', 'Centurion', 'East London', 'Johannesburg', 'Kimberley',  
      'Bloemfontein', 'Ahmedabad', 'Nagpur', 'Dharamsala',  
      'Visakhapatnam', 'Pune', 'Raipur', 'Ranchi', 'Abu Dhabi',  
      'Sharjah', nan, 'Cuttack', 'Mohali', 'Bengaluru'], dtype=object)
```

import pickle

pickle.dump(pipe,open('pipe.pk1','wb'))

WEBSITE:

```
import streamlit as st
import pickle
import pandas as pd
teams = ['Sunrisers Hyderabad',
'Royal Challengers Bangalore',
'Kolkata Knight Riders',
'Kings XI Punjab',
'Chennas Super Kings',
'Rajasthan Royals',
'Delhi Capitals']
cities = ["Hyderabad", "Bangalore", "Mumbai", "Indore", "Kolkata", "Delhi", "Chandigarh",
"Jaipur", "Chennai", "Cape Town", "Port Elizabeth", "Durban", "Centurion", "East London",
"Johannesburg", "Kimberley", "Bloemfontein", "Ahmedabad", "Cuttack", "Nagpur", "Pharansale",
"Visakhapatnam", "Pune", "Raipur", "Ranchi", "Abu Dhabi", "Shartan", "Mohali", "Bengaluru"]
pipe = pickle.load(open('pipe.pk1', 'rb'))
st.title("IPL in Predictor")
col1, col2 = st.columns(2)
with col1:
    batting_team = st.selectbox('Select the batting team', sorted(teams))
with col2:
    bowling_team = st.selectbox('select the bowling team', sorted(teams))
selected_city = st.selectbox('Select host city', sorted(cities))
target = st.number_input('Target')
col3, col4, col5 = st.columns(3)
with col3:
    score = st.number_input('Score')
with col4:
    overs = st.number_input('Overs completed')
with col5:
    wickets = st.number_input('Wickets out')
if st.button('Predict Probability'):
    runs_left = target - score
    balls_left = 120 - (overs*6)
    wickets = 10 - wickets
    crr = score/overs
    rrr = (runs_left*6)/balls_left
```

```

input_df = pd.DataFrame({'batting_team': [batting_team], 'bowling_team': [bowling_team],
'city': [selected_city], 'runs_left': [runs_left], 'balls_left': [balls_left],
'player_dismissed': [player_dismissed], 'over': [over]})
result = pipe.predict_proba(input_df)
loss = result[0][0]
win = result[0][1]
st.header(batting_team + "- " + str(round(win*100)) + "%")
st.header(bowling_team + "- " + str(round(loss*100)) + "%")

```

```
!streamlit run '/content/drive/My Drive/projects/iplproject1.py'
```

WEBSITE:



The screenshot shows a web application titled "IPL Win Predictor" with a background image of a cricket player. The interface includes several input fields and a prediction button:

- Select the batting team:** A dropdown menu with "Chennai Super Kings" selected.
- Select the bowling team:** A dropdown menu with "Chennai Super Kings" selected.
- Select the city:** A dropdown menu with "Abu Dhabi" selected.
- Target:** A text input field with "0.00" and minus/plus buttons.
- Score:** A text input field with "0.00" and minus/plus buttons.
- Overs completed:** A text input field with "0.00" and minus/plus buttons.
- Wickets out:** A text input field with "0.00" and minus/plus buttons.
- Predict Probability:** A button to trigger the prediction.

IPL Win Predictor

Select the batting team

Delhi Capitals

Select the bowling team

Kolkata Knight Riders

Select host city

Mumbai

Target

147.00

Score

117.00

Overs completed

16.00

Wickets out

6.00

Predict Probability

Delhi Capitals- 68%

Kolkata Knight Riders- 32%