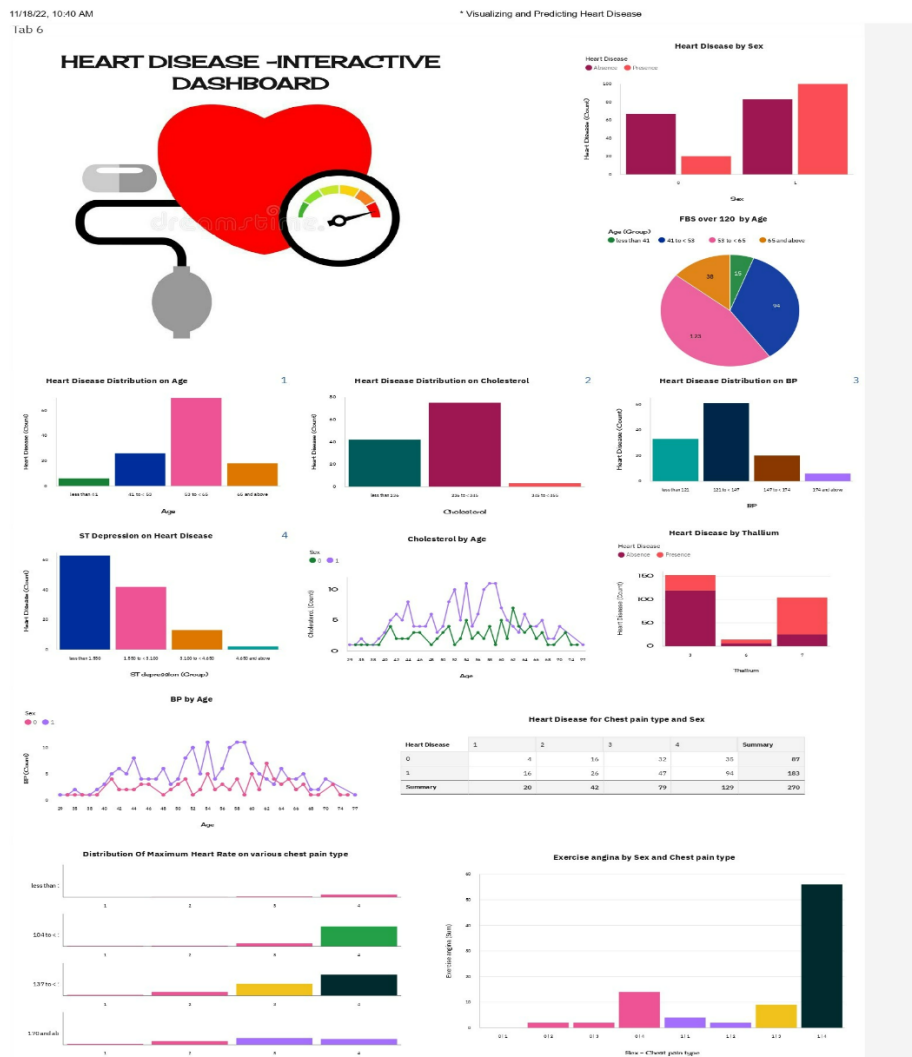


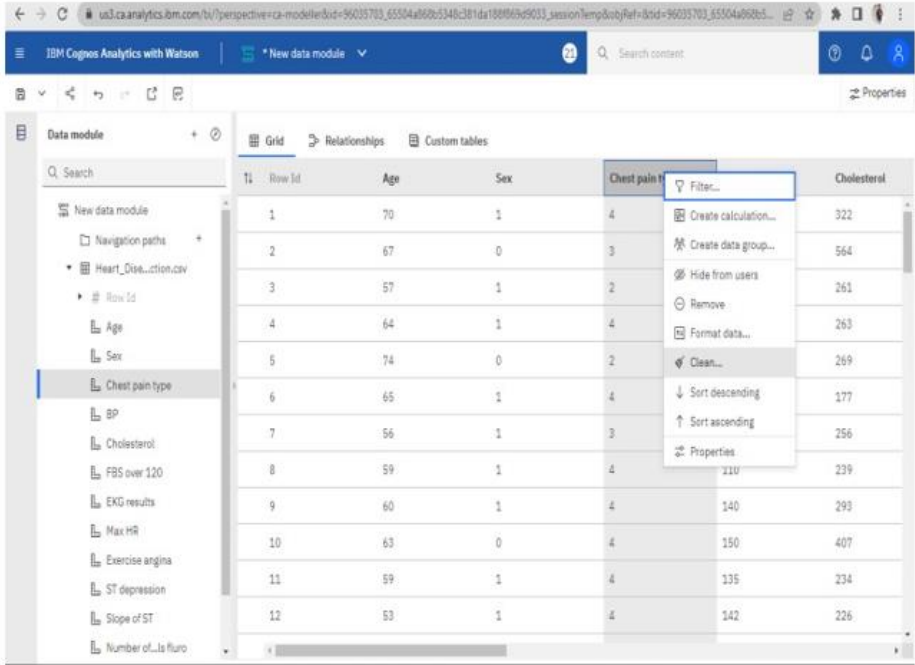
