Effective Heart Disease Prediction Using IBM Auto AI Service

INTRODUCTION

Overview

Cardiovascular diseases (CVDs) are the number 1 cause of death globally, taking an estimated 17.9 million lives each year, which accounts for 31% of all deaths worldwide.
Heart failure is a common event caused by CVDs and this dataset contains 9 features that can be used to predict mortality by heart failure.
In this project, you need to build a model using Auto AI and build a web application where we can showcase the prediction of heart failure.
This project is based on heart failure detection based on certain parameters:

AVGHEARTBEATSPERMIN
PALPITATIONSPERDAY
CHOLESTEROL
BMI
AGE
SEX
FAMILYHISTORY
SMOKERLAST5YRS
EXERCISEMINPERWEEK

These all parameters took as features in machine learning model and heart failure took as predictive variable in model.

Purpose

By this, we build a cloud model that can easily access by any one and use to detect heart failure and help patients in future.
Step of achieving the process:

- Work with Watson Studio
- Create a project in Watson Studio
- Use Auto Ai experiment to create a model

- Deploy the ML model as a webserver
- Integrating Model and Node-RED Service
- Build an Application using Node-RED which takes inputs from the user and showcases the prediction on UI

LITERATURE SURVEY

M. Adnan Khan, S. Abbas, A. Atta, A. Ditta, H. Alquhayz *et al.*, "Intelligent cloud based heart disease prediction system empowered with supervised machine learning," *Computers, Materials & Continua*, vol. 65, no.1, pp. 139–151, 2020.

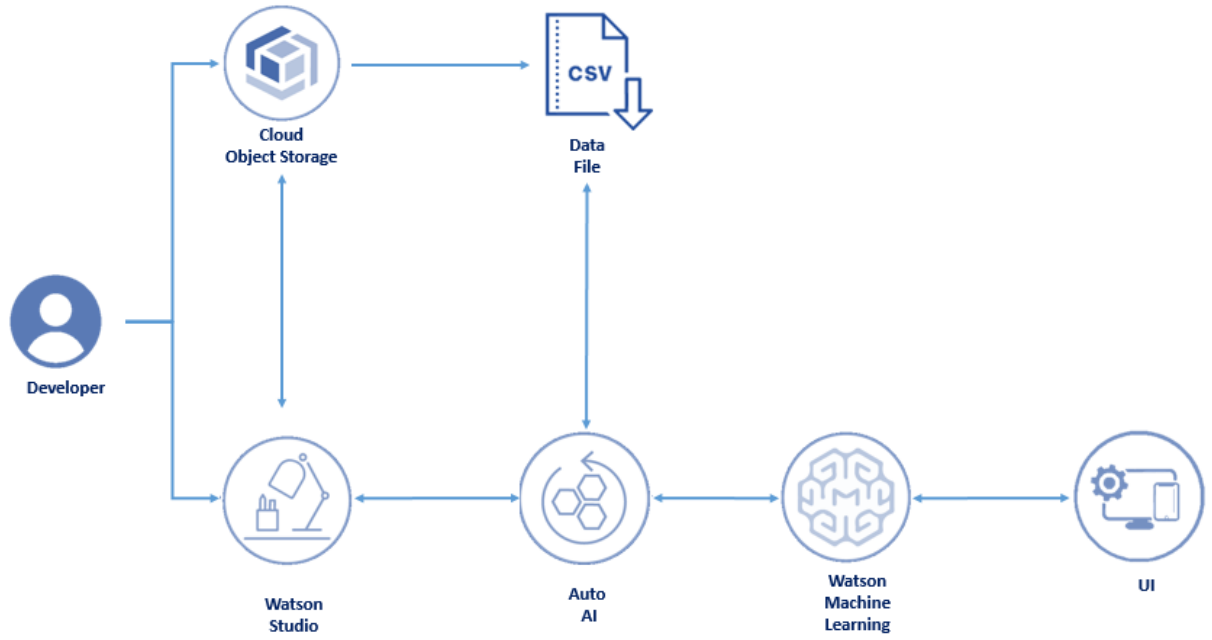
Forum Desai, Deepraj Chowdhury, Rupinder Kaur, Marloes Peeters, Rajesh Chand Arya, Gurpreet Singh Wander, Sukhpal Singh Gill, Rajkumar Buyya,"HealthCloud: A system for monitoring health status of heart patients using machine learning and cloud computing,"Internet of Things, 17, 2022,100485, 2542-6605.

