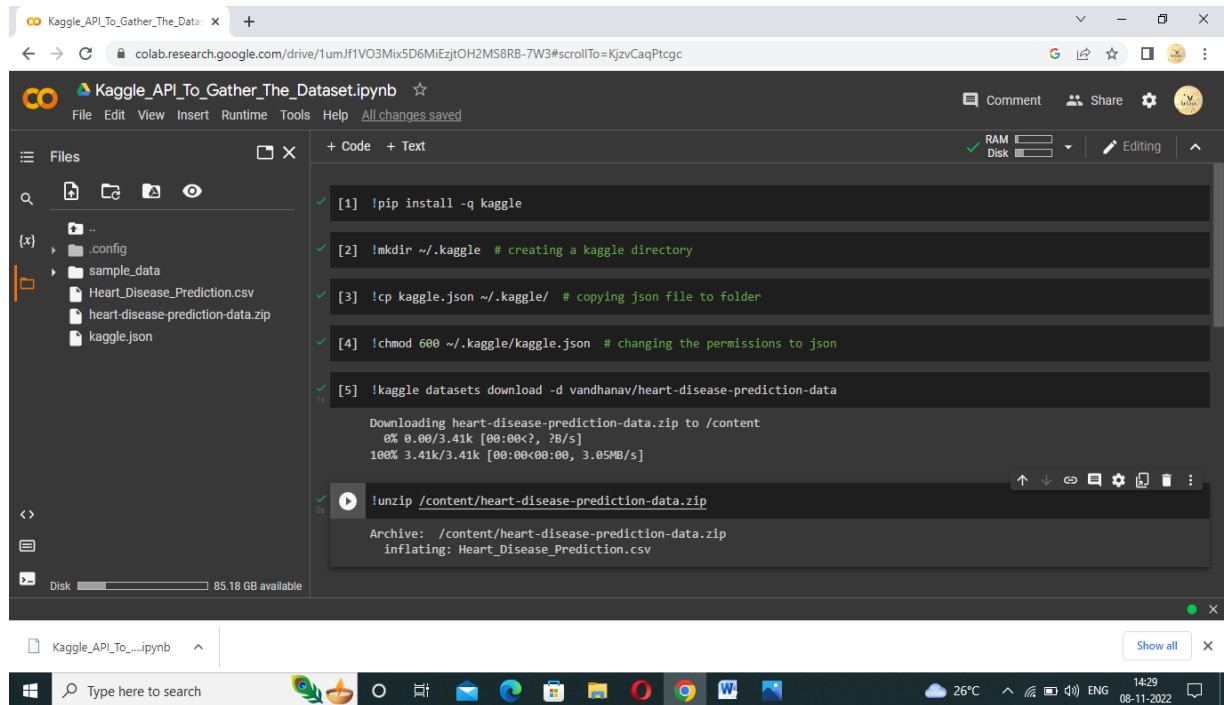


PROJECT DEVELOPMENT PHASE

Delivery of Sprint – 1

Team ID	PNT2022TMID39449
Project Name	Visualizing And Predicting Heart Diseases With An Interactive Dash Board

Fetch Data From External API (Kaggle API):



```
[1] !pip install -q kaggle
[2] !mkdir ~/.kaggle # creating a kaggle directory
[3] !cp kaggle.json ~/.kaggle/ # copying json file to folder
[4] !chmod 600 ~/.kaggle/kaggle.json # changing the permissions to json
[5] !kaggle datasets download -d vandhanav/heart-disease-prediction-data

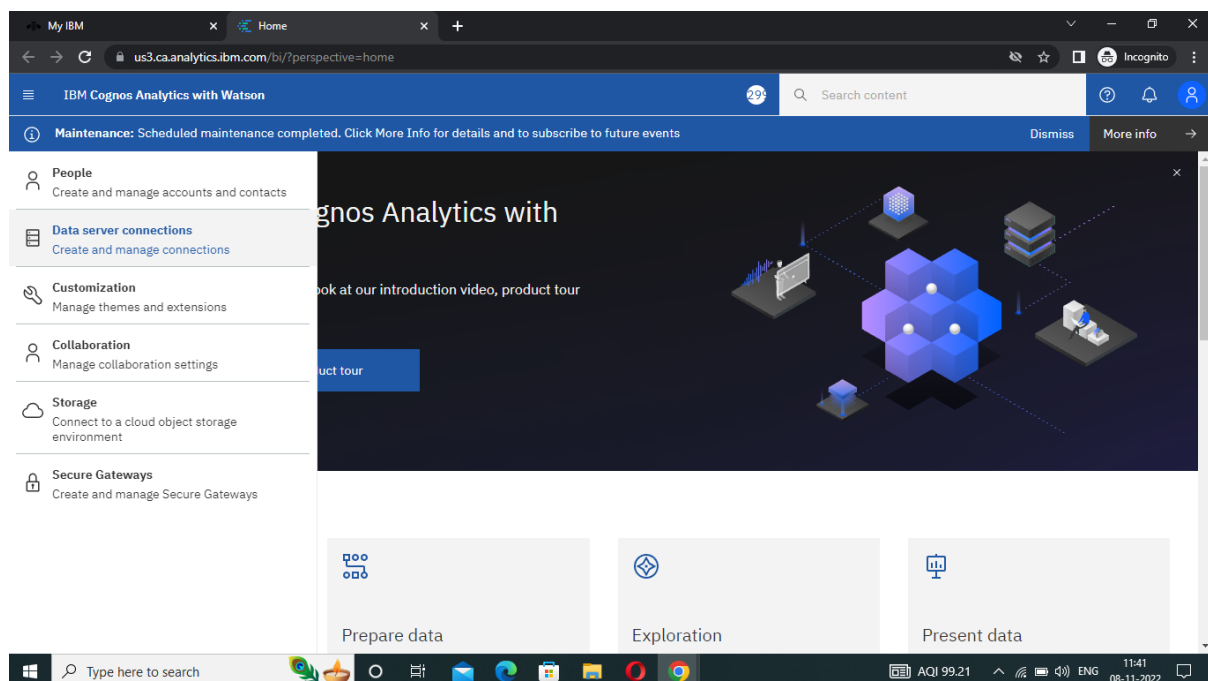
Downloading heart-disease-prediction-data.zip to /content
 0% 0.00/3.41k [00:00<?, ?B/s]
100% 3.41k/3.41k [00:00<00:00, 3.05MB/s]

!unzip /content/heart-disease-prediction-data.zip

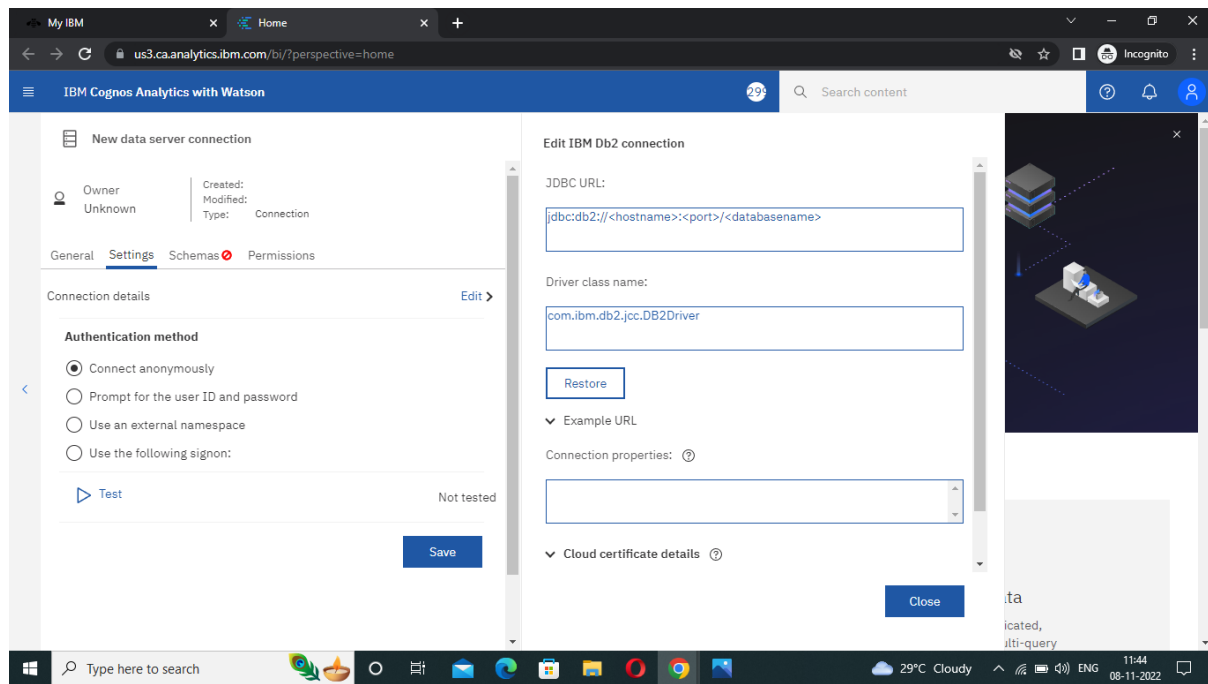
Archive: /content/heart-disease-prediction-data.zip
  inflating: Heart_Disease_Prediction.csv
```