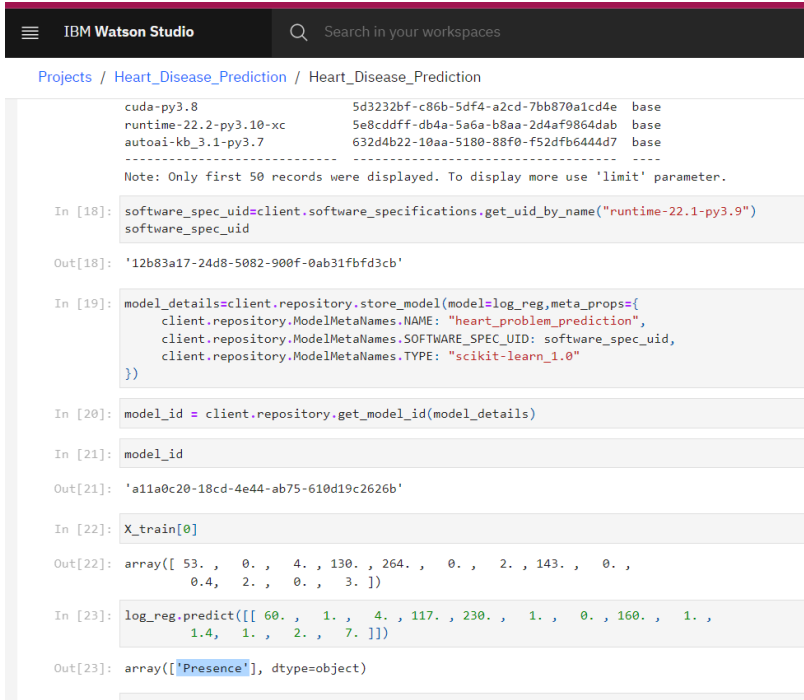
Project Development Phase Model Performance Test

