Course Name: AIML **Course code: 21CSH316**

Experiment 2.2

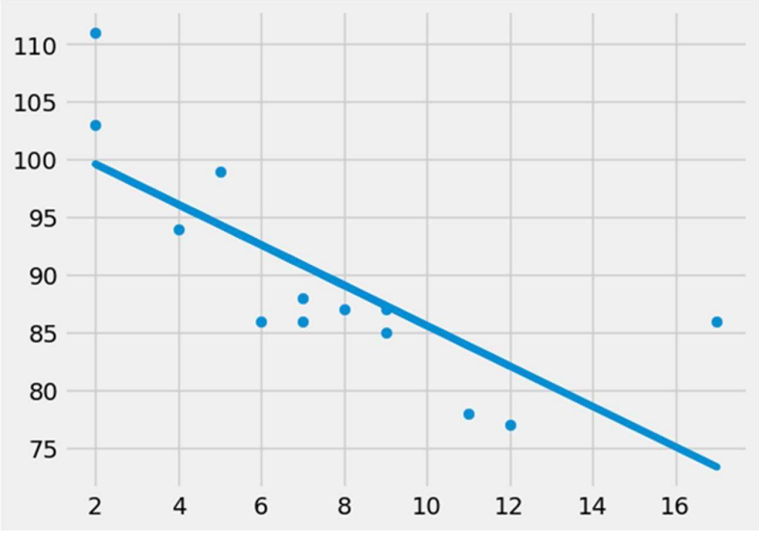
1. Aim: Implementing Linear Regression and Logistic Regression Models.

2. Objective: The objective of this experiment is to implement Linear Regression and Logistic Regression Models.

3. Program and output:

A) Linear Regression

```
import matplotlib.pyplot as plt from scipy import
stats x = [5,7,8,7,2,17,2,9,4,11,12,9,6] y =
[99,86,87,88,111,86,103,87,94,78,77,85,86] slope,
intercept, r, p, std_err = stats.linregress(x, y) def
myfunc(x):
return slope * x + intercept
mymodel = list(map(myfunc, x))
plt.scatter(x, y) plt.plot(x,
mymodel) plt.show()
```



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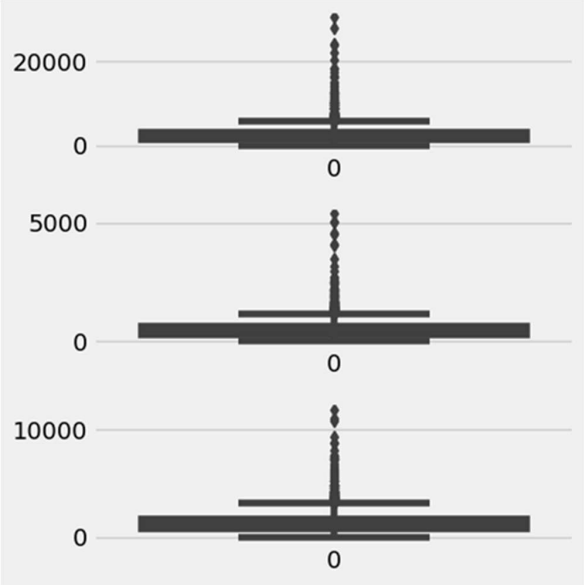
advertising.isnull().sum()*100/advertising.shape[0] longitude 0.0 latitude 0.0 housing_median_age 0.0 total_rooms 0.0 total_bedrooms 0.0 population 0.0 households 0.0 median_income 0.0 median_house_value 0.0 dtype: float64

```
fig, axs = plt.subplots(3, figsize = (5,5)) plt1 =
sns.boxplot(advertising['total_rooms'], ax = axs[0]) plt2 =
sns.boxplot(advertising['total_bedrooms'], ax = axs[1]) plt3 =
sns.boxplot(advertising['population'], ax = axs[2]) plt.tight_layout()
```




```
plt.scatter(X_train, y_train) plt.plot(X_train,
6.948 + 0.162*X_train, 'r') plt.show()
```