2.2 Proposed solution:

Create a WEB application Using Node-RED to take user input and showcase Prediction on UI.

THEORITICAL ANALYSIS

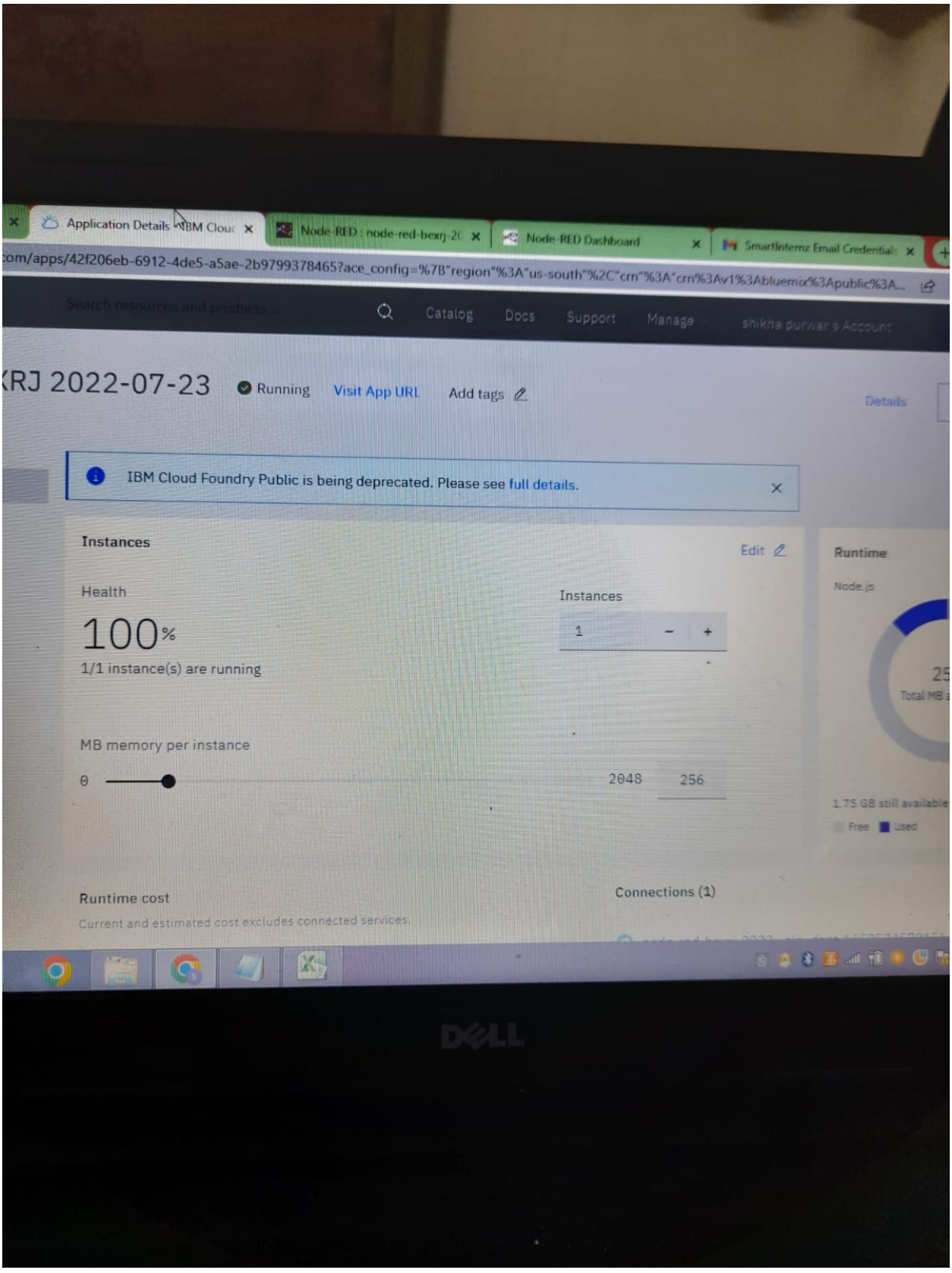
Block diagram

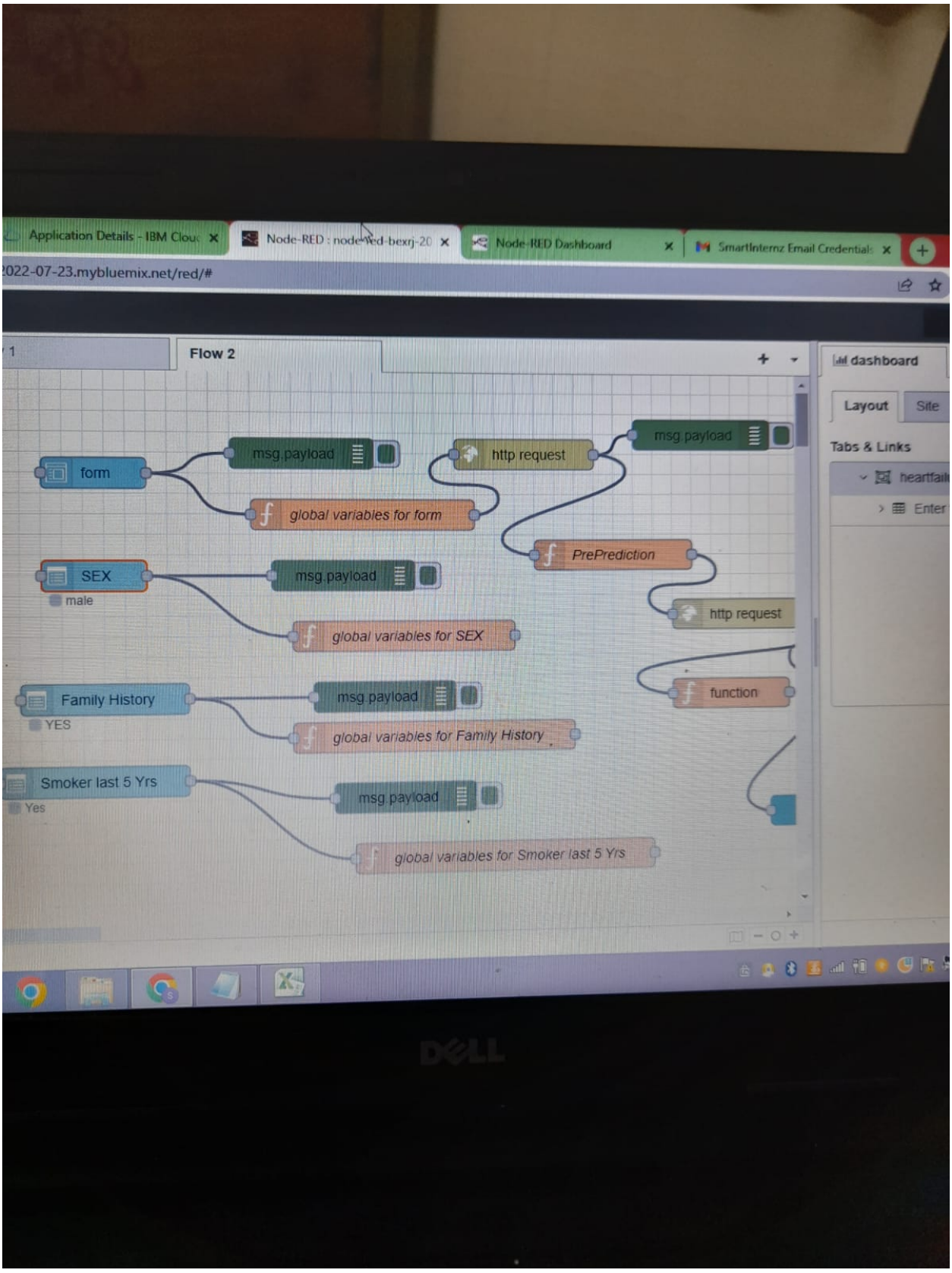


Hardware / Software designing

