In [1]:

```
#Additional Excercise of Machine leraning II session
```

In [2]:

```
# Author: Chidura Santosh
# Importing required Libraries

import numpy as np
import pandas as pd
import scipy.stats as stats
import matplotlib.pyplot as plt
import sklearn
```

In [3]:

```
#Reading Data from CSV file
Data=pd.read_csv("Additional_Excercise_Data.csv")
```

In [4]:

```
Data.head()
```

Out[4]:

	TV	Radio	NewsPaper	Sales
0	230.1	37.8	69.2	22.1
1	44.5	39.3	45.1	10.4
2	17.2	45.9	69.3	9.3
3	151.5	41.3	58.5	18.5
4	180.8	10.8	58.4	12.9

In [6]:

```
from sklearn.linear_model import LinearRegression
lm = LinearRegression()
# Creating Independent(X) and Dependent(Target-Y) data frames
X = Data[['TV', 'Radio', 'NewsPaper']]
Y = Data['Sales']
lm.fit(X, Y)
# print intercept and coefficients
print(lm.intercept_)
print(lm.coef_)
```

```
3.040610598249053
[ 0.05461004  0.17104816 -0.02717817]
```

In [13]:

```
import statsmodels.formula.api as smf
lm = smf.ols(formula='Sales ~ TV + Radio + NewsPaper', data=Data).fit()
lm.conf_int()
```

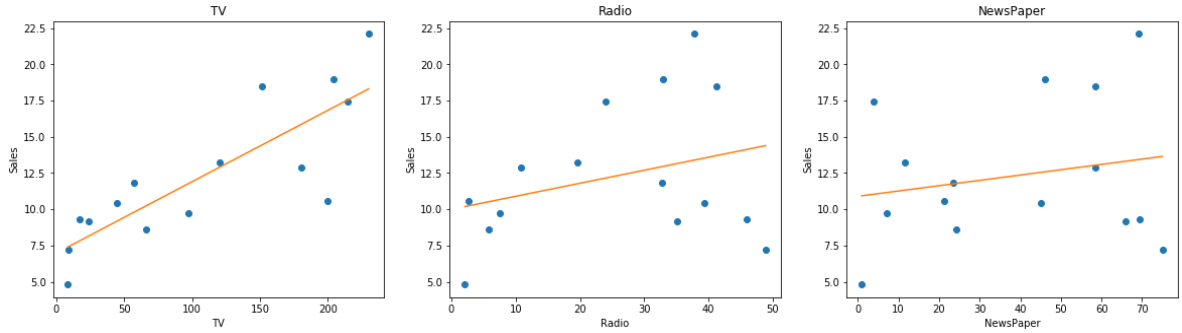
Out[13]:

	0	1
Intercept	0.575783	5.505438
TV	0.042280	0.066940
Radio	0.080181	0.261916
NewsPaper	-0.082672	0.028316

In [15]:

```
# Plotting the X1,X2 and X3 against Sales
plt.figure(figsize=(20, 5))

# iterating for each column
for i, col in enumerate(['TV', 'Radio', 'NewsPaper']):
    plt.subplot(1, 3, i+1)
    x = Data[col]
    y = Data['Sales']
    plt.plot(x, y, 'o')
    # Create regression line
    plt.plot(np.unique(x), np.poly1d(np.polyfit(x, y, 1))(np.unique(x)))
    plt.title(col)
    plt.xlabel(col)
    plt.ylabel('Sales')
```



In [ ]: