Intelligent Customer Help Desk With Smart Document Understanding

Category: Artificial Intelligence
Skills Required:
python,IBM Cloud,IBM Watson
Project Description:

The typical customer care chatbot can answer simple questions, such as store locations and hours, directions, and maybe even making appointments. When a question falls outside of the scope of the pre-determined question set, the option is typically to tell the customer the question isn't valid or offer to speak to a real person. In this project, there will be another option. If the customer question is about the operation of a device, the application shall pass the question onto Watson Discovery Service, which has been pre-loaded with the device's owners manual. So now, instead of "Would you like to speak to a customer representative?" we can return relevant sections of the owners manual to help solve our customers' problems.

To take it a step further, the project shall use the Smart Document Understanding feature of Watson Discovery to train it on what text in the owners manual is important and what is not. This will improve the answers returned from the queries.

Scope of Work

- Create a customer care dialog skill in Watson Assistant
- Use Smart Document Understanding to build an enhanced Watson Discovery collection
- Create an IBM Cloud Functions web action that allows Watson Assistant to

post queries to Watson Discovery

- Build a web application with integration to all these services & deploy the same on IBM Cloud Platform

Project Process:

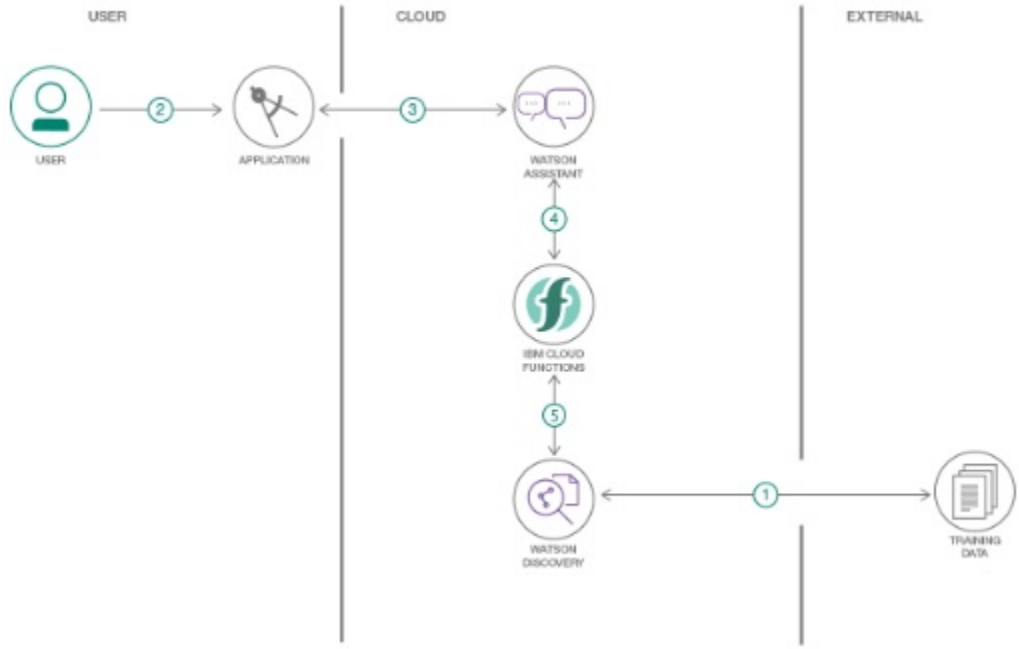
In this code pattern, we walk you through a working example of a web app that utilizes multiple Watson services to create a better customer care experience.

Using the Watson Discovery Smart Document Understanding (SDU) feature, we will enhance the Discovery model so that queries will be better focused to only search the most relevant information found in a typical owner's manual.

Using Watson Assistant, we will use a standard customer care dialog to handle a typical conversation between a custmomer and a company representitive. When a customer question involves operation of a product, the Assistant dialog will communicate with the Discovery service using a webhook.

The webhook will be created by defining a `web action` using IBM Cloud Functions.

Flow:



1. The document is annotated using Watson Discovery SDU
2. The user interacts with the backend server via the app UI. The frontend app UI is a chatbot that engages the user in a conversation.
3. Dialog between the user and backend server is coordinated using a Watson Assistant dialog skill.
4. If the user asks a product operation question, a search query is passed to a predefined IBM Cloud Functions action.
5. The Cloud Functions action will query the Watson Discovery service and return the results.