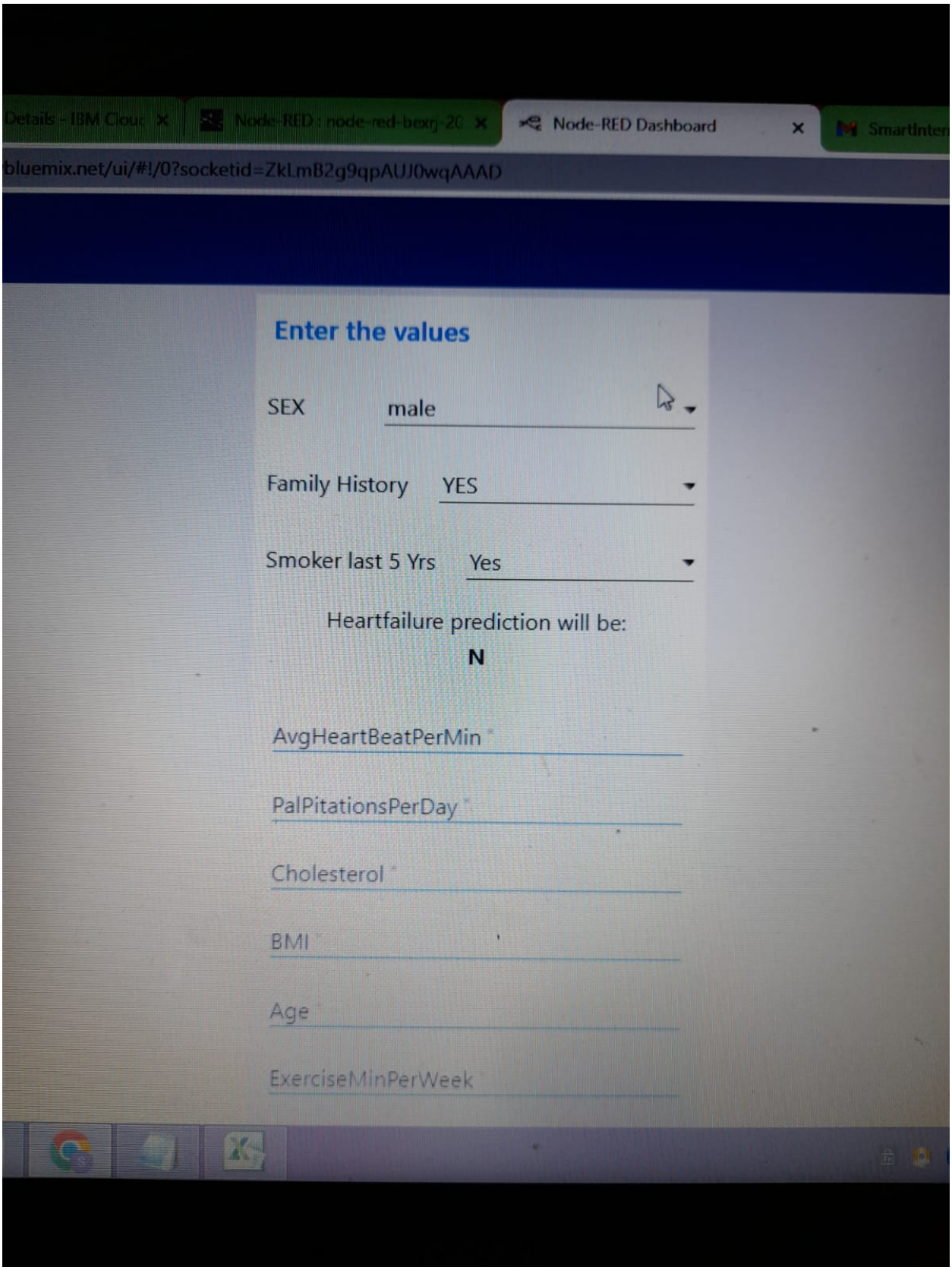
- Python
- System
- IBM Watson Studio
- IBM Watson Machine Learning
- Auto Ai
- Node-RED
- IBM Cloud Object Storage
-

