ML LAB ASSIGNMENT

SUPRATIM NAG -- CSE-AIML/22/057 -- GROUP-B

Q-7:Write a python code to implement SVM algorithm on iris dataset. Show the classification results.

In [16]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

In [17]:
```
data = pd.read_csv(r"C:\Users\SUPRATIM NAG\OneDrive\Documents\ML\Personal_Datasets\Dataset.csv")
```

In [18]:
```
data.shape
```

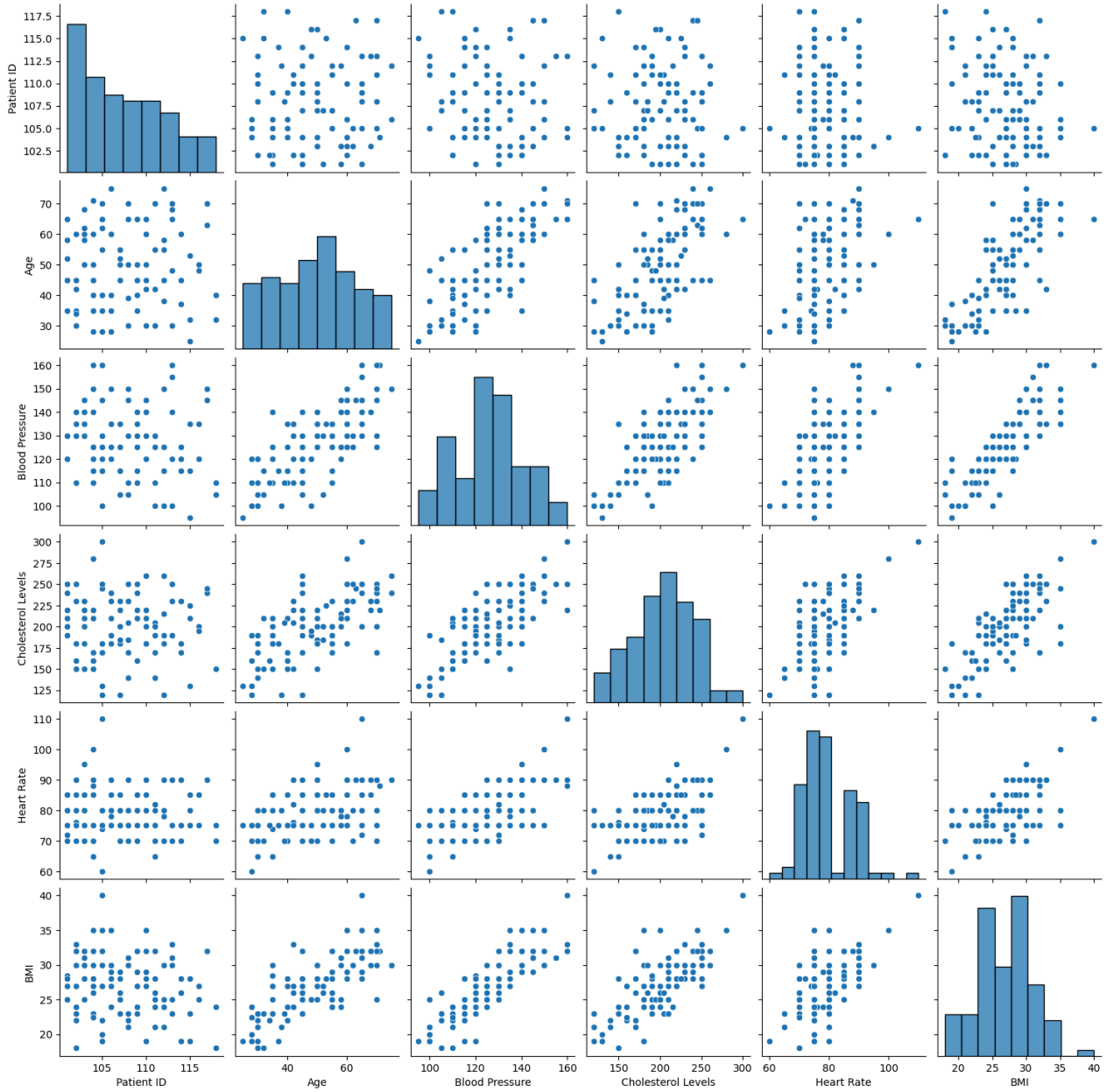
Out[18]: (100, 11)

In [19]:
```
data.head(1)
```

Out[19]:

	Patient ID	Age	Blood Pressure	Cholesterol Levels	Heart Rate	BMI	Diagnosis	Treatment Plan	Recovery Status	Medication Type	Follow-up Requirement
0	101	65	130	250	72	28.0	Hypertension with high cholesterol.	Medication: Lisinopril (blood pressure), Stati...	Active Recovery	Lisinopril, Statins.	Quarterly.

