```
#Heart Attack prediction ML Model by Sourasish Mondal
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns


#if a person is at greater risk of suffering from a heart attack or not
df = pd.read_csv('https://raw.githubusercontent.com/ameenmanna8824/DATASETS/ma
df.head(10)
```

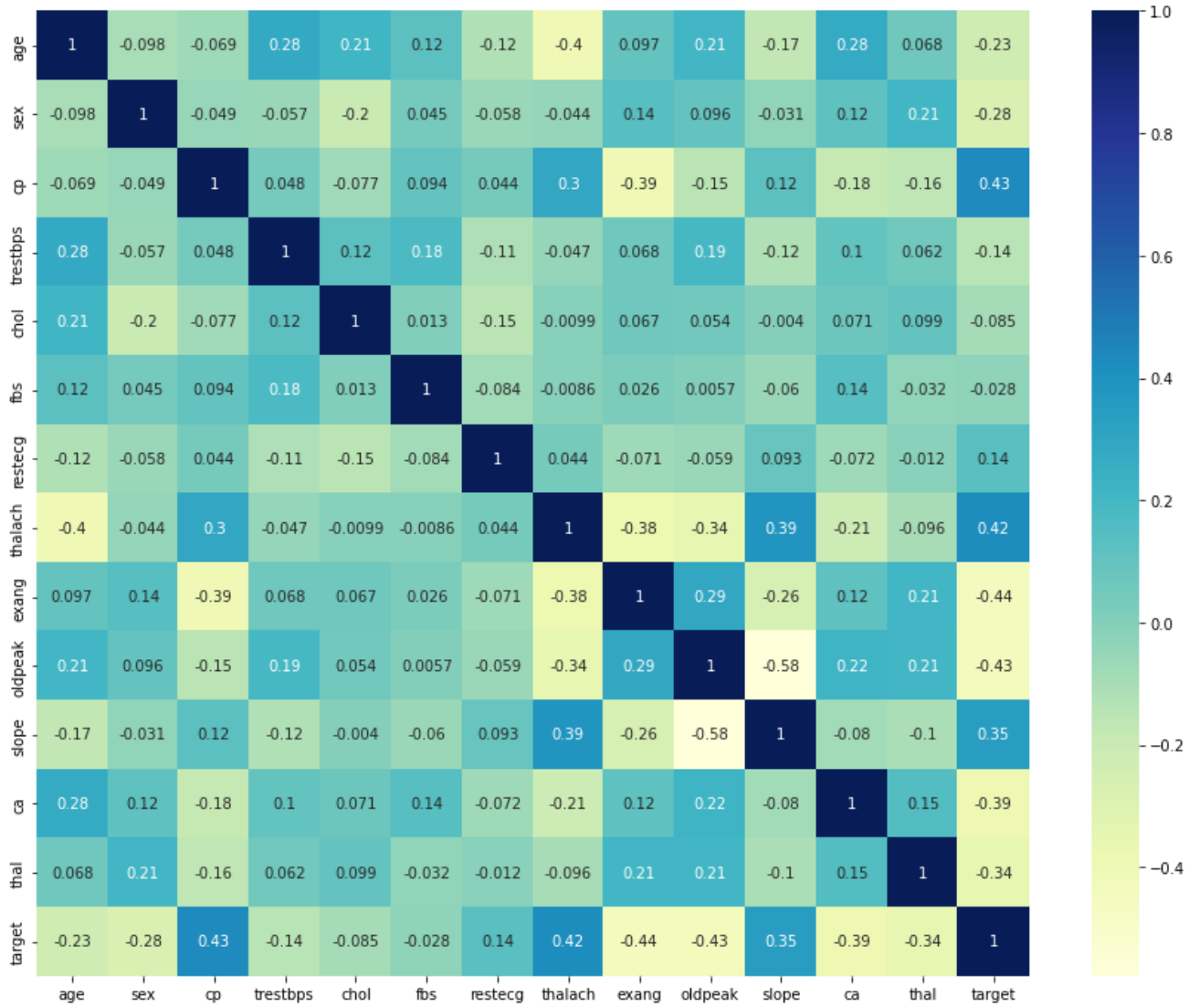
	age	sex	cp	trestbps	chol	fbs	restecg	thalach	exang	oldpeak	slope	c
0	63	1	3	145	233	1	0	150	0	2.3	0	
1	37	1	2	130	250	0	1	187	0	3.5	0	
2	41	0	1	130	204	0	0	172	0	1.4	2	
3	56	1	1	120	236	0	1	178	0	0.8	2	
4	57	0	0	120	354	0	1	163	1	0.6	2	
5	57	1	0	140	192	0	1	148	0	0.4	1	
6	56	0	1	140	294	0	0	153	0	1.3	1	
7	44	1	1	120	263	0	1	173	0	0.0	2	
8	52	1	2	172	199	1	1	162	0	0.5	2	
9	57	1	2	150	168	0	1	174	0	1.6	2	

