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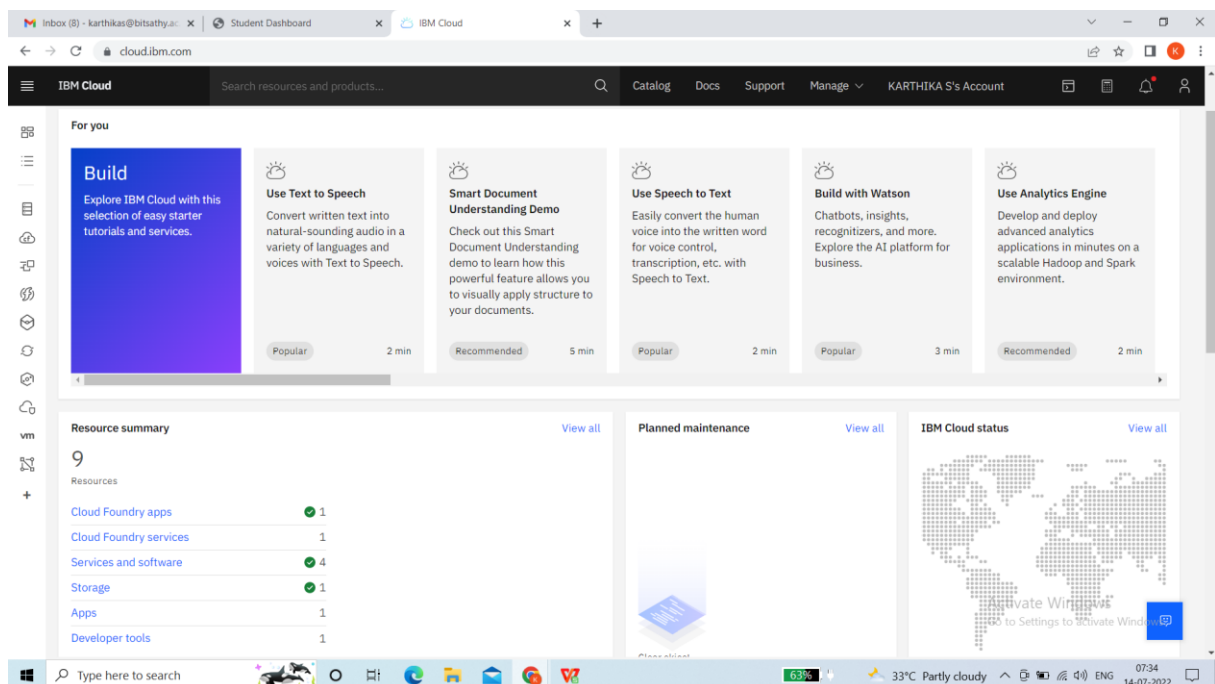
**INSTITUTION NAME:** Bannari Amman Institute of Technology ,  
Sathyamangalam,Erode(District)  
Tamil Nadu - 638401

**COURSE TITLE:** Applied Data Science

**PROJECT TITLE:** Effective Heart Disease Prediction Using IBM Auto AI Service

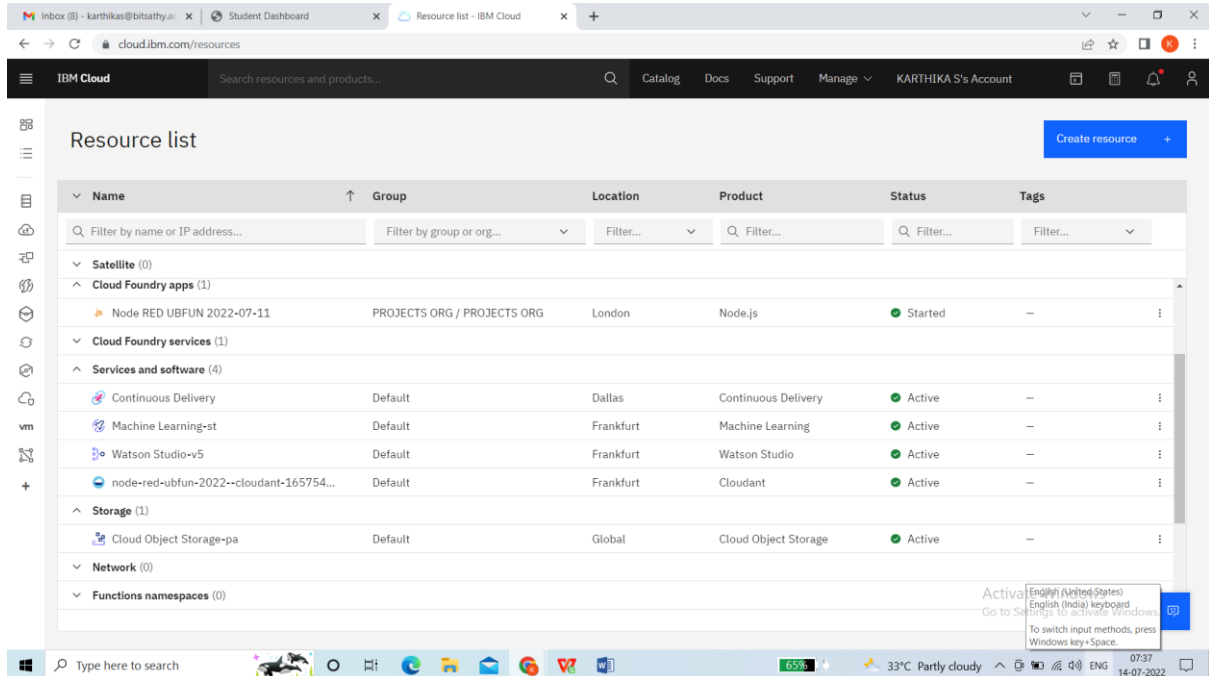
## SCREENSHOTS OF PROJECT:

### IBM CLOUD DASHBOARD



## SERVICES AND SOFTWARE INSTALLED

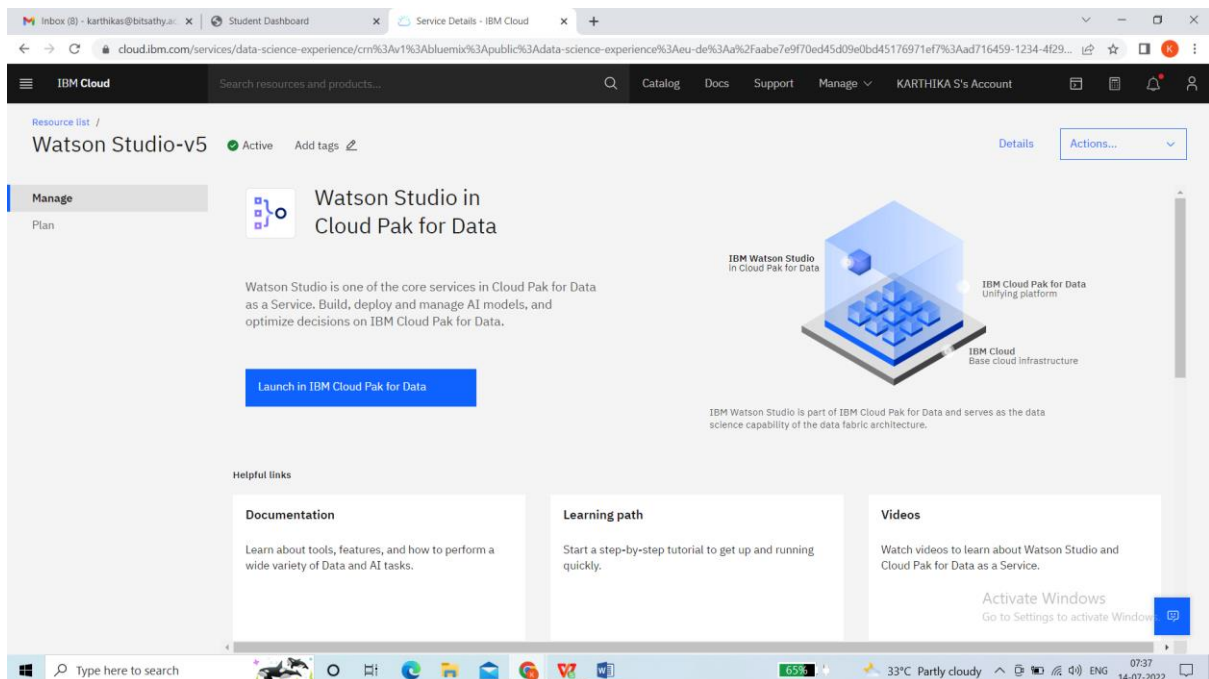
### IBM CLOUD(INCLUDES WATSON STUDIO,MACHINE LEARNING,NODE-RED) – RESOURCE LIST



The screenshot displays the IBM Cloud 'Resource list' page. The page header includes the IBM Cloud logo, a search bar, and navigation links for Catalog, Docs, Support, and Manage. The user's account name, KARTHIKA S's Account, is visible in the top right corner. The main content area shows a table of resources with columns for Name, Group, Location, Product, Status, and Tags. The resources are categorized into Satellite (0), Cloud Foundry apps (1), Cloud Foundry services (1), Services and software (4), Storage (1), Network (0), and Functions namespaces (0). The 'Services and software' section is expanded, showing four items: Continuous Delivery, Machine Learning-st, Watson Studio-v5, and node-red-ubfun-2022--cloudant-165754... Each item has a status indicator (Active or Started) and a 'Go to Settings' link. The bottom of the screen shows a Windows taskbar with the search bar, task icons, and system tray information including the date and time (07:37, 14-07-2022).