IBM DB2 Service Creation and DB2 Connectivity With Cognos:

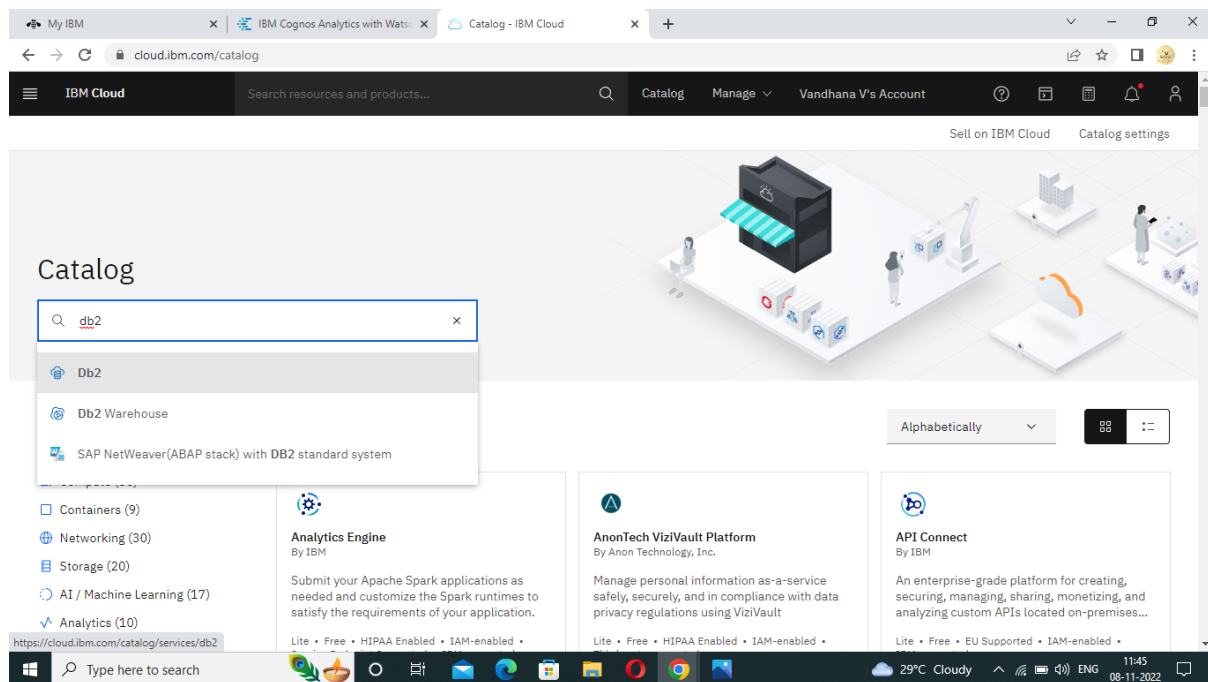
Step 1: In Cognos we have to perform data server connections.



Step 2: Connection of New Data Server.



Step 3: In IBM Cloud go to catalog search for db2.



Step 4: Create a new db2 service connection.

