In [ ]:
```
import pandas as pd
import numpy as np
from sklearn.tree  import DecisionTreeClassifier
from sklearn.model_selection import train_test_split
import seaborn as sns
import matplotlib.pyplot as plt
```

In [ ]:
```
df=pd.read_csv("diabetes_dataset.csv",sep=',')
df.head()
```

Out[ ]:

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigreeFunction	Age	Outcome
0	6	148	72	35	0	33.6	0.627	50	1
1	1	85	66	29	0	26.6	0.351	31	0
2	8	183	64	0	0	23.3	0.672	32	1
3	1	89	66	23	94	28.1	0.167	21	0
4	0	137	40	35	168	43.1	2.288	33	1

In [ ]:
```
df.isna().sum()
```

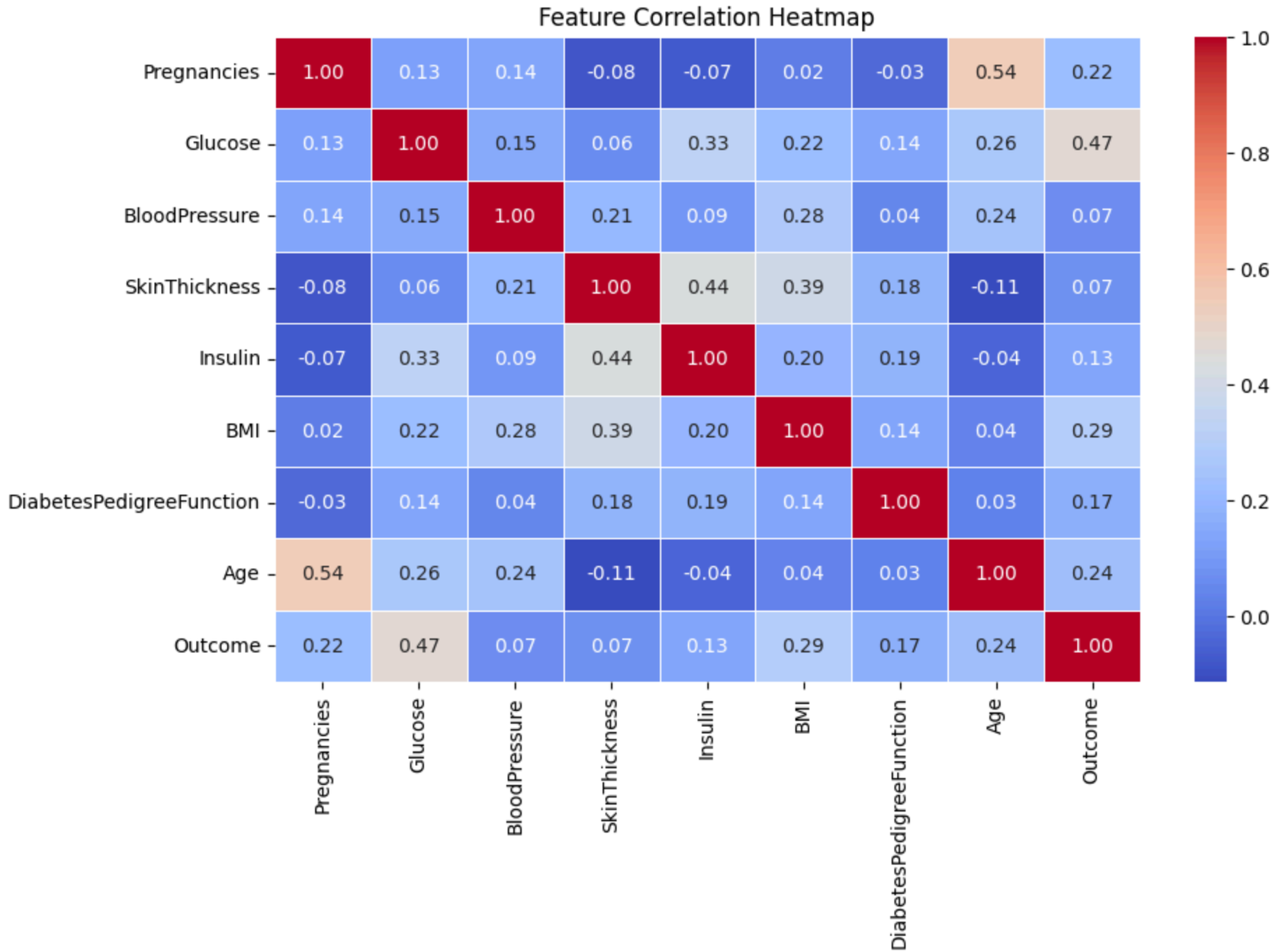
Out[ ]:
```
Pregnancies                 0
Glucose                     0
BloodPressure               0
SkinThickness               0
Insulin                     0
BMI                         0
DiabetesPedigreeFunction    0
Age                         0
Outcome                     0
dtype: int64
```

In [ ]:
```
X = df.drop(["Outcome"],axis=1)
y = df["Outcome"].values


# Splitting data into training (80%) and testing (20%) sets
```

```
X_train, X_test, y_train, y_test = train_test_split(X, y, train_size=0.8)

# Initializing the Decision tree
model = DecisionTreeClassifier()


# Training the model
model.fit(X_train, y_train)

# Predicting  test set
y_pred = model.predict(X_test)

print(y_pred)
print(model.score(X_test,y_test))
```

```
[0 0 1 1 1 1 0 0 0 0 0 1 0 0 1 1 0 1 0 0 1 1 0 0 1 0 0 0 0 1 0 0 1 0 0 0 0
 1 1 1 0 0 0 0 0 1 0 1 0 0 0 1 0 0 1 0 0 1 0 0 0 0 1 0 0 0 0 0 1 1 0 0 1 1
 0 0 1 0 0 1 0 1 1 1 1 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 1 0
 0 1 0 0 1 0 0 1 0 1 0 0 1 0 0 0 0 0 1 0 0 0 0 0 1 1 0 0 0 0 0 1 1 0 1 1 1
 1 0 0 0 0 1]
0.7207792207792207
```

In [ ]:
```
corr_matrix = df.corr()

plt.figure(figsize=(10, 6))
sns.heatmap(corr_matrix, annot=True, fmt=".2f", cmap="coolwarm", linewidths=0.5)
plt.title("Feature Correlation Heatmap")
plt.show()
```


Feature Correlation Heatmap
Pregnancies 1.00 0.13 0.14 -0.08 -0.07 0.02 -0.03 0.54 0.22
Glucose 0.13 1.00 0.15 0.06 0.33 0.22 0.14 0.26 0.47
BloodPressure 0.14 0.15 1.00 0.21 0.09 0.28 0.04 0.24 0.07
SkinThickness -0.08 0.06 0.21 1.00 0.44 0.39 0.18 -0.11 0.07
Insulin -0.07 0.33 0.09 0.44 1.00 0.20 0.19 -0.04 0.13
BMI 0.02 0.22 0.28 0.39 0.20 1.00 0.14 0.04 0.29
DiabetesPedigreeFunction -0.03 0.14 0.04 0.18 0.19 0.14 1.00 0.03 0.17
Age 0.54 0.26 0.24 -0.11 -0.04 0.04 0.03 1.00 0.24
Outcome 0.22 0.47 0.07 0.07 0.13 0.29 0.17 0.24 1.00
Pregnancies
Glucose
BloodPressure
SkinThickness
Insulin
BMI
DiabetesPedigreeFunction
Age
Outcome
1.0
0.8
0.6
0.4
0.2
0.0