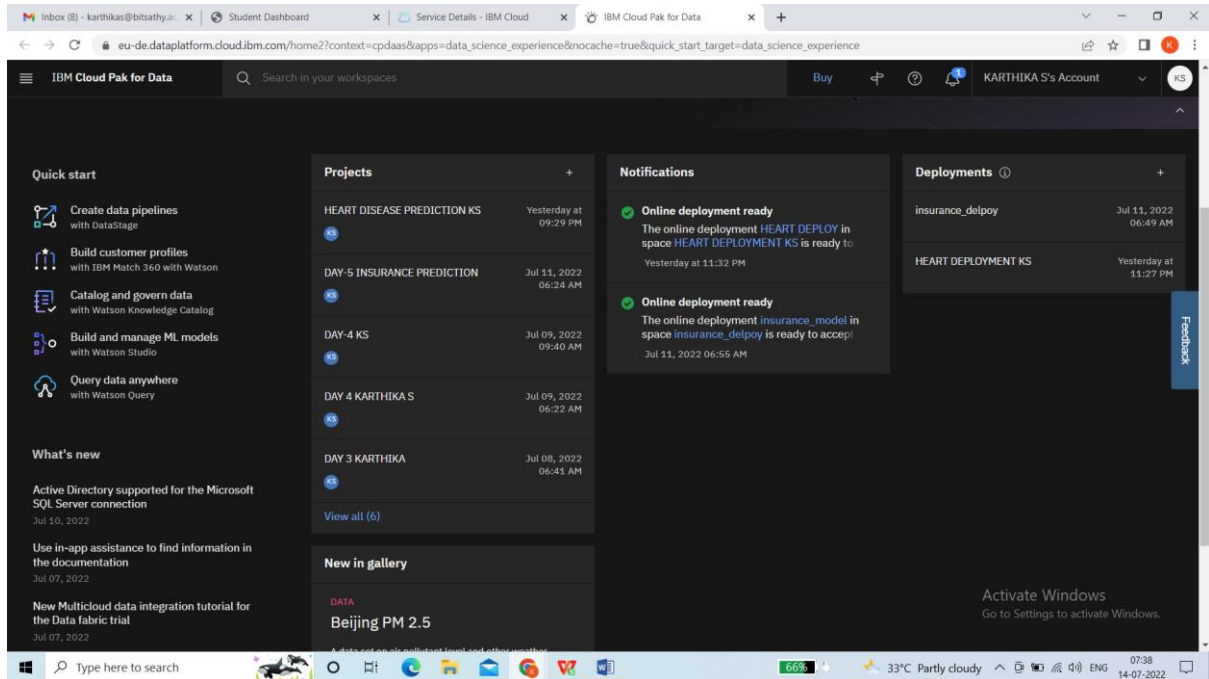
Name	Group	Location	Product	Status	Tags
<b>Satellite (0)</b>					
<b>Cloud Foundry apps (1)</b>					
Node RED UBFUN 2022-07-11	PROJECTS ORG / PROJECTS ORG	London	Node.js	Started	—
<b>Cloud Foundry services (1)</b>					
<b>Services and software (4)</b>					
Continuous Delivery	Default	Dallas	Continuous Delivery	Active	—
Machine Learning-st	Default	Frankfurt	Machine Learning	Active	—
Watson Studio-v5	Default	Frankfurt	Watson Studio	Active	—
node-red-ubfun-2022--cloudant-165754...	Default	Frankfurt	Cloudant	Active	—
<b>Storage (1)</b>					
Cloud Object Storage-pa	Default	Global	Cloud Object Storage	Active	—
<b>Network (0)</b>					
<b>Functions namespaces (0)</b>					