EXPERIMENTAL INVESTIGATIONS


Application Details | IBM Cloud
Node-RED : node-red-bexrj-20
Node-RED Dashboard
SmartInternz Email Credentials
com/apps/42f206eb-6912-4de5-a5ae-2b9799378465?ace_config=%7B"region"%3A"us-south"%2C"crn"%3A"crn%3Av1%3Abluemix%3Apublic%3A...
Search resources and products...
Catalog
Docs
Support
Manage
shikha purwar's Account
RJ 2022-07-23
Running
Visit App URL
Add tags
Details
IBM Cloud Foundry Public is being deprecated. Please see full details.
Instances
Edit
Health
100%
1/1 instance(s) are running
Instances
1
MB memory per instance
0
2048
256
Runtime
Node.js
1.75 GB still available
Free
Used
Runtime cost
Current and estimated cost excludes connected services.
Connections (1)


Application Details - IBM Clou
Node-RED : node-red-bexrj-20
Node-RED Dashboard
SmartInternz Email Credentials
2022-07-23.mybluemix.net/red/#
Flow 2
dashboard
Layout
Site
Tabs & Links
form
msg.payload
http request
msg.payload
global variables for form
PrePrediction
SEX
male
msg.payload
http request
global variables for SEX
function
Family History
YES
msg.payload
global variables for Family History
Smoker last 5 Yrs
Yes
msg.payload
global variables for Smoker last 5 Yrs

RESULT


Details - IBM Cloud
Node-RED : node-red-bexrj-20
Node-RED Dashboard
SmartIntern
bluemix.net/ui/#!/0?socketid=ZkLmB2g9qpAUJ0wqAAAD
Enter the values
SEX
male
Family History
YES
Smoker last 5 Yrs
Yes
Heartfailure prediction will be:
N
AvgHeartBeatPerMin
PalPitationsPerDay
Cholesterol
BMI
Age
ExerciseMinPerWeek

APPLICATIONS

Medical, business, marketing, banking, retail

CONCLUSION

This project done with help of IBM cloud plateform and use many application of it like node red for front end, machine learning and watson for backend codding and storage in cloud to store data in which we are performimg prediction.

FUTURE SCOPE

We can build any medical related problem model and help the pateints to effeeciently detect the disease.

BIBILOGRAPHY

M. Adnan Khan, S. Abbas, A. Atta, A. Ditta, H. Alquhayz *et al.*, "Intelligent cloud based heart disease prediction system empowered with supervised machine learning," *Computers, Materials & Continua*, vol. 65, no.1, pp. 139–151, 2020.

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APPENDIX

audio link of google drive:
https://drive.google.com/file/d/1ikNUCXLhPOkp8UKz-1WUbpINbEWm4u4Z/view?usp=sharing