The screenshot shows the IBM Cloud console interface. The top navigation bar includes the IBM Cloud logo, a search bar, and user account information (Vandhana V's Account). The main content area is titled 'A fully managed, highly-performant relational data store running the enterprise-class Db2 database engine.' Below this, there are two tabs: 'Create' (selected) and 'About'. The 'Create' page is divided into several sections:

- Type:** Service
- Provider:** IBM
- Last updated:** 07/06/2022
- Category:** Databases
- Compliance:** EU Supported, HIPAA Enabled, IAM-enabled
- Location:** A list of locations including Sydney, Frankfurt, London, Dallas, Sao Paulo, Toronto, Tokyo, and Milan. 'Dallas (us-south)' is selected.
- Select a pricing plan:** A table with columns 'Plan', 'Features', and 'Pricing'. The 'Lite' plan is selected, showing '200 MB of data storage', '5 simultaneous connections', and 'Shared multitenant system'. The pricing is 'Free'. A note states: 'The Free plan provides a free Db2 service for development and evaluation. The plan has a set amount of limitations as shown. You can continue using the free plan for as long as needed, however, users are asked to re-extend their free account every 90 days by email. If you do not re-extend, your free account is cleaned out a further 90 days later. This helps provide free resources for everyone. Lite plan services are deleted after 30 days of inactivity.'
- Summary:** A sidebar on the right showing 'Db2' service, 'Free' plan, 'Location: Dallas', 'Plan: Lite', 'Service name: Db2-m7', and 'Resource group: Default'. It includes a checkbox for 'I have read and agree to the following license agreements:' and buttons for 'Create' and 'Add to estimate'.

Step 5: From the Resource list select databases as Db2.

The screenshot shows the IBM Cloud console interface. The top navigation bar is the same as in Step 4. The main content area is titled 'Resource list'. On the right, there is a 'Create resource' button. Below the title, there is a table with columns: Name, Group, Location, Product, Status, and Tags. The table is filtered to show only 'Databases' resources. The following table represents the data shown in the screenshot:

Name	Group	Location	Product	Status	Tags
Db2-m7	Default	Dallas	Db2	Active	—

On the left side of the 'Resource list' page, there is a sidebar with a list of resource categories: Compute (0), Containers (0), Networking (0), Storage (0), AI / Machine Learning (0), Analytics (0), Blockchain (0), Databases (1), Developer tools (0), and Logging and monitoring (0). The 'Databases' category is expanded, showing the 'Db2-m7' resource.

Step 6: Click on goto UI to know resource usage.

The screenshot shows the IBM Cloud console interface. At the top, there's a navigation bar with 'IBM Cloud' and a search bar. Below it, the 'Resource list' section displays 'Db2-m7' with a green 'Active' status and an 'Add tags' link. A left sidebar contains a 'Manage' tab and links for 'Getting started', 'Service credentials', and 'Connections'. The main content area is divided into two columns. The left column, titled 'Getting started', provides instructions on finding credentials and includes a 'Go to UI' button with a document icon and a 'Getting started docs' link. The right column, titled 'Need help?', prompts the user to 'Submit a IBM Cloud Support Case to our team.' and includes a 'Support case' button. The bottom of the screen shows a Windows taskbar with various application icons and system information like '29°C Cloudy' and the date '08-11-2022'.

Step 7: Resource Usage of IBM Db2 on Cloud.

The screenshot displays the 'IBM Db2 on Cloud' console. The top navigation bar includes 'Overview', 'In-flight executions', 'Connections', and 'Table performance'. A left sidebar lists various database-related icons. The main area is titled 'Resource usage' and features a line graph showing 'Storage (0M / 0M) current value' over time. The graph's y-axis is labeled 'Storage usage (%)' and ranges from 0 to 100. The x-axis is labeled 'Time' and shows timestamps from 10:53 AM to 11:53 AM. The graph line remains at 0% throughout the period. A dropdown menu at the top right of the graph area is set to 'Last 1 hour'. The bottom of the screen shows a Windows taskbar with system information like '29°C Cloudy' and the date '08-11-2022'.

Step 8: Creation of new Service Credential.

The screenshot shows the IBM Cloud console interface. The top navigation bar includes 'My IBM', 'IBM Cognos Analytics with Watson', 'Service Details - IBM Cloud', and 'IBM Db2 on Cloud'. The main content area is titled 'Resource list / Db2-m7' and shows a 'Service credentials' section. A table lists the existing service credential 'Service credentials-1' created on 2022-11-08 11:58 AM. A 'New credential' button is visible in the top right of the table area.

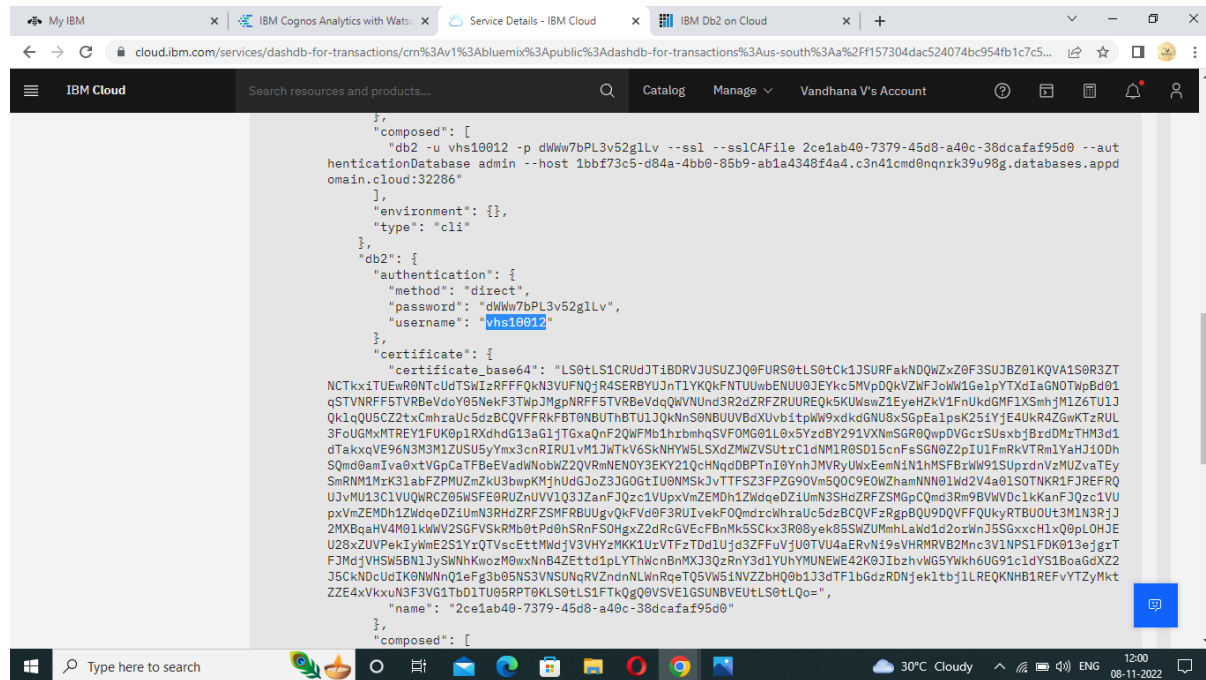
Key name	Date created
Service credentials-1	2022-11-08 11:58 AM

Step 9: Copy the jdbc url from the created service credential in IBM Cloud.