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 303 entries, 0 to 302
Data columns (total 14 columns):
 #   Column    Non-Null Count  Dtype  
---  ------    --------------  -----  
 0   age       303 non-null    int64  
 1   sex       303 non-null    int64  
 2   cp        303 non-null    int64  
 3   trestbps  303 non-null    int64  
 4   chol      303 non-null    int64  
 5   fbs       303 non-null    int64  
 6   restecg   303 non-null    int64  
 7   thalach   303 non-null    int64  
 8   exang     303 non-null    int64  
 9   oldpeak   303 non-null    float64
 10  slope     303 non-null    int64  
 11  ca        303 non-null    int64  
 12  thal      303 non-null    int64  
 13  target    303 non-null    int64  
dtypes: float64(1), int64(13)
memory usage: 35.5 KB
```

```
#visualization
plt.figure(figsize=(15,12))
sns.heatmap(df.corr(),annot=True,cmap="YlGnBu")
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x7f8bc1603cd0>
```




```
x_input = df.iloc[:,0:13].values
x_input
```

```
array([[63.,  1.,  3., ...,  0.,  0.,  1.],
       [37.,  1.,  2., ...,  0.,  0.,  2.],
       [41.,  0.,  1., ...,  2.,  0.,  2.],
       ...,
       [68.,  1.,  0., ...,  1.,  2.,  3.],
       [57.,  1.,  0., ...,  1.,  1.,  3.],
       [57.,  0.,  1., ...,  1.,  1.,  2.]])
```

```
y_output = df.iloc[:,13].values
```

```
y_output
```

```
array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
       1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
       1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
       1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
       1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
       1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
       1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
       1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0])
```

```
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test = train_test_split(x_input,y_output,random_state
```

```
# Normalization and Scaling
from sklearn.preprocessing import MinMaxScaler
Scaler = MinMaxScaler()
x_train = Scaler.fit_transform(x_train)
x_test = Scaler.fit_transform(x_test)
```

```
from sklearn.linear_model import LogisticRegression
HeartAttack_model = LogisticRegression()
```

```
HeartAttack_model.fit(x_train,y_train)
```

```
LogisticRegression()
```

```
#predicting
y_pred = HeartAttack_model.predict(x_test)
y_pred
```

```
array([0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 1, 1, 1, 0, 1, 0, 1, 1, 0,
       0, 0, 1, 1, 0, 0, 1, 1, 1, 0, 1, 1, 1, 1, 0, 1, 0, 0, 1, 1, 1, 0,
       1, 1, 1, 1, 0, 1, 1, 1, 1, 1, 1, 0, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
       1, 0, 1, 0, 0, 1, 1, 0, 0, 1])
```

```
#original output
y_test
```

```
array([0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 1, 1, 0, 1, 1, 1, 1, 1, 0, 1, 1, 0,
       0, 0, 1, 0, 0, 0, 1, 1, 0, 0, 1, 1, 1, 0, 0, 1, 0, 0, 1, 1, 1, 0,
       1, 1, 1, 0, 0, 1, 1, 1, 1, 1, 1, 0, 1, 0, 1, 1, 1, 1, 1, 1, 0, 0,
       0, 0, 1, 1, 1, 1, 1, 0, 0, 1])
```

```
from sklearn.metrics import accuracy_score,confusion_matrix
```

```
print("Accuracy: ",accuracy_score(y_pred,y_test) * 100)
```

```
Accuracy:  82.89473684210526
```

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