**Institute of Information Technology (IIT)**

Jahangirnagar University



**Lab Report: 05**

Submitted by:

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Lab Date: 08/08/2023  
Submission Date: 18/08/2023

# Example 1:

**Lab Report # Day 05**

Apply logistic íegíession techniques to píedict CHD based on the píovided featuíes in the attached Dataset. (Given fíamingham.csv)

## Import Libraries & Read CSV File: Code:

import numpy as np import pandas as pd

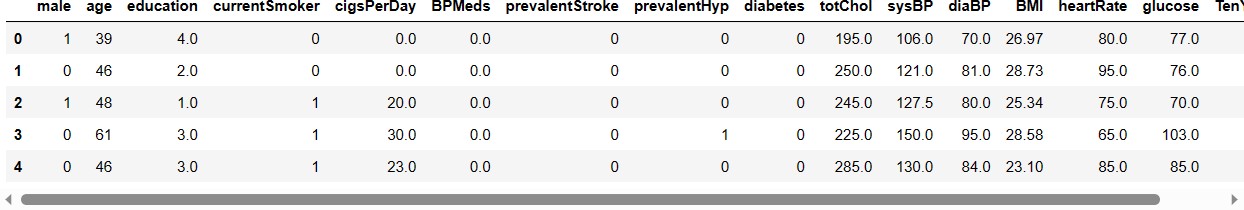
import matplotlib.pyplot as plt import seaborn as sns

import math

%matplotlib inline

data=pd.read\_csv("framingham.csv") data.head()

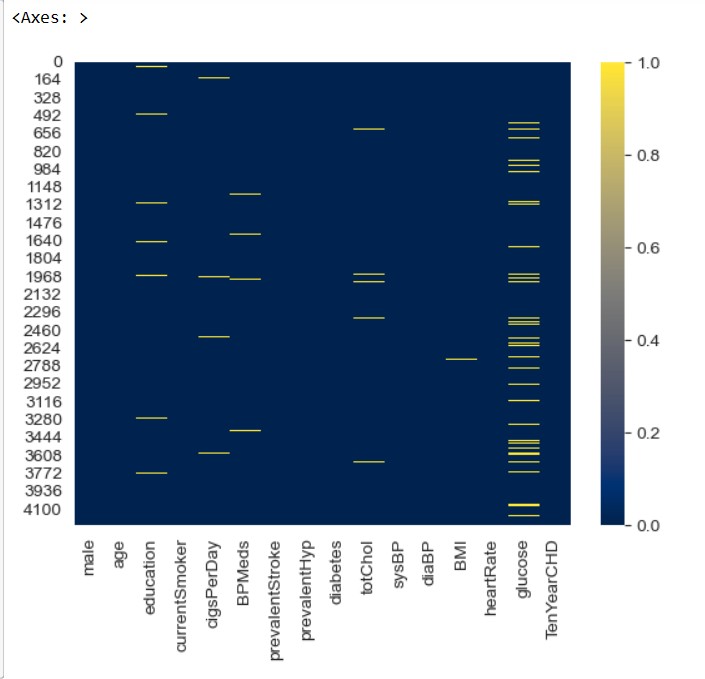
**Output:**



## Code:

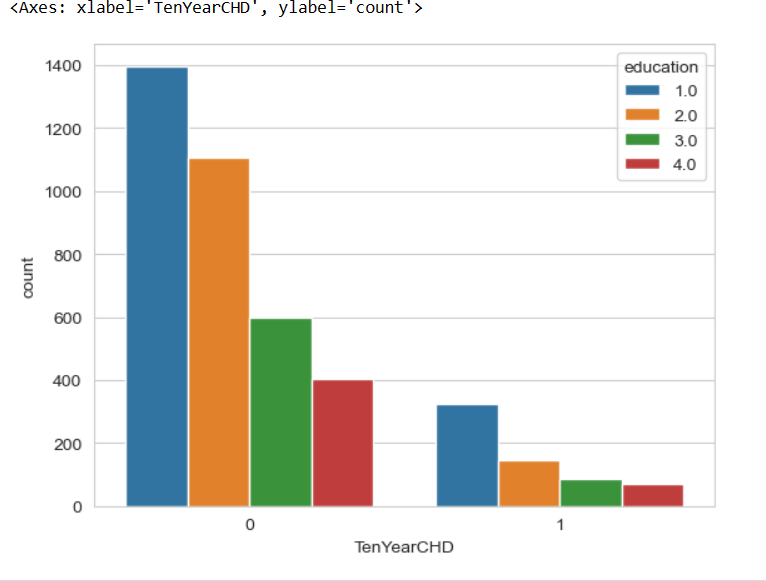
sns.heatmap(data.isnull(),cmap='cividis')

