

# DATA ANALYTICS

## Assignment 6

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### PROBLEM STATEMENT : ARIMA

```
In [33]: #It is not a stationary graph - meaning : mean, variance and covariance is constant over periods but here it is not
#So we have to convert it into stationary
#STEP 1 : Take diff of values [146-266]
sales_diff=sales.diff(periods=1) #integrated of order 1 ,denoted by d for diff...one of the parameters of ARIMA model
sales_diff.head()
```

```
Out[33]:
```

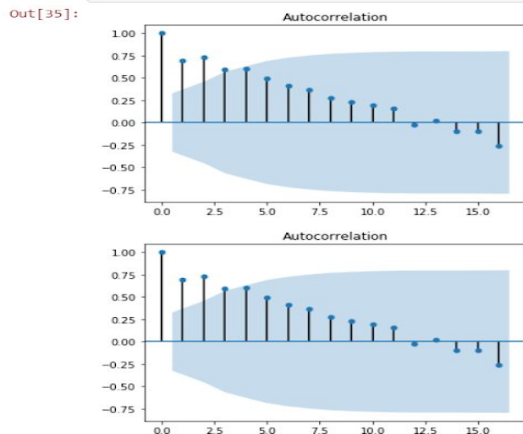
	Sales
Month	
2016-01-01	NaN
2016-02-01	-120.0
2016-03-01	37.0
2016-04-01	-64.0
2016-05-01	61.0

```
In [34]: #To ignore the NaN
sales_diff=sales_diff[1:]
sales_diff.head()
```

```
Out[34]:
```

	Sales
Month	
2016-02-01	-120.0
2016-03-01	37.0
2016-04-01	-64.0
2016-05-01	61.0
2016-06-01	-11.0

```
In [35]: #Another way to check if its stationary - acf plots - auto correlation between sales & sales.shift(1)
from statsmodels.graphics.tsaplots import plot_acf
plot_acf(sales)
#NOT STATIONARY
```



```
In [15]: sales_diff = sales.diff(periods=1)
# integrated of order 1, denoted by d (for diff), one of the parameter of ARIMA model
```

```
In [15]: sales_diff = sales.diff(periods=1)
# integrated of order 1, denoted by d (for diff), one of the parameter of ARIMA model
```

```
In [16]: sales_diff = sales_diff[1:]
sales_diff.head()
```

```
Out[16]:
```

	Sales
Month	
2016-02-01	-120.0
2016-03-01	37.0
2016-04-01	-64.0
2016-05-01	61.0
2016-06-01	-11.0

```
In [36]: plot_acf(sales_diff)
#STATIONARY - Converted
```