The screenshot shows the JSON details of a service credential in the IBM Cloud console. The 'jdbc_url' field is highlighted in blue, showing the following URL:

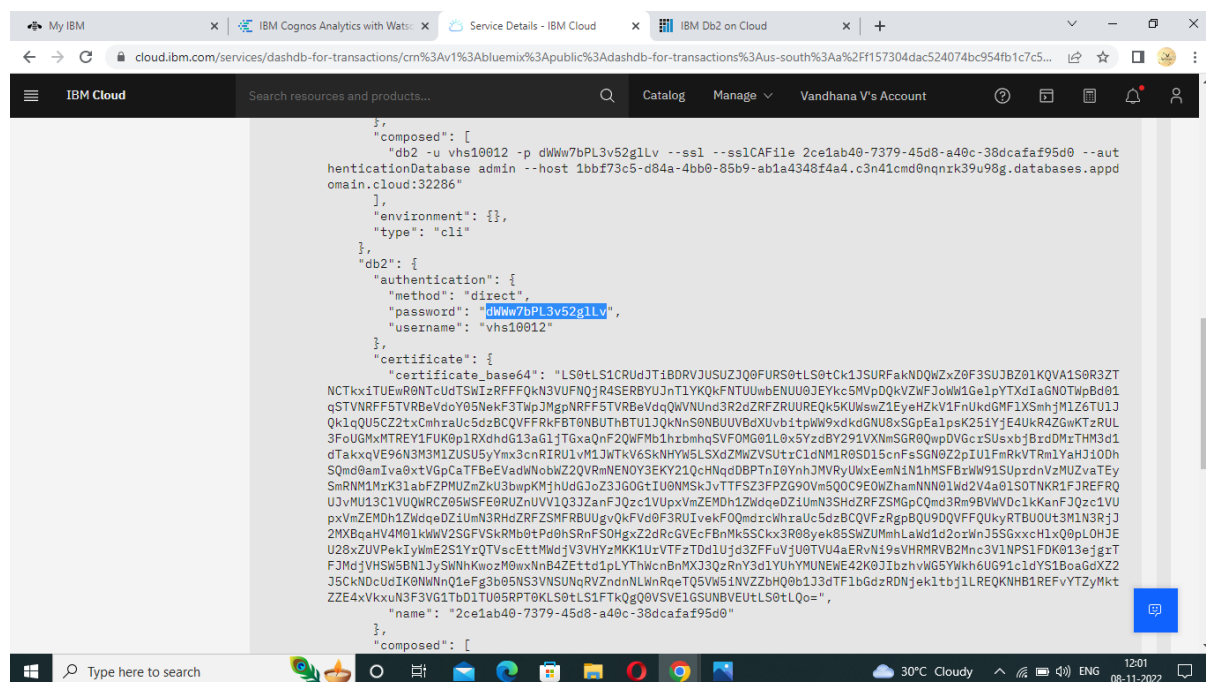
```
"jdbc_url": [
  {
    "jdbc": "jdbc:db2://1bbf73c5-d84a-4bb0-85b9-ab1a4348f4a4.c3n41cmd0nqnk39u98g.databases.appdomain.cloud:32286/bludb:user=<userid>;password=<your_password>;sslConnection=true;"
  }
]
```

Step 10: Copy the username and paste in jdbc url in cognos for creating data server connection.



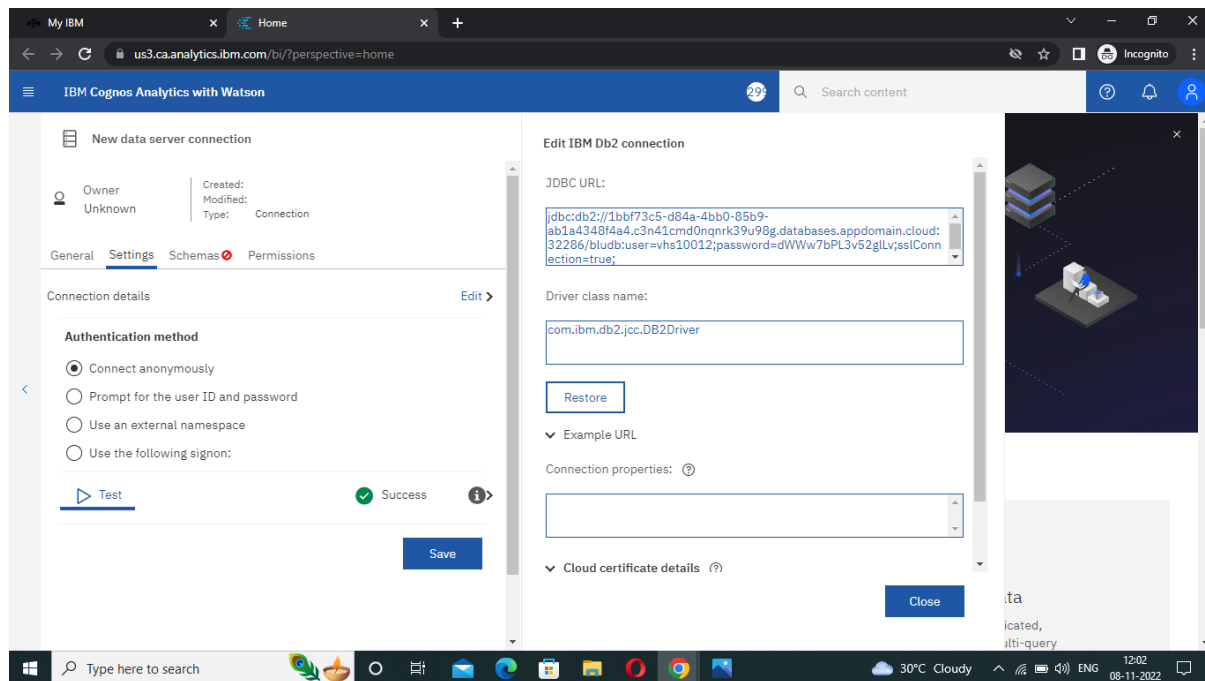
```
    },
    "composed": [
      {
        "db2 -u vhs10012 -p dWw7bPL3v52g1lv --ssl --sslCAFile 2ce1ab40-7379-45d8-a40c-38dcafa95d0 --aut
        henticationDatabase admin --host 1bbf73c5-d84a-4bb0-85b9-ab1a4348f4a4.c3n41cmd0nqnzk39u9g8.databases.appd
        omain.cloud:32286"
      },
      {
        "environment": {},
        "type": "cli"
      }
    ],
    "db2": {
      "authentication": {
        "method": "direct",
        "password": "dWw7bPL3v52g1lv",
        "username": "vhs10012"
      },
      "certificate": {
        "certificate_base64": "LS0tLS1CRUdJTiBDRVJUSUZJQ0FURSB0tLS0tCk1JSURFakNQWQxZ0F3SUJzB201KQVA1S0R3ZT
        NCTkxiTUeWR0NTCudTSWIZRFFQkN3VUFNQjR4SERBYUJnTlYkQkFNTUUbWENUU0JEYkcSMVpDQkVZWJJoWw1Ge1pYtXdaGN0TwpBd01
        qSTVNRFF5TVRBeVdoY05NekF3TwpJGpNRFF5TVRBeVdqQWVNUnd3R2dZRFZRUUREQk5KUWswZ1EyeHZKv1FnUkdGMF1XSmlhJm1Z6TU1J
        Qk1QQU5CZ2ZtXmhzraUc5dzBCQVFFRkFBNBUThtBU1JQkNnS0NB0UUVBdXUvbitpW9YxdkdGNUM8xSGpEa1psK251YjE4UkR4ZGwKTzRUL
        3FoUGMxMTREY1FUK0p1RXdhG13aG1jTgxaQnF2QWFMb1hzbmhqSVFOMG01L0x5YzdBY291VXNmSGR0QmpDVGciSUsxbjBrd0MzTHM3d1
        dTakxqVE96N3M3M1ZUSU5yYmx3cnRIRU1vM1JWTKv6SkNHYW5LSXdZMwZVSUtrC1dNM1R0SD15cnFsSGN0Z2pIU1FmRkVTRm1YaHj100h
        SQmd0amIva0xtVgPcaTFBeEvdWobWZ2QVRmNEN0Y3EKY21QcHNqd0BPTnI0YnhJMVRYUWxEamNiN1hMSFBzWw91SUpxdnVzMUZvaTEY
        SmRNM1MzK31abFZPMUZmZkU3bwpKMjhUdGJoZ3JGOGtIU0NMskJvTTF5Z3FPZG90Vn50QC9EOWZhamNN01Wd2V4a01S0TNKR1FJREFRQ
        UJvMU13C1VUQWRkZ05WSE0RUZnUVV1Q3JZanFJQzc1VUpXVmZEMDh1ZldqdzIUmN3SHdZRFZSMGpCQmd3Rm9BVWV0c1kKanfJQzc1VU
        pxVmZEMDh1ZldqdzIUmN3RHdZRFZSMFRBUUgVqkFvd0F3RUIvekFOQmdrcWhiaUc5dzBCQVFFRkRgBQU9DQVFFQkYkYRTBU0U0t3M1N3RjJ
        2MXBqaH4M01kMwV2SGFVSkRmb0tPd0hSRnFS0HgXZ2dRcGVEcFbnMk5Sckx3R08yeK85SWZUMmhLaWd1d2ozWn3J5SGxxcHlxQ0pLOHJE
        U28xZUVPeK1YwmE2S1YzQTVscEttMwdjV3VHYzMKK1UzVTFzTd01Ujd3ZFFuVjU0TVU4aERvN19eVHRMRVB2Mnc3V1NPS1FDK013eJgT
        FJMdjVHWS5BN1JySWNhKwozM0wXnB4ZEttidpLYThWcnBnMX3JQzRnY3d1YUhyMUNEW42K0JibzhvW6Y5Wkh6UG91c1dYS1BoaGdXZ2
        J5CkNDcUdIK0NNWnQ1eFg3b05NS3VNSUNqRVZndnNLWnRqeTQ5VW5iNVZzbH00b1J3dTf1b6dzRDNjek1tj1LREQKNHB1REFvYTYzMkt
        ZZE4xVkuXn3F3VG1TbD1TU05RPT0KLS0tLS1FTkQgQ0VSVE1GSUNBEU0tLS0tLQo=",
        "name": "2ce1ab40-7379-45d8-a40c-38dcafa95d0"
      }
    },
    "composed": [
```

Step 11: Copy the password and paste in jdbc url in cognos.

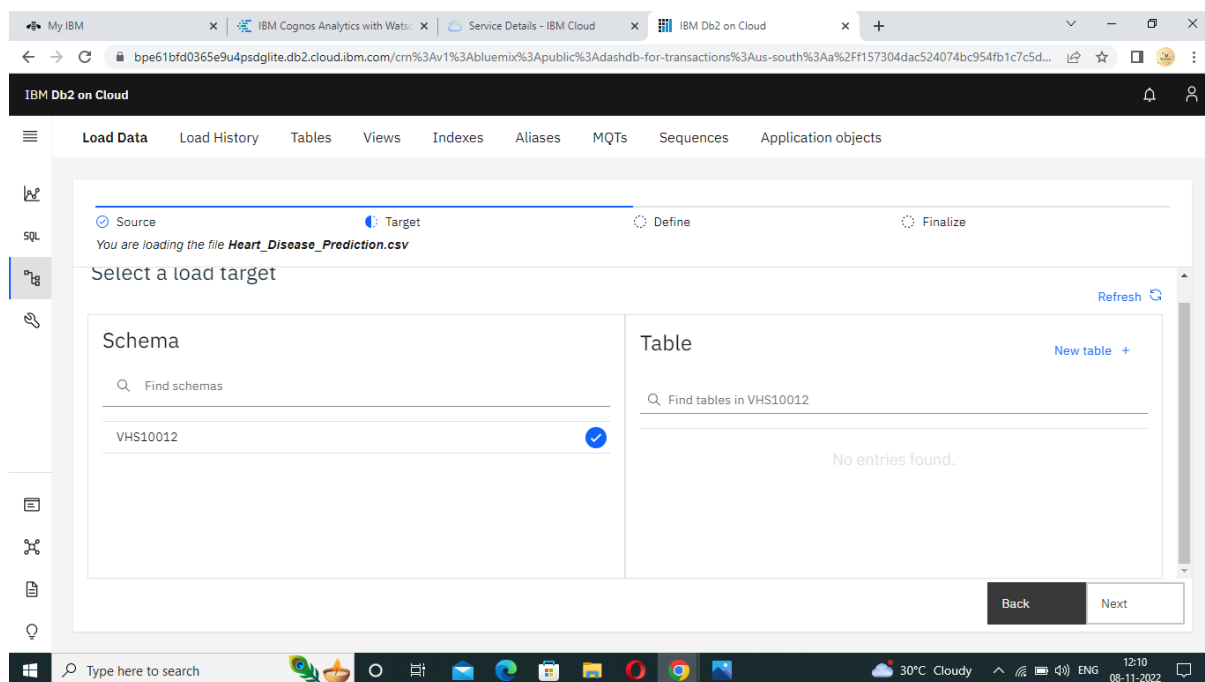


```
    },
    "composed": [
      {
        "db2 -u vhs10012 -p dWw7bPL3v52g1lv --ssl --sslCAFile 2ce1ab40-7379-45d8-a40c-38dcafa95d0 --aut
        henticationDatabase admin --host 1bbf73c5-d84a-4bb0-85b9-ab1a4348f4a4.c3n41cmd0nqnzk39u9g8.databases.appd
        omain.cloud:32286"
      },
      {
        "environment": {},
        "type": "cli"
      }
    ],
    "db2": {
      "authentication": {
        "method": "direct",
        "password": "dWw7bPL3v52g1lv",
        "username": "vhs10012"
      },
      "certificate": {
        "certificate_base64": "LS0tLS1CRUdJTiBDRVJUSUZJQ0FURSB0tLS0tCk1JSURFakNQWQxZ0F3SUJzB201KQVA1S0R3ZT
        NCTkxiTUeWR0NTCudTSWIZRFFQkN3VUFNQjR4SERBYUJnTlYkQkFNTUUbWENUU0JEYkcSMVpDQkVZWJJoWw1Ge1pYtXdaGN0TwpBd01
        qSTVNRFF5TVRBeVdoY05NekF3TwpJGpNRFF5TVRBeVdqQWVNUnd3R2dZRFZRUUREQk5KUWswZ1EyeHZKv1FnUkdGMF1XSmlhJm1Z6TU1J
        Qk1QQU5CZ2ZtXmhzraUc5dzBCQVFFRkFBNBUThtBU1JQkNnS0NB0UUVBdXUvbitpW9YxdkdGNUM8xSGpEa1psK251YjE4UkR4ZGwKTzRUL
        3FoUGMxMTREY1FUK0p1RXdhG13aG1jTgxaQnF2QWFMb1hzbmhqSVFOMG01L0x5YzdBY291VXNmSGR0QmpDVGciSUsxbjBrd0MzTHM3d1
        dTakxqVE96N3M3M1ZUSU5yYmx3cnRIRU1vM1JWTKv6SkNHYW5LSXdZMwZVSUtrC1dNM1R0SD15cnFsSGN0Z2pIU1FmRkVTRm1YaHj100h
        SQmd0amIva0xtVgPcaTFBeEvdWobWZ2QVRmNEN0Y3EKY21QcHNqd0BPTnI0YnhJMVRYUWxEamNiN1hMSFBzWw91SUpxdnVzMUZvaTEY
        SmRNM1MzK31abFZPMUZmZkU3bwpKMjhUdGJoZ3JGOGtIU0NMskJvTTF5Z3FPZG90Vn50QC9EOWZhamNN01Wd2V4a01S0TNKR1FJREFRQ
        UJvMU13C1VUQWRkZ05WSE0RUZnUVV1Q3JZanFJQzc1VUpXVmZEMDh1ZldqdzIUmN3SHdZRFZSMGpCQmd3Rm9BVWV0c1kKanfJQzc1VU
        pxVmZEMDh1ZldqdzIUmN3RHdZRFZSMFRBUUgVqkFvd0F3RUIvekFOQmdrcWhiaUc5dzBCQVFFRkRgBQU9DQVFFQkYkYRTBU0U0t3M1N3RjJ
        2MXBqaH4M01kMwV2SGFVSkRmb0tPd0hSRnFS0HgXZ2dRcGVEcFbnMk5Sckx3R08yeK85SWZUMmhLaWd1d2ozWn3J5SGxxcHlxQ0pLOHJE
        U28xZUVPeK1YwmE2S1YzQTVscEttMwdjV3VHYzMKK1UzVTFzTd01Ujd3ZFFuVjU0TVU4aERvN19eVHRMRVB2Mnc3V1NPS1FDK013eJgT
        FJMdjVHWS5BN1JySWNhKwozM0wXnB4ZEttidpLYThWcnBnMX3JQzRnY3d1YUhyMUNEW42K0JibzhvW6Y5Wkh6UG91c1dYS1BoaGdXZ2
        J5CkNDcUdIK0NNWnQ1eFg3b05NS3VNSUNqRVZndnNLWnRqeTQ5VW5iNVZzbH00b1J3dTf1b6dzRDNjek1tj1LREQKNHB1REFvYTYzMkt
        ZZE4xVkuXn3F3VG1TbD1TU05RPT0KLS0tLS1FTkQgQ0VSVE1GSUNBEU0tLS0tLQo=",
        "name": "2ce1ab40-7379-45d8-a40c-38dcafa95d0"
      }
    },
    "composed": [
```

Step 12: Data Server Connection is created successfully.



Step 13: In IBM Db2 Select a schema and create a table.



Step 14: Schema and table is created.

IBM Db2 on Cloud

Load Data | Load History | Tables | Views | Indexes | Aliases | MQTs | Sequences | Application objects

Source | Target | Define | Finalize

You are loading the file **Heart_Disease_Prediction.csv** into **VHS10012.HEART**

Select a load target

Schema

Find schemas

VHS10012

Table

Find tables in VHS10012

HEART

Back | Next

Step 15: It shows the creation of table.

IBM Db2 on Cloud

Load Data | Load History | Tables | Views | Indexes | Aliases | MQTs | Sequences | Application objects

Source | Target | Define | Finalize

You are loading the file **Heart_Disease_Prediction.csv** into **VHS10012.HEART**

Code page (character encoding): 1208 (UTF-8) | Separator: , | Header in first row: ☒ | Time & date format: | Detect data types: ☐

	AGE SMALLINT	SEX SMALLINT	CHEST_PAIN_TYPE SMALLINT	BP SMALLINT	CHOLESTEROL SMALLINT	FBS_OVER_120 SMALLINT	EKG_RESULTS SMALLINT	MAX_HF SMALLINT
1	70	1	4	130	322	0	2	109
2	67	0	3	115	564	0	2	160
3	57	1	2	124	261	0	0	141
4	64	1	4	128	263	0	0	105
5	74	0	2	120	269	0	2	121
6	65	1	4	120	177	0	0	140
7	56	1	3	130	256	1	2	142
8	59	1	4	110	239	0	2	142
9	60	1	4	140	202	0	2	170

Back | Next

Step 16: Data is loaded successfully in Db2.

The screenshot shows the IBM Db2 on Cloud console interface. The top navigation bar includes tabs for Load Data, Load History, Tables, Views, Indexes, Aliases, MQTs, Sequences, and Application. The main content area displays the status of a data load job. A large blue circle with a checkmark indicates the job is complete. Below the circle, the following statistics are shown: 270 Rows read, 270 Rows loaded, and 0 Rows rejected. The start time is 11/08/2022 12:11:47 PM and the end time is 11/08/2022 12:12:01 PM. A message states: "The data load job succeeded. You can now work with your data." On the right side, a notification panel shows a green checkmark and the message: "The data load job succeeded. Load Heart_Disease_Prediction.csv from My Computer to VHS10012.HEART. 2022/11/08, 12:12 PM. View details". Below the notification, there are sections for Errors (0) and Warnings (0).

Step 17: The below table represent the data present in our dataset.

The screenshot shows the IBM Db2 on Cloud console interface for the VHS10012.HEART table. The table is displayed with 10 rows of data. The columns are: AGE, SEX, CHEST_PAIN_T..., BP, CHOLESTEROL, FBS_OVER_120, EKG_RESULTS, MAX_HR, and EXERCISE_AN. The data is as follows:

	AGE SMALLINT	SEX SMALLINT	CHEST_PAIN_T... SMALLINT	BP SMALLINT	CHOLESTEROL SMALLINT	FBS_OVER_120 SMALLINT	EKG_RESULTS SMALLINT	MAX_HR SMALLINT	EXERCISE_AN SMALLINT
1	29	1	2	130	204	0	2	202	0
2	34	0	2	118	210	0	0	192	0
3	34	1	1	118	182	0	2	174	0
4	35	1	4	120	198	0	0	130	1
5	35	0	4	138	183	0	0	182	0
6	35	1	4	126	282	0	2	156	1
7	37	0	3	120	215	0	0	170	0
8	37	1	3	130	250	0	0	187	0
9	38	1	1	120	231	0	0	182	1
10	39	0	3	94	199	0	0	179	0

Step 18: Loading of metadata and successfully loaded data in cognos by server connection.

The screenshot shows the IBM Cognos Analytics web interface. The main content area displays the configuration for a data source named 'Heart Disease Prediction'. The 'Connections' tab is selected, showing a table of loaded schemas.

Status	Schema name	Tables loaded
<input type="radio"/>	SYSIBMTS	
<input type="radio"/>	SYSPROC	
<input type="radio"/>	SYSPUBLIC	
<input type="radio"/>	SYSSTAT	
<input type="radio"/>	SYSTOOLS	
<input checked="" type="radio"/>	VHS10012	1 / 1

The 'Show system schemas' checkbox is checked. The right sidebar shows a 'Present data' button. The top navigation bar includes 'IBM Cognos Analytics with Watson' and a search bar.

Creation of Data Module:

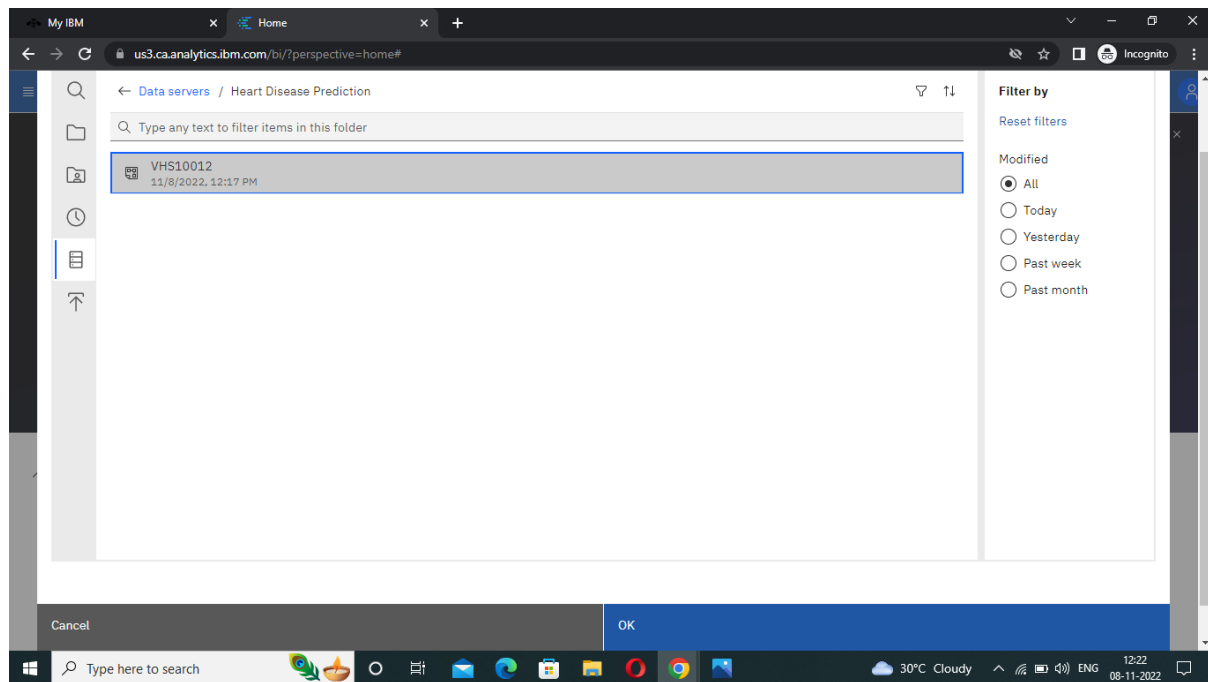
Step 1: creation of Data Module.

The screenshot shows the IBM Cognos Analytics web interface. The 'New' menu is open, displaying options for creating new content. The 'Data module' option is highlighted under the 'Data' category.

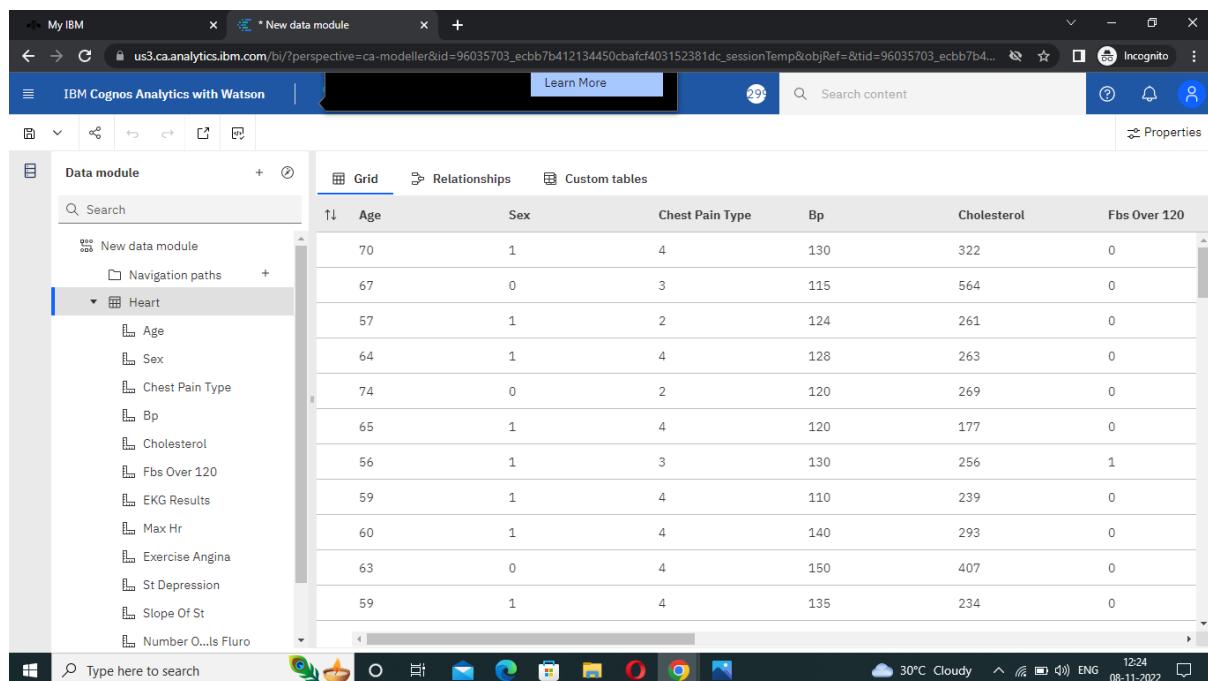
- New
 - Data
 - Data module**
 - Explore
 - Exploration
 - Present
 - Dashboard
 - Report
 - Story

The right sidebar shows a 'Present data' button. The bottom navigation bar includes 'IBM Cognos Analytics with Watson' and a search bar.

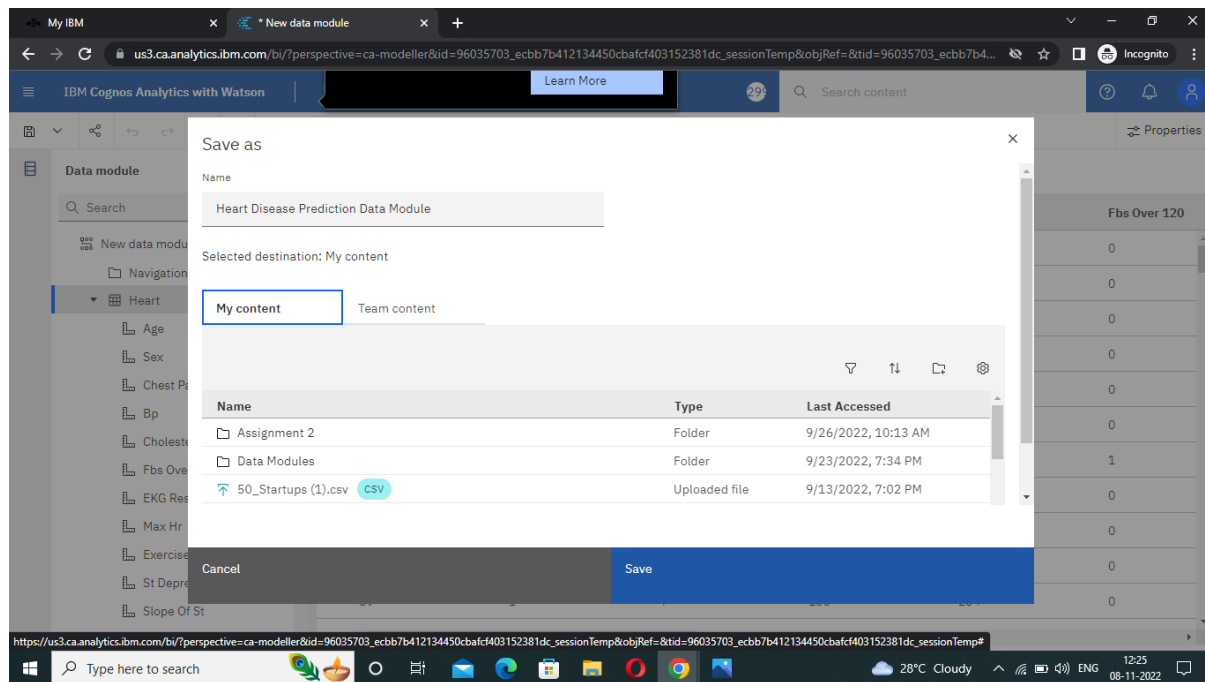
Step 2: Choosing of dataset in data server connection in cognos.



Step 3: Data Module is created successfully.



Step 4: Save the data module in my content.



Step 5: Representation of data module with data for heart disease prediction.