**Output:**



sns.countplot(x='TenYearCHD',hue='education’,data=data)

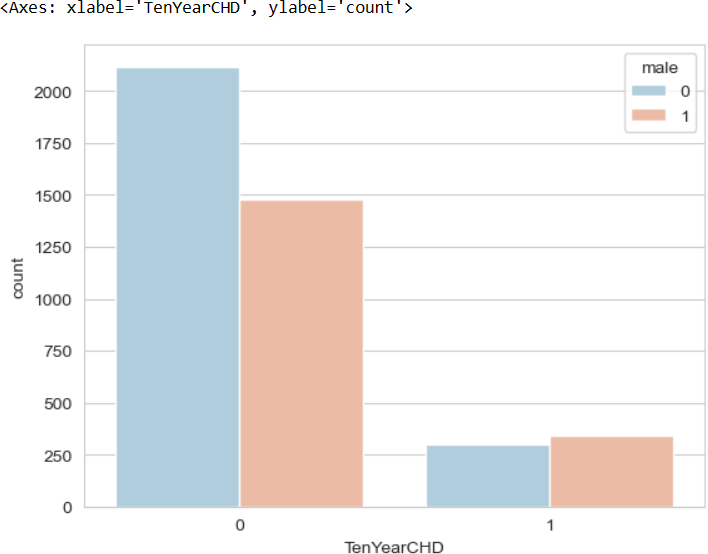
## Output:



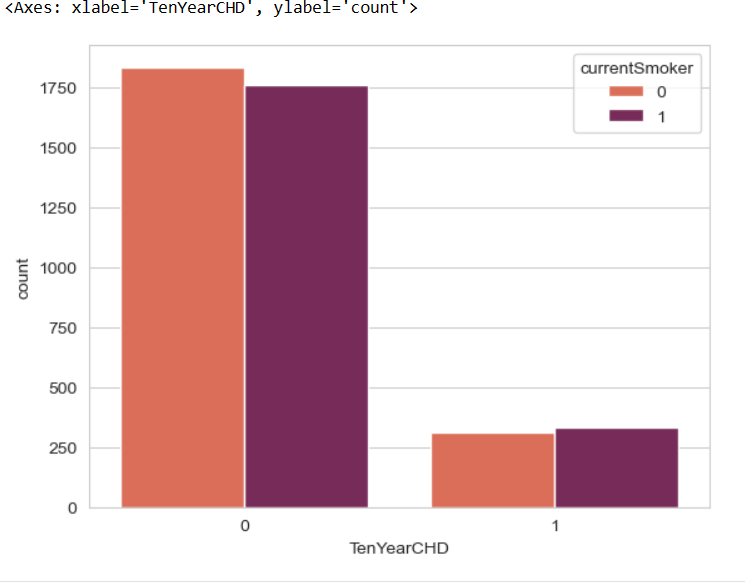
**Code:**

sns.countplot(x='TenYearCHD',hue='male',data=data,palette='RdBu\_r')