## WATSON STUDIO (LAUNCH)

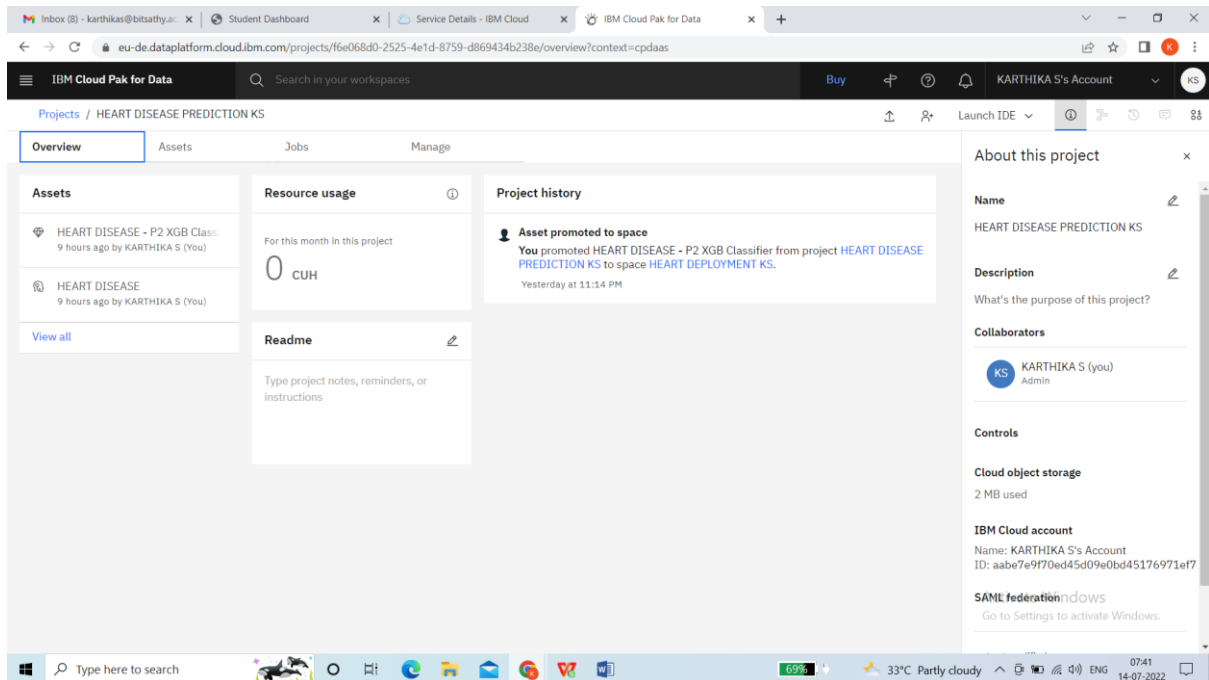


The screenshot displays the IBM Cloud 'Watson Studio-v5' page. The page header includes the IBM Cloud logo, a search bar, and navigation links for Catalog, Docs, Support, and Manage. The user's account name, KARTHIKA S's Account, is visible in the top right corner. The main content area shows the 'Watson Studio in Cloud Pak for Data' section. It includes a 'Launch in IBM Cloud Pak for Data' button and a diagram illustrating the architecture: IBM Watson Studio in Cloud Pak for Data, IBM Cloud Pak for Data Unifying platform, and IBM Cloud Base cloud infrastructure. Below this, there are three sections: 'Documentation' (Learn about tools, features, and how to perform a wide variety of Data and AI tasks), 'Learning path' (Start a step-by-step tutorial to get up and running quickly), and 'Videos' (Watch videos to learn about Watson Studio and Cloud Pak for Data as a Service). The bottom of the screen shows a Windows taskbar with the search bar, task icons, and system tray information including the date and time (07:37, 14-07-2022).

# CREATING WATSON STUDIO



# OVERVIEW PAGE



## ASSETS FOR HEART DISEASE

The screenshot shows the IBM Cloud Pak for Data interface. The top navigation bar includes 'Inbox', 'Student Dashboard', 'Service Details - IBM Cloud', and 'IBM Cloud Pak for Data'. The main header shows the project path: 'eu-de.dataplatform.cloud.ibm.com/projects/f6e068d0-2525-4e1d-8759-d869434b238e/assets?context=cpdaas'. The left sidebar has tabs for 'Overview', 'Assets', 'Jobs', and 'Manage'. The 'Assets' tab is active, showing a list of 3 assets. The 'Asset types' section on the left lists 'Data' (1), 'Experiments' (1), and 'Models' (1). The 'All assets' table lists the following:

Name	Last modified
HEART DISEASE - P2 XGB Classifier Model	9 hours ago KARTHIKA S (You)
HEART DISEASE AutoAI experiment	9 hours ago KARTHIKA S (You)
patientdataV6.csv	9 hours ago KARTHIKA S (You)

The right sidebar shows 'About this project' details: Name (HEART DISEASE PREDICTION KS), Description (What's the purpose of this project?), Collaborators (KARTHIKA S (you) Admin), and Controls (Cloud object storage: 2 MB used, IBM Cloud account: KARTHIKA S's Account, SAML federation windows).

## DEPLOYMENT SPACE (HEART DISEASE)

The screenshot shows the IBM Cloud Pak for Data interface for the 'HEART DISEASE - P2 XGB Classifier' deployment space. The top navigation bar is the same as the previous screenshot. The main header shows the project path: 'eu-de.dataplatform.cloud.ibm.com/ml/models/96770ee8-5755-4710-8fa7-57cfcd177bb?projectid=f6e068d0-2525-4e1d-8759-d869434b238e&context=cpdaas'. The left sidebar has tabs for 'Overview', 'Assets', 'Jobs', and 'Manage'. The 'Assets' tab is active, showing the 'HEART DISEASE - P2 XGB Classifier' asset. The 'Input Schema' section shows the following input columns and types:

Column	Type
AGE	integer
AVGHEARTBEATSPERMIN	integer
BMI	integer
CHOLESTEROL	integer
EXERCISEMINPERWEEK	integer
FAMILYHISTORY	other
HEARTFAILURE	other
PALPITATIONSPERDAY	integer
SEX	other

The right sidebar shows 'About this project' details: Name (HEART DISEASE - P2 XGB Classifier), Description (No description provided.), Created (Jul 13, 2022 11:05 PM), Type (wml-hybrid\_0.1), Model ID (96770ee8-5755-4710-8fa7-57...), Software specification (hybrid\_0.1), Hybrid pipeline software specifications (autoai-kb\_rt22.1-py3.9), Tags (Add tags to make assets easier to find.), and Activate Windows (Go to Settings to activate Windows).

## DEPLOYMENT NOTIFICATION

The screenshot shows the IBM Cloud Pak for Data interface. A notification panel on the right indicates that the online deployment 'HEART DEPLOY' in space 'HEART DEPLOYMENT KS' is ready to accept requests. The main content area displays the 'HEART DISEASE - P2 XGB Classifier' project. Below the project name, the 'Input Schema' is shown, listing various health-related features and their data types.

Column	Type
AGE	"integer"
AVGHEARTBEATSPERMIN	"integer"
BMI	"integer"
CHOLESTEROL	"integer"
EXERCISEMINPERWEEK	"integer"
FAMILYHISTORY	"other"
HEARTFAILURE	"other"
PALPITATIONSPERDAY	"integer"
SEX	"other"

## HEART DISEASE PREDICTION (MANAGE TAB)

The screenshot shows the 'Manage' tab for the 'HEART DISEASE PREDICTION KS' project. The interface is divided into several sections: 'General' (containing project details like Name, Description, and Project ID), 'Storage' (showing storage used and bucket information), and 'Danger zone' (with options to leave or delete the project). A right-hand sidebar provides 'About this project' information, including the project name, description, collaborators, and controls.

