

Model validation output

```
In [2]: regressor.coef_  
  
...: regressor.intercept_  
Out[2]: 42659.81372552845  
  
Removing all variables...  
Removing all variables...  
In [3]: runcell(0, '/Users/myyntiimac/untitled6.py')  
  
In [4]: runcell(0, '/Users/myyntiimac/untitled6.py')  
  
In [5]: regressor.coef_  
Out[5]:  
array([ 7.90840255e-01,  3.01968165e-02,  3.10148566e-02, -2.55942855e+02,  
        2.07086137e+02,  4.88567184e+01])  
  
In [6]: bias=regressor.score(X_train, y_train)  
...: bias  
Out[6]: 0.951557126270021  
  
In [7]: variance=regressor.score(X_test, y_test)  
...: variance  
Out[7]: 0.9358680970046517  
  
In [8]: import statsmodels.api as sm  
...: X_out = X[:, [0,1,2,3,4,5]]
```

The main output of assignment 2, where use intercept or constant as 4266, which given by our MLR Model

	0	1	2	3	4	5	6
0	4266	165349	136898	471784	0	0	1
1	4266	162598	151378	443899	1	0	0
2	4266	153442	101146	407935	0	1	0
3	4266	144372	118672	383200	0	0	1
4	4266	142107	91391.8	366168	0	1	0
5	4266	131877	99814.7	362861	0	0	1
6	4266	134615	147199	127717	1	0	0
7	4266	130298	145530	323877	0	1	0
8	4266	120543	148719	311613	0	0	1
9	4266	123335	108679	304982	1	0	0
10	4266	101913	110594	229161	0	1	0
11	4266	100672	91790.6	249745	1	0	0
12	4266	93863.8	127320	249839	0	1	0
13	4266	91992.4	135495	252665	1	0	0

The Result of Regressor OLS of MLR

```
<class 'statsmodels.iolib.summary.Summary'>
''''
```

OLS Regression Results						
Dep. Variable:	Profit	R-squared:	0.951			
Model:	OLS	Adj. R-squared:	0.945			
Method:	Least Squares	F-statistic:	169.9			
Date:	Sun, 11 Jun 2023	Prob (F-statistic):	1.34e-27			
Time:	00:59:02	Log-Likelihood:	-525.38			
No. Observations:	50	AIC:	1063.			
Df Residuals:	44	BIC:	1074.			
Df Model:	5					
Covariance Type:	nonrobust					

	coef	std err	t	P> t	[0.025	0.975]
const	11.7401	1.630	7.204	0.000	8.456	15.025
x1	0.8060	0.046	17.369	0.000	0.712	0.900
x2	-0.0270	0.052	-0.517	0.608	-0.132	0.078
x3	0.0270	0.017	1.574	0.123	-0.008	0.062
x4	41.8870	3256.039	0.013	0.990	-6520.229	6604.003
x5	240.6758	3338.857	0.072	0.943	-6488.349	6969.701

Omnibus:	14.782	Durbin-Watson:	1.283
Prob(Omnibus):	0.001	Jarque-Bera (JB):	21.266
Skew:	-0.948	Prob(JB):	2.41e-05
Kurtosis:	5.572	Cond. No.	8.37e+05

The result of OLS after backward feature elimination

```
In [24]: import statsmodels.api as sm
...: X_opt1 = X[:,[0,1]]
...:
...: #OrdinaryLeastSquares
...: regressor_OLS = sm.OLS(endog=y, exog=X_opt1).fit()
...:
...: regressor_OLS.summary()
```

```
Out[24]:
<class 'statsmodels.iolib.summary.Summary'>
=====
```

OLS Regression Results

```
=====
Dep. Variable:          Profit    R-squared:                0.947
Model:                  OLS       Adj. R-squared:           0.945
Method:                 Least Squares   F-statistic:             849.8
Date:                   Sun, 11 Jun 2023   Prob (F-statistic):      3.50e-32
Time:                   01:00:14    Log-Likelihood:          -527.44
No. Observations:       50          AIC:                     1059.
Df Residuals:           48          BIC:                     1063.
Df Model:                1
Covariance Type:        nonrobust
=====
```

	coef	std err	t	P> t	[0.025	0.975]
const	11.4939	0.595	19.320	0.000	10.298	12.690
x1	0.8543	0.029	29.151	0.000	0.795	0.913

```
=====
Omnibus:                 13.727    Durbin-Watson:           1.116
```