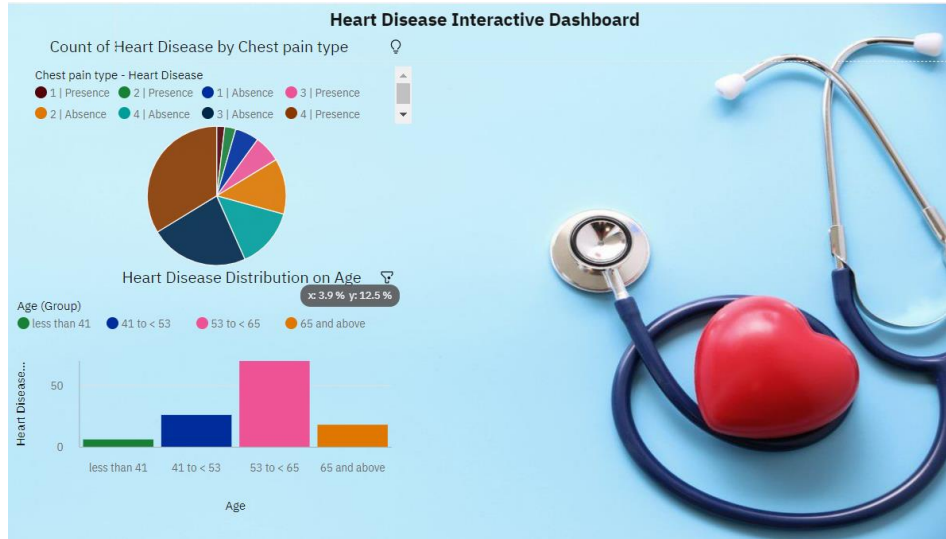
Date	18 November 2022
Team ID	PNT2022TMID52957
Project Name	Visualizing and Predicting Heart Diseases with an Interactive Dashboard
Maximum Marks	10 Marks

Model Performance Testing:

Project team shall fill the following information in model performance testing template.

S.No.	Parameter	Screenshot / Values
1.	Dashboard designs	<p>No of Visualizations / Graphs – 5 dashboard 25 visualization</p>  <p>The dashboard, titled 'HEART DISEASE -INTERACTIVE DASHBOARD', features a central heart icon with a pulse line. It contains 25 visualizations: <ul style="list-style-type: none"> Heart Disease by Sex: Bar chart showing counts for Male and Female. FBS over 120 by Age: Pie chart showing distribution across age groups. Heart Disease Distribution on Age: Bar chart showing counts for different age ranges. Heart Disease Distribution on Cholesterol: Bar chart showing counts for different cholesterol levels. Heart Disease Distribution on BP: Bar chart showing counts for different blood pressure categories. ST Depression on Heart Disease: Bar chart showing counts for different ST depression levels. Cholesterol by Age: Line graph showing cholesterol levels across ages. Heart Disease by Thallium: Bar chart showing counts for different thallium levels. BP by Age: Line graph showing blood pressure levels across ages. Heart Disease for Chest pain type and Sex: Summary table showing counts for different chest pain types and sexes. Distribution of Maximum Heart Rate on various chest pain type: Horizontal bar chart showing maximum heart rate distribution. Exercise angina by Sex and Chest pain type: Bar chart showing exercise angina counts. </p>
2.	Data Response	<p>It hides certain aspects of the visualization if the size is limited, to maximize the space that is available to display data.</p> <ul style="list-style-type: none"> • Its Create with relationship with another explorations

		<ul style="list-style-type: none"> There was another data exploration with various continuous values, those values were grouped as common.
3.	Dataset collection and Modification	<p>As per project ideation the dataset are collected from smartwatches by the and work the dataset with cleaning process</p> 
4.	Utilization of Data Filters	<p>IN Cognos Dashboard utilization of the filtration to be filtered of all explorations of the dashboard</p> 
5.	Effective User Story	No of Scene Added– 15 stories with 2-3 visualizations in each story