Steps:

1. Create IBM Cloud services
2. Configure Watson Discovery
3. Create IBM Cloud Functions action
4. Configure Watson Assistant
5. Integrate the Services to NODE RED
6. Get IBM Cloud services credentials and add to .env file
7. Run the application

1. Create IBM Cloud services

Create the following services:

- **Watson Discovery**
- **Watson Assistant**

2. Configure Watson Discovery

Import the document

As shown below, launch Watson Discovery tool and create a new data collection by selecting the `Upload your Own Data` option. Give the data collection a unique name. When prompted, select and upload the `User Manual_Acer_1.0_A_A` file located in the

`data` directory of your local repo.

Before applying SDU to our document, lets do some simple queries on the data so that we can compare it to results found after applying SDU.
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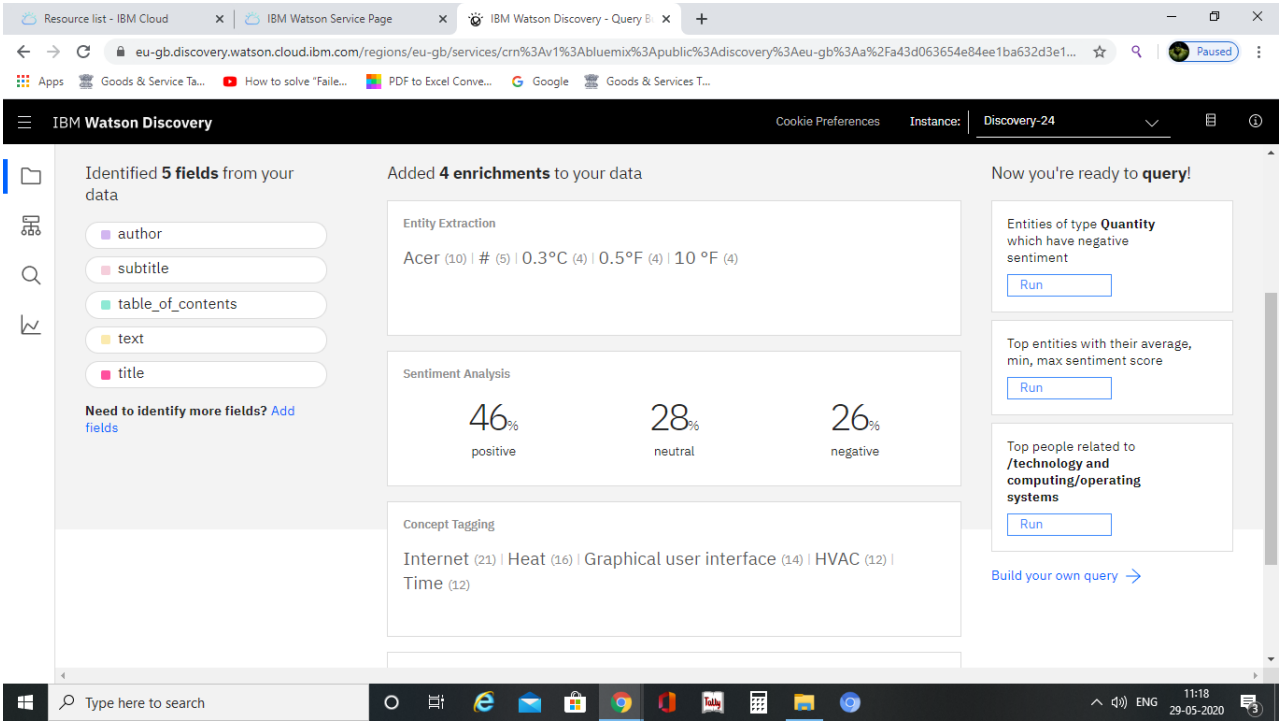
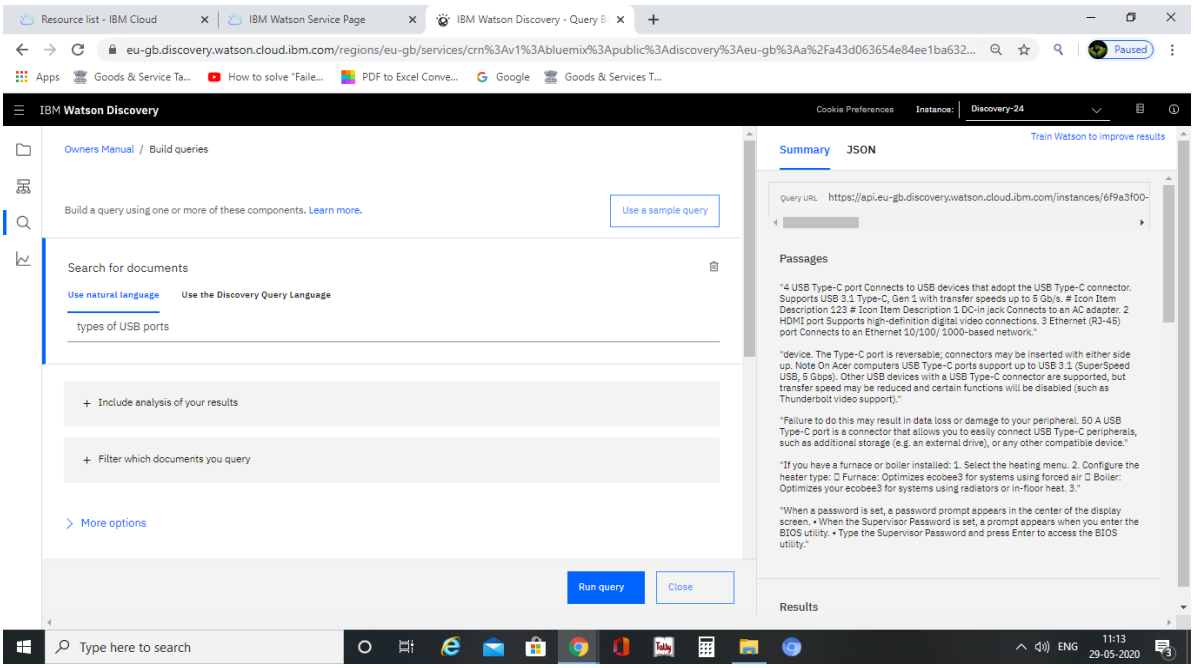