**General**

**Details**

Name: HEART DISEASE PREDICTION KS

Description: What's the purpose of this project?

Project ID: f6e068d0-2525-4e1d-8759-d869434b238e

**Storage**

Storage used: 2 MB

Bucket: heartdiseasepredictionks-donotdelete-pr-izaza1y4thtoj

**Danger zone**

Leave project: Remove your ability to access this project and its assets. [Leave]

Delete project: [Delete]

**About this project**

Name: HEART DISEASE PREDICTION KS

Description: What's the purpose of this project?

Collaborators: KARTHIKA S (you) Admin

Controls

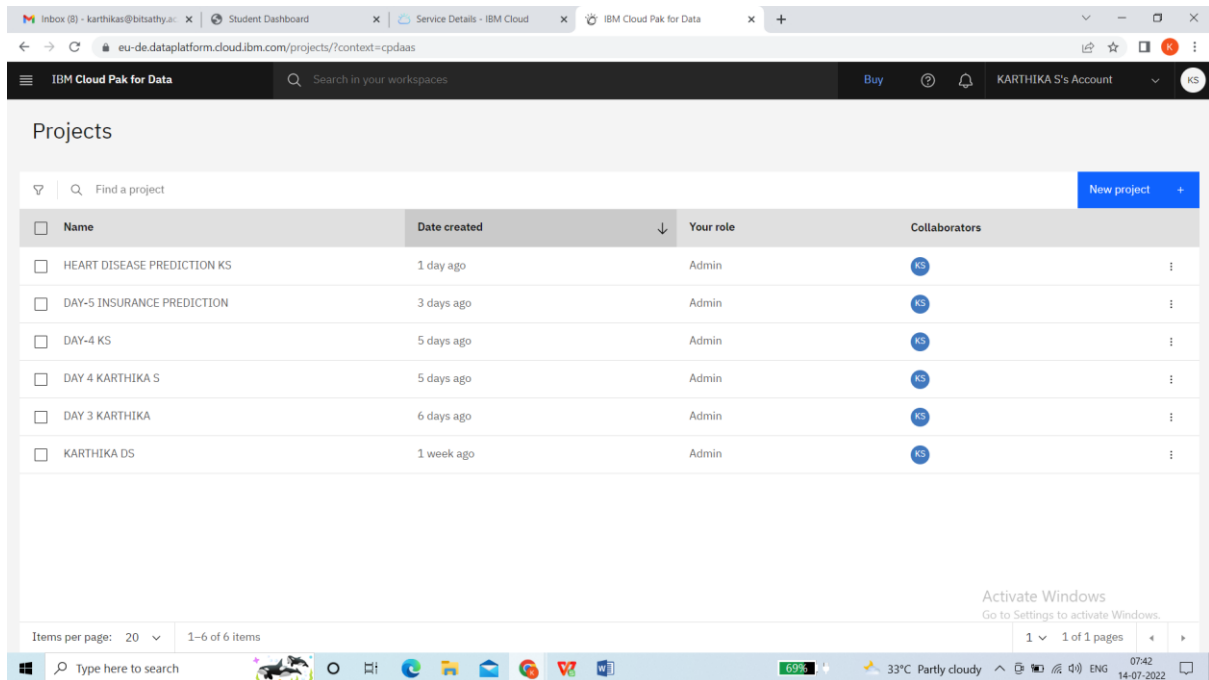
Cloud object storage: 2 MB used

IBM Cloud account: Name: KARTHIKA S's Account ID: aabe7e9f70ed45d09e0bd45176971ef7

SAML federation: Go to Settings to activate Windows.