6. Deployment of ML model for prediction in IBM Cloud

By user input their parametrs like age,sex,BP etc logistic regression is deployed in IBM cloud and it will display whether Heart disease is presence or absence

```
IBM Watson Studio

Search in your workspaces

Projects / Heart_Disease_Prediction / Heart_Disease_Prediction

cuda-py3.8 5d3232bf-c86b-5df4-a2cd-7bb870a1cd4e base
runtime-22.2-py3.10-xc 5e8cddff-db4a-5a6a-b8aa-2d4af9864dab base
autoai-kb_3.1-py3.7 632d4b22-10aa-5180-88f0-f52dfb6444d7 base
-----
Note: Only first 50 records were displayed. To display more use 'limit' parameter.

In [18]: software_spec_uid=client.software_specifications.get_uid_by_name("runtime-22.1-py3.9")
software_spec_uid

Out[18]: '12b83a17-24d8-5082-900f-0ab31fbfd3cb'

In [19]: model_details=client.repository.store_model(model=log_reg,meta_props={
client.repository.ModelMetaNames.NAME: "heart_problem_prediction",
client.repository.ModelMetaNames.SOFTWARE_SPEC_UID: software_spec_uid,
client.repository.ModelMetaNames.TYPE: "scikit-learn_1.0"
})

In [20]: model_id = client.repository.get_model_id(model_details)

In [21]: model_id

Out[21]: 'a11a0c20-18cd-4e44-ab75-610d19c2626b'

In [22]: X_train[0]

Out[22]: array([ 53. ,  0. ,  4. , 130. , 264. ,  0. ,  2. , 143. ,  0. ,
 0.4,  2. ,  0. ,  3. ])

In [23]: log_reg.predict([[ 60. ,  1. ,  4. , 117. , 230. ,  1. ,  0. , 160. ,  1. ,
 1.4,  1. ,  2. ,  7. ]])

Out[23]: array(['Presence'], dtype=object)
```

7.

Heart Disease Prediction in python using deployed model in IBM Cloud.

Heart Disease is predicted by user giving their details in python itself which use the deployed model in IBM cloud as backend.

Code in Python:

```
test_cloud_api.py - C:\Users\SSN\OneDrive - SSN Trust\Documents\SEM 7\IBM\test_cloud_api.py (3.10.3)
File Edit Format Run Options Window Help

import requests
import json
# NOTE: you must manually set API_KEY below using information retrieved from your IBM Cloud account.
API_KEY = "igRk1vaXofv08uhk6_rU0GCArtz0w88m1e19fJ-R8"
token_response = requests.post("https://iam.cloud.ibm.com/identity/token", data={"apikey":
API_Key, "grant_type": "urn:ibm:params:oauth:grant-type:apikey"})
mltoken = token_response.json()["access_token"]

header = {'Content-Type': 'application/json', 'Authorization': 'Bearer ' + mltoken}

# NOTE: manually define and pass the array(s) of values to be scored in the next line
payload_scoring = {"input_data": [{"fields": ['Age','Sex','Chest pain type','BP','Cholesterol','FBS over 120','ECG results','Max HR','Exercise angina','ST Depression',
'Thallium'], "values": [[ 44, 1, 3, 140, 235, 0, 2, 180, 0, 0, 1, 0, 3]]}]]}

response_scoring = requests.post("https://us-south.ml.cloud.ibm.com/ml/v4/deployments/2102715e-0bc9-42dd-9036-6a7eaf7aed5/predictions?version=2022-11-18", json=payload_scoring,
headers={"Authorization": "Bearer " + mltoken})
print("Scoring response")
predictions=response_scoring.json()
pred=predictions["predictions"][0]["values"][0][0]
if(pred == "Presence"):
    print("You have high probability to heart Disease Kindly approach a Doctor Take care")
else:
    print("Hey! Your Normal Take care")
|
```

Output :

```
IDLE Shell 3.10.3
File Edit Shell Debug Options Window Help

Python 3.10.3 (tags/v3.10.3:a342a49, Mar 16 2022, 13:07:40) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

>>>
= RESTART: C:\Users\SSN\OneDrive - SSN Trust\Documents\SEM 7\IBM\test_cloud_api.py
Scoring response
Hey! Your Normal Take care
>>>
```

8.

Webpage Design for Visualizing and prediction

Designed an webpage model for Visualizing and Prediction of Heart Disease Webpage Model

Sample Design for Prediction

Visualizing and Predicting Heart Disease

Male

Typical angina

No

Normal

No

Unslowing

Zero

Normal

Age

BP

Cholesterol


Max HR

ST depression

Predict

Predicted Value

Visualizing and Predicting Heart Disease:Hey! Your Normal Take care



Sample Design for Visualization

