```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestClassifier
from sklearn.metrics import accuracy_score
```

```
diabetic_dataset = pd.read_csv('/content/diabetes_prediction_dataset.csv')
```

```
diabetic_dataset.shape
```

```
(100000, 9)
```

```
diabetic_dataset.head()
```

	gender	age	hypertension	heart_disease	smoking_history	bmi	HbA1c_level	blood_glucose_level	diabetes
0	Female	80.0	0	1	never	25.19	6.6	140	0
1	Female	54.0	0	0	No Info	27.32	6.6	80	0
2	Male	28.0	0	0	never	27.32	5.7	158	0
3	Female	36.0	0	0	current	23.45	5.0	155	0
4	Male	76.0	1	1	current	20.14	4.8	155	0

```
diabetic_dataset.tail()
```

	gender	age	hypertension	heart_disease	smoking_history	bmi	HbA1c_level	blood_glucose_level	diabetes
99995	Female	80.0	0	0	No Info	27.32	6.2	90	0
99996	Female	2.0	0	0	No Info	17.37	6.5	100	0
99997	Male	66.0	0	0	former	27.83	5.7	155	0
99998	Female	24.0	0	0	never	35.42	4.0	100	0
99999	Female	57.0	0	0	current	22.43	6.6	90	0

```
#diabetic_dataset.drop(['gender'],axis=1)
```

```
#diabetic_dataset.drop(['smoking_history'],axis=1)
```

```
diabetic_dataset.describe()
```

	age	hypertension	heart_disease	bmi	HbA1c_level	blood_glucose_level	diabetes
count	100000.000000	100000.00000	100000.000000	100000.000000	100000.000000	100000.000000	100000.000000
mean	41.885856	0.07485	0.039420	27.320767	5.527507	138.058060	0.085000
std	22.516840	0.26315	0.194593	6.636783	1.070672	40.708136	0.278883
min	0.080000	0.00000	0.000000	10.010000	3.500000	80.000000	0.000000
25%	24.000000	0.00000	0.000000	23.630000	4.800000	100.000000	0.000000
50%	43.000000	0.00000	0.000000	27.320000	5.800000	140.000000	0.000000
75%	60.000000	0.00000	0.000000	29.580000	6.200000	159.000000	0.000000
max	80.000000	1.00000	1.000000	95.690000	9.000000	300.000000	1.000000

```
diabetic_dataset.isnull().sum()
```

```
gender                 0
age                    0
hypertension           0
heart_disease          0
smoking_history        0
bmi                    0
HbA1c_level            0
blood_glucose_level    0
diabetes               0
dtype: int64
```

```
diabetic_dataset['gender'].unique()
```

```
array(['Female', 'Male', 'Other'], dtype=object)
```

```
diabetic_dataset['smoking_history'].unique()
```

```
array(['never', 'No Info', 'current', 'former', 'ever', 'not current'],
      dtype=object)
```

```
#sns.catplot(x='diabetes',data = diabetic_dataset , kind = 'count')
```

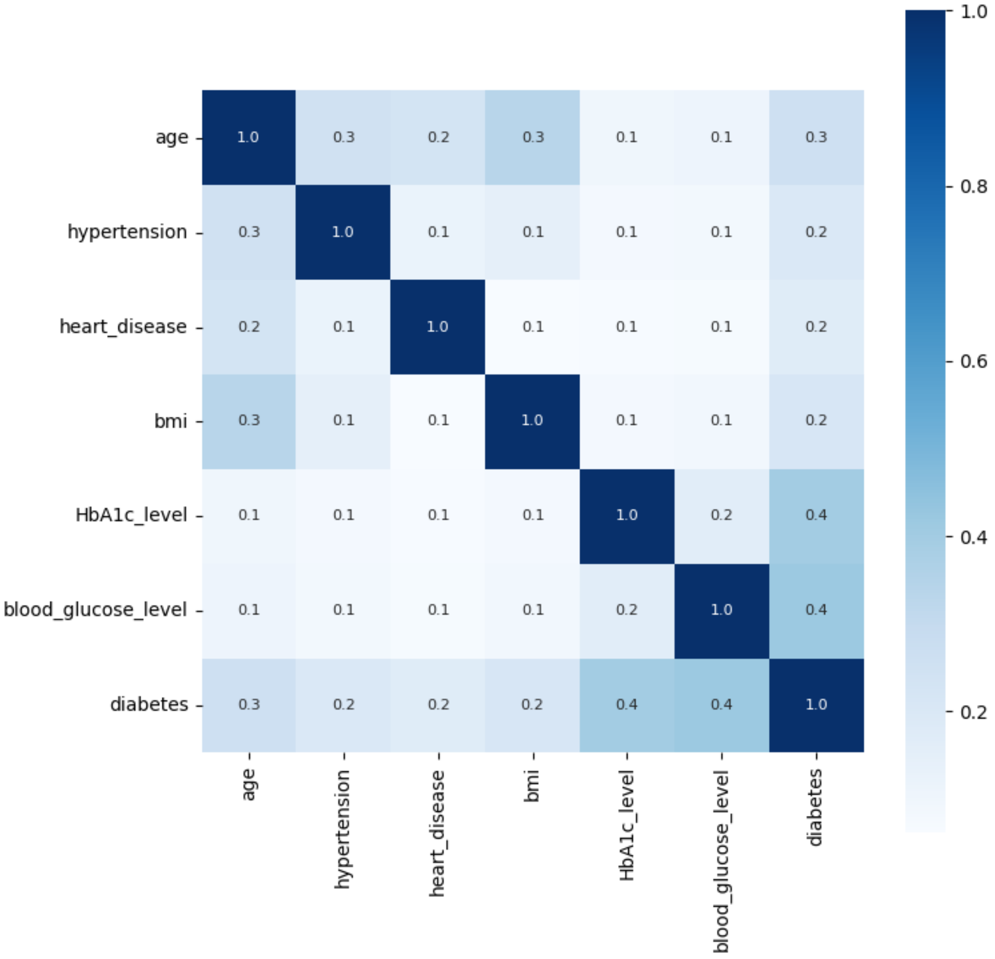
```
#plot = plt.figure(figsize = (5,5))
#sns.barplot(x='diabetes', y='age',data = diabetic_dataset)
```

```
correlation = diabetic_dataset.corr()
```

```
<ipython-input-19-08d52160405e>:1: FutureWarning: The default value of numeric_only in DataFrame.corr is deprecated. In a future ve
  correlation = diabetic_dataset.corr()
```

```
plt.figure(figsize=(8,8))
sns.heatmap(correlation, cbar='True', square='True', fmt='.1f', annot=True, annot_kws={'size':8}, cmap='Blues')
```

```
<Axes: >
```



```
from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
print(le)
```

```
LabelEncoder()
```

```
diabetic_dataset['gender'] = le.fit_transform(diabetic_dataset['gender'])
```

```
diabetic_dataset['gender'].unique()
```

```
array([0, 1, 2])
```

```
diabetic_dataset['smoking_history'] = le.fit_transform(diabetic_dataset['smoking_history'])
```

```
diabetic_dataset['smoking_history'].unique()

     array([4, 0, 1, 3, 2, 5])
```

```
X = diabetic_dataset.drop('diabetes',axis=1)
```

```
print(X)

            gender   age  hypertension  heart_disease  smoking_history    bmi  \
     0           0  80.0             0              1                4  25.19   
     1           0  54.0             0              0                0  27.32   
     2           1  28.0             0              0                4  27.32   
     3           0  36.0             0              0                1  23.45   
     4           1  76.0             1              1                1  20.14   
     ...       ...   ...           ...            ...              ...    ...   
     99995       0  80.0             0              0                0  27.32   
     99996       0   2.0             0              0                0  17.37   
     99997       1  66.0             0              0                3  27.83   
     99998       0  24.0             0              0                4  35.42   
     99999       0  57.0             0              0                1  22.43   

            HbA1c_level  blood_glucose_level  
     0              6.6                  140  
     1              6.6                   80  
     2              5.7                  158  
     3              5.0                  155  
     4              4.8                  155  
     ...            ...                  ...  
     99995          6.2                   90  
     99996          6.5                  100  
     99997          5.7                  155  
     99998          4.0                  100  
     99999          6.6                   90  

     [100000 rows x 8 columns]
```

```
Y = diabetic_dataset['diabetes']
```

```
print(Y)

     0        0
     1        0
     2        0
     3        0
     4        0
             ..
     99995    0
     99996    0
     99997    0
     99998    0
     99999    0
     Name: diabetes, Length: 100000, dtype: int64
```

```
X_train, X_test, Y_train, Y_test = train_test_split(X,Y,test_size = 0.2, random_state = 3)
```

```
print(Y.shape, Y_train.shape, Y_test.shape)

     (100000,) (80000,) (20000,)
```

```
model = RandomForestClassifier()
```

```
model.fit(X_train,Y_train)
```

```
X_test_prediction = model.predict(X_test)
test_data_accuracy = accuracy_score(X_test_prediction,Y_test)
```

```
print("Accuracy :",test_data_accuracy)
```

```
# Building Prediction System
input_data = (1,67.0,0,1,5,27.32,6.5,200)
input_data_as_numpy_array = np.asarray(input_data)
input_data_reshaped = input_data_as_numpy_array.reshape(1,-1)
prediction = model.predict(input_data_reshaped)
print(prediction)

if(prediction == 1):
  print("Diabetic Patient")
else:
  print("Not a diabetic Patient")
```