## PROJECTS DONE

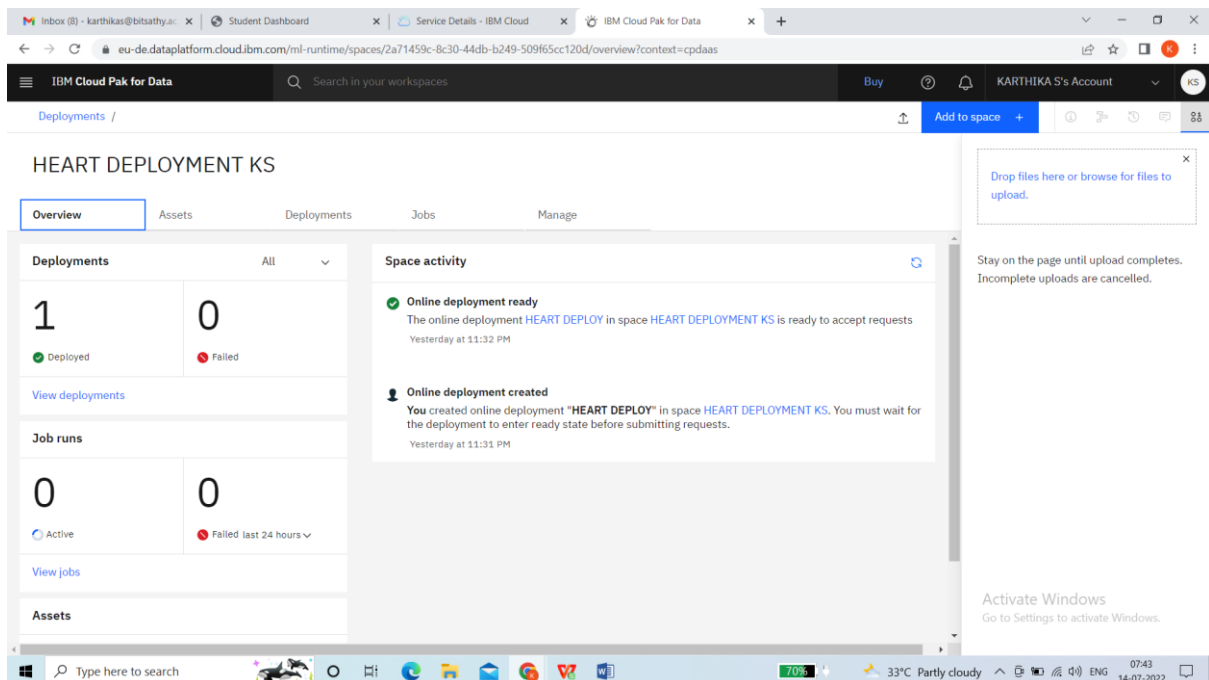
### EX: HEART DISEASE PREDICTION KS (FILE NAME)



The screenshot shows the IBM Cloud Pak for Data interface. The top navigation bar includes the IBM logo, a search bar, and a user profile for 'KARTHIKA S's Account'. The main heading is 'Projects'. Below it is a search bar and a 'New project' button. A table lists several projects, including 'HEART DISEASE PREDICTION KS', 'DAY-5 INSURANCE PREDICTION', 'DAY-4 KS', 'DAY 4 KARTHIKA S', 'DAY 3 KARTHIKA', and 'KARTHIKA DS'. The table columns are 'Name', 'Date created', 'Your role', and 'Collaborators'. The 'HEART DISEASE PREDICTION KS' project is highlighted. The bottom of the page shows a Windows taskbar with the date '14-07-2022' and time '07:42'.

Name	Date created	Your role	Collaborators
HEART DISEASE PREDICTION KS	1 day ago	Admin	KS
DAY-5 INSURANCE PREDICTION	3 days ago	Admin	KS
DAY-4 KS	5 days ago	Admin	KS
DAY 4 KARTHIKA S	5 days ago	Admin	KS
DAY 3 KARTHIKA	6 days ago	Admin	KS
KARTHIKA DS	1 week ago	Admin	KS

## SPACE ACTIVITY



The screenshot shows the IBM Cloud Pak for Data interface for the 'HEART DEPLOYMENT KS' space. The top navigation bar includes the IBM logo, a search bar, and a user profile for 'KARTHIKA S's Account'. The main heading is 'HEART DEPLOYMENT KS'. Below it is a 'Deployments' section with a table showing 1 deployed and 0 failed deployments. The 'Space activity' section shows two events: 'Online deployment ready' and 'Online deployment created'. The bottom of the page shows a Windows taskbar with the date '14-07-2022' and time '07:43'.

Deployments	Assets	Deployments	Jobs	Manage
1 Deployed	0 Failed			

**Space activity**

- Online deployment ready**  
The online deployment **HEART DEPLOY** in space **HEART DEPLOYMENT KS** is ready to accept requests  
Yesterday at 11:32 PM
- Online deployment created**  
You created online deployment **"HEART DEPLOY"** in space **HEART DEPLOYMENT KS**. You must wait for the deployment to enter ready state before submitting requests.  
Yesterday at 11:31 PM

## HEART DEPLOYMENT (ASSETS)

The screenshot shows the IBM Cloud Pak for Data interface. The top navigation bar includes the IBM Cloud Pak for Data logo, a search bar, and user account information (KARTHIKA S's Account). The main header displays "HEART DEPLOYMENT KS" with tabs for Overview, Assets (selected), Deployments, Jobs, and Manage. Below the tabs is a search bar with the text "What assets are you looking for?". A section titled "Models (1)" contains a table with one entry:

Name	Type	Software specification	Tags	Last modified
HEART DISEASE - P2 XGB Classifier	wml-hybrid_0.1	hybrid_0.1		Jul 13, 2022 11:14 PM

On the right side, there is a file upload instruction: "Drop files here or browse for files to upload." and a note: "Stay on the page until upload completes. Incomplete uploads are cancelled." At the bottom, there is an "Activate Windows" watermark.

## HEART DEPLOYMENT KS (CREATED/DEPLOYED)

The screenshot shows the IBM Cloud Pak for Data interface, specifically the "Deployments" tab for "HEART DEPLOYMENT KS". The top navigation bar is the same as the previous screenshot. The main header displays "HEART DEPLOYMENT KS" with tabs for Overview, Assets, Deployments (selected), Jobs, and Manage. Below the tabs is a search bar with the text "What deployments are you looking for?". A section titled "Deployments (1)" contains a table with one entry:

Name	Type	Status	Asset	Tags	Last modified
HEART DEPLOY	Online	Deployed	HEART DISEASE - P2 XGB Classifier		Jul 13, 2022 11:31 PM

On the right side, there is a file upload instruction: "Drop files here or browse for files to upload." and a note: "Stay on the page until upload completes. Incomplete uploads are cancelled." At the bottom, there is an "Activate Windows" watermark.

# MACHINE LEARNING DASHBOARD

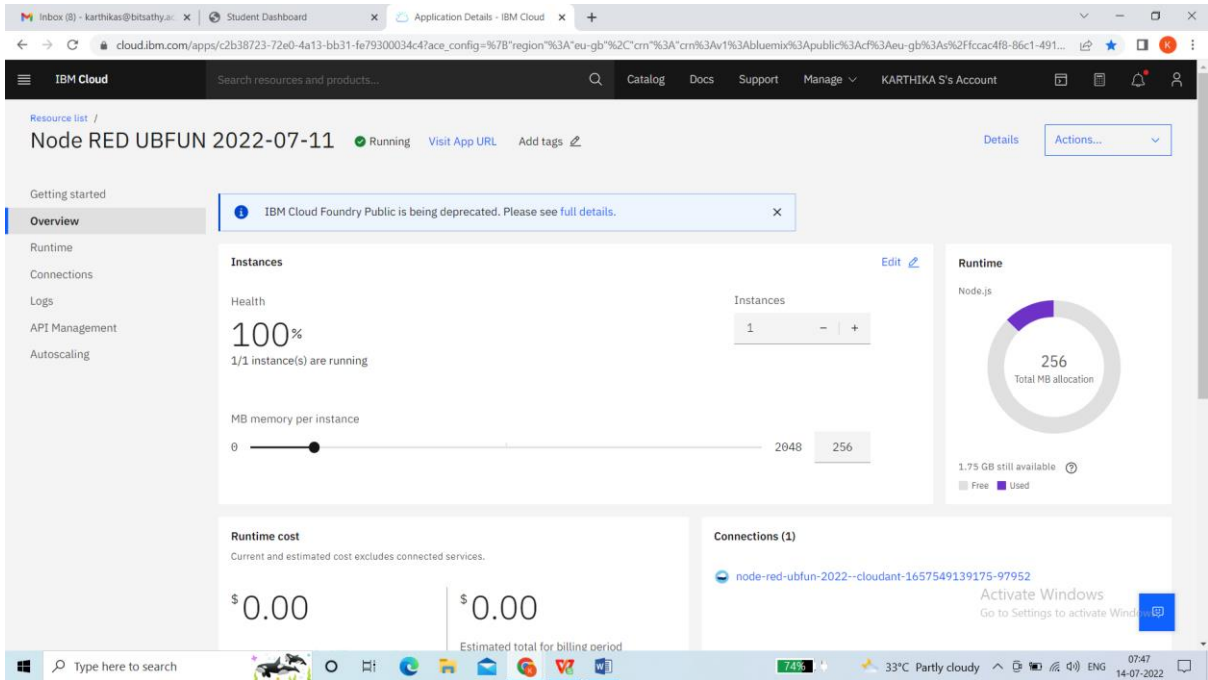
The screenshot shows the IBM Cloud Machine Learning dashboard. The browser tabs include 'Inbox', 'Student Dashboard', 'Service Details - IBM Cloud', and 'cloud.ibm.com/services/pm-20/crm%3Av1%3Abluemix%3Apublic%3Apm-20%3Aeu-de%3Aa%2Ffaabe7e9f70ed45d09e0bd45176971ef7%3A3687d590-ebe0-4a04-bf97-ab7a7ed16a3d%3A%3A7pan...'. The dashboard header shows 'IBM Cloud' and a search bar. The main content area is titled 'Machine Learning-st' with a green 'Active' status and an 'Add tags' link. A sidebar on the left has 'Manage' selected, with sub-links for 'Plan' and 'Connections'. The main content features a 'Watson Machine Learning in Cloud Pak for Data' section with a blue 'Launch in IBM Cloud Pak for Data' button. Below this, there are three columns: 'Documentation' (Learn about the tools and capabilities you need to run, monitor, and update your AI assets.), 'Learning path' (Check out sample projects, notebooks, and data sets to help you be productive.), and 'Videos' (Watch videos to learn about Watson Machine Learning and Cloud Pak for Data as a Service.). A diagram on the right shows the architecture: 'IBM Watson Machine Learning' on top of 'IBM Cloud Pak for Data' (Unifying platform), which sits on 'IBM Cloud Base cloud infrastructure'. A small 'Activate Windows' watermark is visible in the bottom right corner.

# NODE RED APP

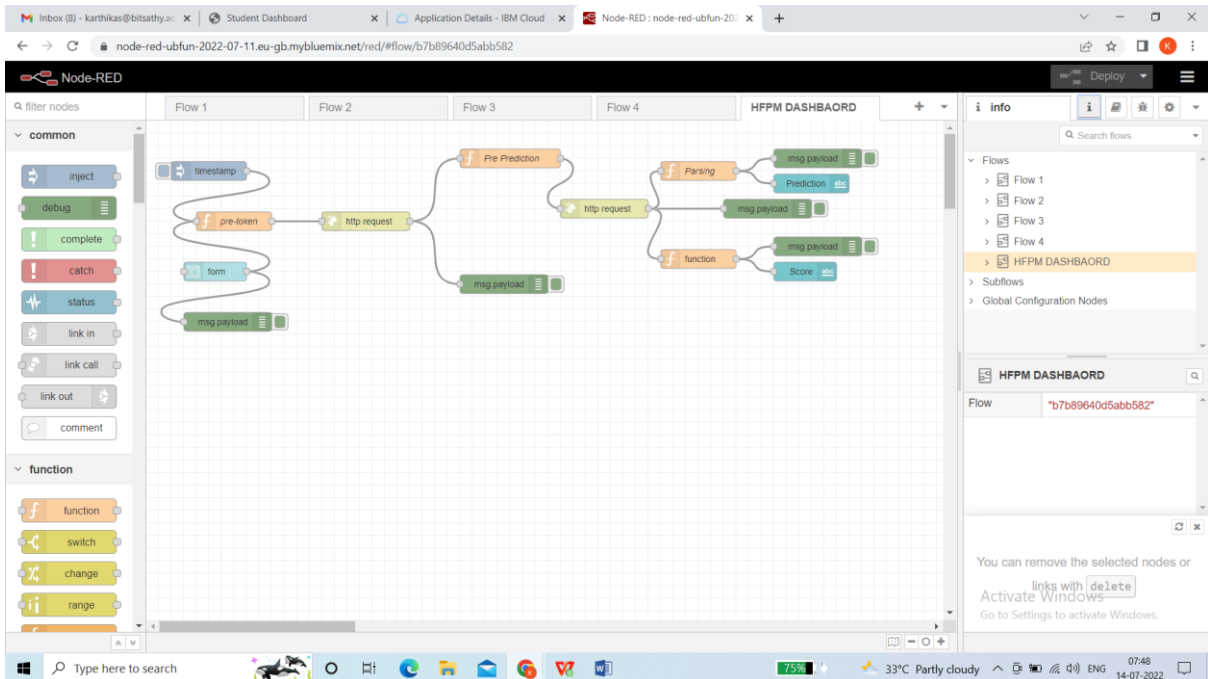
The screenshot shows the Node-RED application interface on IBM Cloud. The browser tabs include 'Inbox', 'Student Dashboard', 'Application Details - IBM Cloud', and 'Node-RED on IBM Cloud'. The URL bar shows 'node-red-ubfun-2022-07-11.eu-gb.bluemix.net'. The main content area has a dark red header with 'Node-RED on IBM Cloud'. Below this, the text 'Node-RED' is displayed in large white letters, followed by 'Flow-based programming for the Internet of Things'. The main content area is divided into two columns. The left column contains text: 'Node-RED is a programming tool for wiring together hardware devices, APIs and online services in new and interesting ways.', 'This instance is running as an IBM Cloud application, giving it access to the wide range of services available on the platform.', and 'More information about Node-RED, including documentation, can be found at [nodered.org](https://nodered.org).' The right column has a button 'Go to your Node-RED flow editor' and a link 'Learn how to customise Node-RED'. A small 'Activate Windows' watermark is visible in the bottom right corner.



## NODE RED DASHBOARD



## NODE RED (JSON FILE)FUNCTION



## HEART DISEASE PREDICTION OUTPUT 1:

Inbox (8) - karthikas@bitsathy.a... x Student Dashboard x Application Details - IBM Cloud x Node-RED : node-red-ubfun-20... x Node-RED Dashboard x

node-red-ubfun-2022-07-11.eu-gb.mybluemix.net/ui/#/07/socketid=k75GzNrvYpwlffmJHAAAw

Home

### Heart Disease Prediction KS

AVERAGE HEART BEATS ( Per Minute ) \*

108

PALPITATIONS PER DAY \*

22

CHOLESTEROL \*

181

BMI \*

24

AGE \*

32

SEX (M or F) \*

F

FAMILY HISTORY (Y or N) \*

N

SMOKER ( In Last 5 Years : Y or N ) \*

N

EXERCISE ( Minutes Per Week ) \*

192

SUBMIT CANCEL

Prediction **Not at Risk**

Score **0.959392786026001**

Activate Windows  
Go to Settings to activate Windows.

Type here to search

79% 33°C Partly cloudy 07:53 14-07-2022

## HEART DISEASE PREDICTION OUTPUT 2:

Inbox (8) - karthikas@bitsathy.a... x Student Dashboard x Application Details - IBM Cloud x Node-RED : node-red-ubfun-20... x Node-RED Dashboard x

node-red-ubfun-2022-07-11.eu-gb.mybluemix.net/ui/#/07/socketid=k75GzNrvYpwlffmJHAAAw

Home

### Heart Disease Prediction KS

AVERAGE HEART BEATS ( Per Minute ) \*

PALPITATIONS PER DAY \*

CHOLESTEROL \*

BMI \*

AGE \*

SEX (M or F) \*

FAMILY HISTORY (Y or N) \*

SMOKER ( In Last 5 Years : Y or N ) \*

EXERCISE ( Minutes Per Week ) \*

SUBMIT CANCEL

Prediction **Not at Risk**

Score **0.9609134197235107**

Activate Windows  
Go to Settings to activate Windows.

Type here to search

80% 33°C Partly cloudy 07:55 14-07-2022