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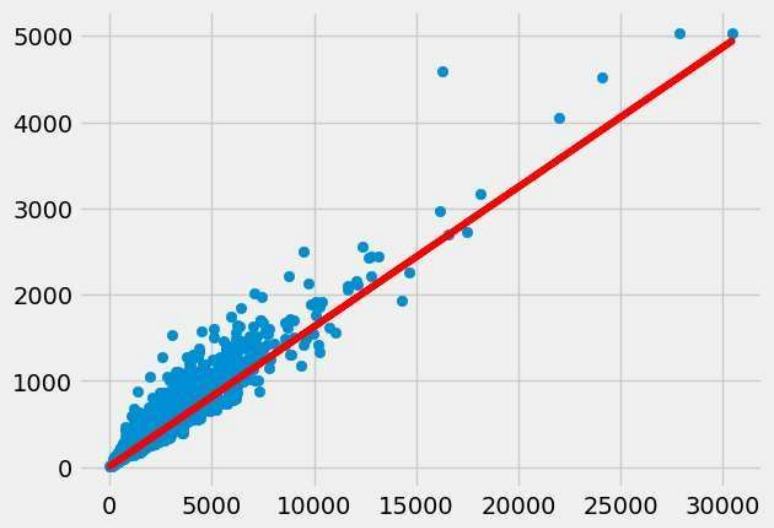

B) Logistic Regression import numpy as np import

pandas as pd # Data Visualisation import

matplotlib.pyplot as plt import seaborn as sns

advertising=pd.DataFrame(pd.read_csv("/content/sample_data/california_housing_test.csv")) advertising.head()

	longitude	latitude	housing_median_age	total_rooms	total_bedrooms	population	households	median_income	median_house_value
0	-122.05	37.37	27.0	3885.0	661.0	1537.0	606.0	6.6085	344700.0
1	-118.30	34.26	43.0	1510.0	310.0	809.0	277.0	3.5990	176500.0
2	-117.81	33.78	27.0	3589.0	507.0	1484.0	495.0	5.7934	270500.0
3	-118.36	33.82	28.0	67.0	15.0	49.0	11.0	6.1359	330000.0
4	-	36.33	19.0	1241.0	244.0	850.0	237.0	2.9375	81700.0 119.67

advertising.shape (3000, 9) advertising.info()

<class 'pandas.core.frame.DataFrame'> RangeIndex: 3000 entries, 0 to 2999 Data columns (total 9 columns):

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# Column	Non-Null Count	Dtype
0 longitude	3000 non-null	float64
1 latitude	3000 non-null	float64
2 housing_median_age	3000 non-null	float64
3 total_rooms	3000 non-null	float64
4 total_bedrooms	3000 non-null	float64
5 population	3000 non-null	float64
6 households	3000 non-null	float64
7 median_income	3000 non-null	float64 8
median_house_value	3000 non-null	float64

dtypes: float64(9)

memory usage: 211.1 KB

advertising.describe()

	longitude	latitude	housing_median_age	total_rooms	total_bedrooms	population	households	median_income	median_hous
count	3000.000000	3000.00000	3000.000000	3000.000000	3000.000000	3000.000000	3000.00000	3000.000000	30
mean	-119.589200	35.63539	std 28.845333	2599.578667	529.950667	1402.798667	489.91200	3.807272	2058
1.994936	2.12967	min	-124.180000	12.555396	1.000000	2155.593332	415.654368	1030.543012	365.42271
1.854512	1131								
32.56000	25%	-121.810000	18.000000	6.000000	2.000000	5.000000	2.00000	0.499900	225
33.93000			29.000000	1401.000000	291.000000	780.000000	273.00000	2.544000	1212
50%	-118.485000	34.27000		37.000000	2106.000000	437.000000	1155.000000	409.50000	3.487150
1776									
75%	-118.020000	37.69000	max	-	52.000000	3129.000000	636.000000	1742.750000	597.25000
4.656475	2639								
	114.490000	41.92000				30450.000000	5419.000000	11935.000000	4930.00000
15.000100	5000								

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Learning Outcomes:

- This experiment demonstrates us how to use a dataset or extract datasets from Kaggle.
- Perform various regression on them like Logistics and Linear Regression.
- How to implement Linear Regression on data set and make predictions.
- How to implement Logistic Regression on data set and make predictions