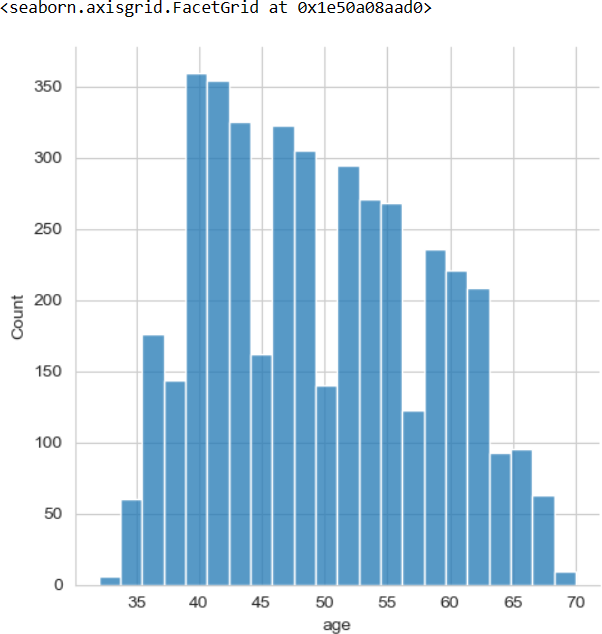
## Output:



**Output:**



## Output:



**Code:**

#**Function**

def fill\_with\_Data(cols): coloum=cols.keys()[0] female=cols[0] male=cols[1]

if pd.isnull(female): if male==1:

return math.ceil(data[data['male']==1][coloum].mean()) elif male==0:

return math.ceil(data[data['male']==0][coloum].mean())

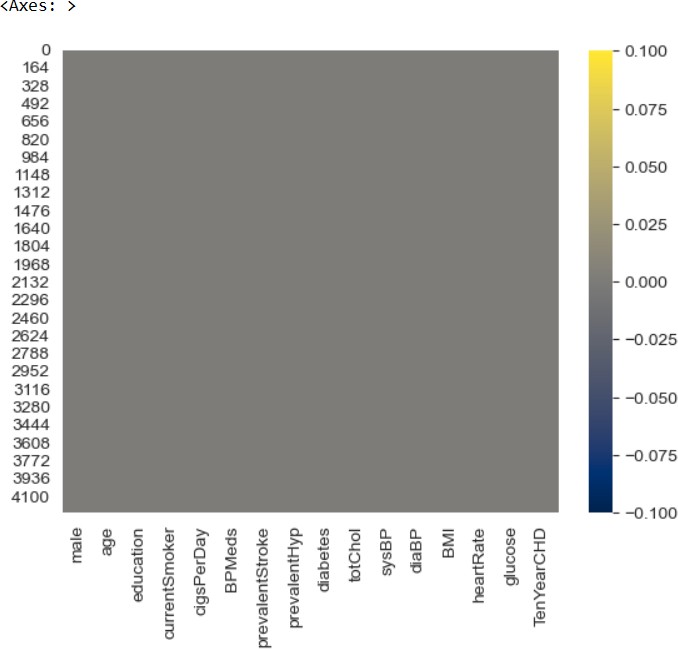
else:

return female

*#***Clean Null Values**

data['education'] = data[['education','male']].apply(fill\_with\_Data,axis=1) data['cigsPerDay']=data[['cigsPerDay','male']].apply(fill\_with\_Data,axis=1) data['BPMeds']=data[['BPMeds','male']].apply(fill\_with\_Data,axis=1) data['totChol']=data[['totChol','male']].apply(fill\_with\_Data,axis=1) data['BMI']=data[['BMI','male']].apply(fill\_with\_Data,axis=1) data['heartRate']=data[['heartRate','male']].apply(fill\_with\_Data,axis=1) data['glucose']=data[['glucose','male']].apply(fill\_with\_Data,axis=1)

sns.heatmap(data.isnull(),cmap='cividis')



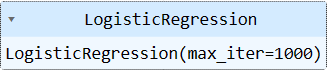
## Building a Logistic Regression Model: Code:

*#* **Train Test Split**

*from sklearn.model\_selection import train\_test\_split x\_train,x\_test,y\_train,y\_test=train\_test\_split(data.drop('TenYearCHD',axis=1), data['TenYearCHD'], test\_size=0.3, random\_state=101)*

*from sklearn.linear\_model import LogisticRegression lrmodel=LogisticRegression(solver='lbfgs',max\_iter=1000) lrmodel.fit(x\_train,y\_train)*

**Output:**



## Code:

**#Predicting** *predictions=lrmodel.predict(x\_test) predictions*

**Output:**



## Evaluation: Code:

from sklearn.metrics import classification\_report print(classification\_report(y\_test,predictions))

**Output:**