In [20]:
```
sns.pairplot(data)
plt.show()
```



In [22]:
```
meddata = data[['Age', 'Blood Pressure', 'Cholesterol Levels', 'Heart Rate', 'BMI', 'Diagnosis']]
```

In [23]:
```
meddata['Diagnosis'] = meddata['Diagnosis'].apply(
    lambda x: 1 if any(condition in x for condition in ['Hypertension', 'Obesity', 'Overweight']) else 0
)
```

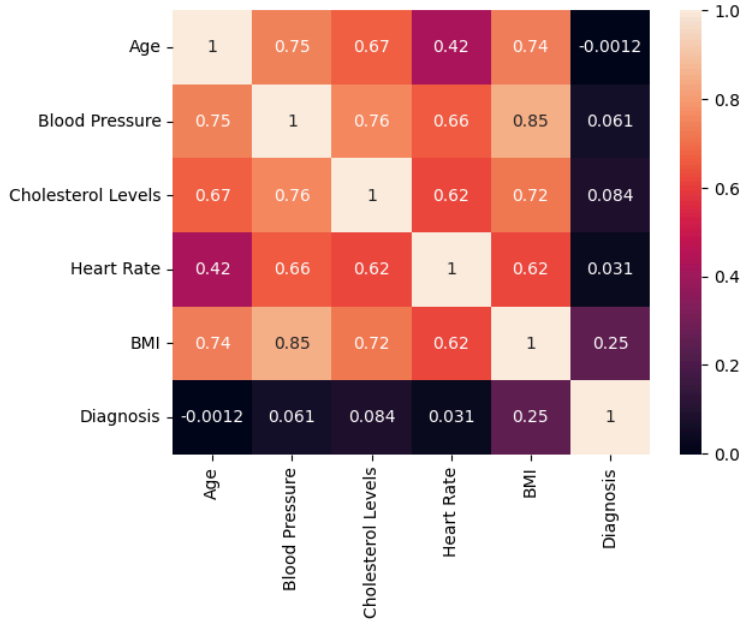
```
C:\Users\SUPRATIM NAG\AppData\Local\Temp\ipykernel_12664\2310464088.py:1: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  meddata['Diagnosis'] = meddata['Diagnosis'].apply(
```

In [24]:
```
print(meddata['Diagnosis'].value_counts())
```

```
Diagnosis
0    63
1    37
Name: count, dtype: int64
```

In [25]:
```
corr = meddata.corr()
sns.heatmap(corr, annot=True)
plt.show()
```



In [26]:
```
x = meddata.drop('Diagnosis', axis=1)
y = meddata['Diagnosis']
```

In [27]:
```
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(x, y, test_size = 0.20)
```

In [28]:
```
from sklearn.svm import SVC
svclassifier = SVC(kernel='linear')
svclassifier.fit(X_train, y_train)
```

Out[28]:
```
SVC
SVC(kernel='linear')
```

In [29]:
```
y_pred = svclassifier.predict(X_test)
```

In [30]:
```
print(y_pred)
```

```
[0 0 0 1 0 1 0 0 1 0 0 0 0 0 0 0 0 1 1 0]
```

In [31]:
```
from sklearn.metrics import classification_report, confusion_matrix
print(confusion_matrix(y_test,y_pred))
print(classification_report(y_test,y_pred))
```

```
[[12  1]
 [ 3  4]]
              precision    recall  f1-score   support

           0       0.80      0.92      0.86        13
           1       0.80      0.57      0.67         7

    accuracy                           0.80        20
   macro avg       0.80      0.75      0.76        20
weighted avg       0.80      0.80      0.79        20
```