Click the `Build your own query`



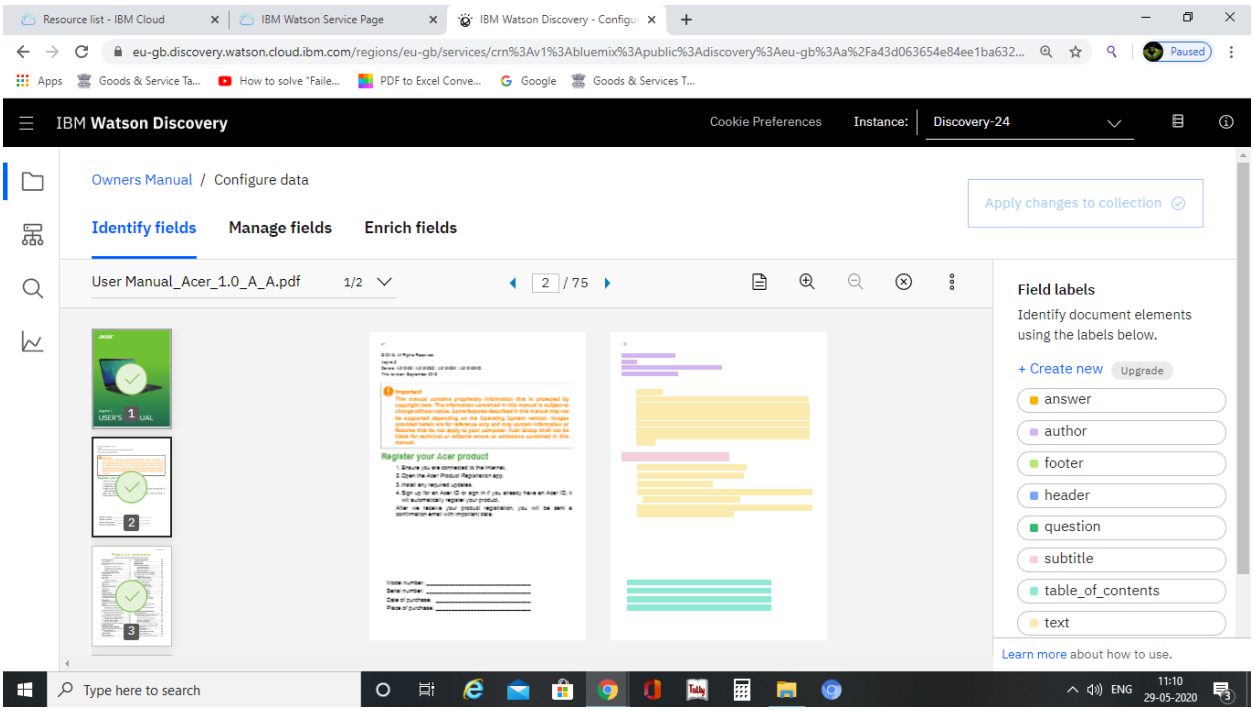
Enter queries related to the operation of the thermostat and view the results. As you will see, the results are not very useful, and in some cases, not even related to the question.

Annotate with SDU

Now let's apply SDU to our document to see if we can generate some better query responses.

From the Discovery collection panel, click the `Configure data` button (located in the top right corner) to start the SDU process.

Here is the layout of the `Identify fields` tab of the SDU annotation panel:



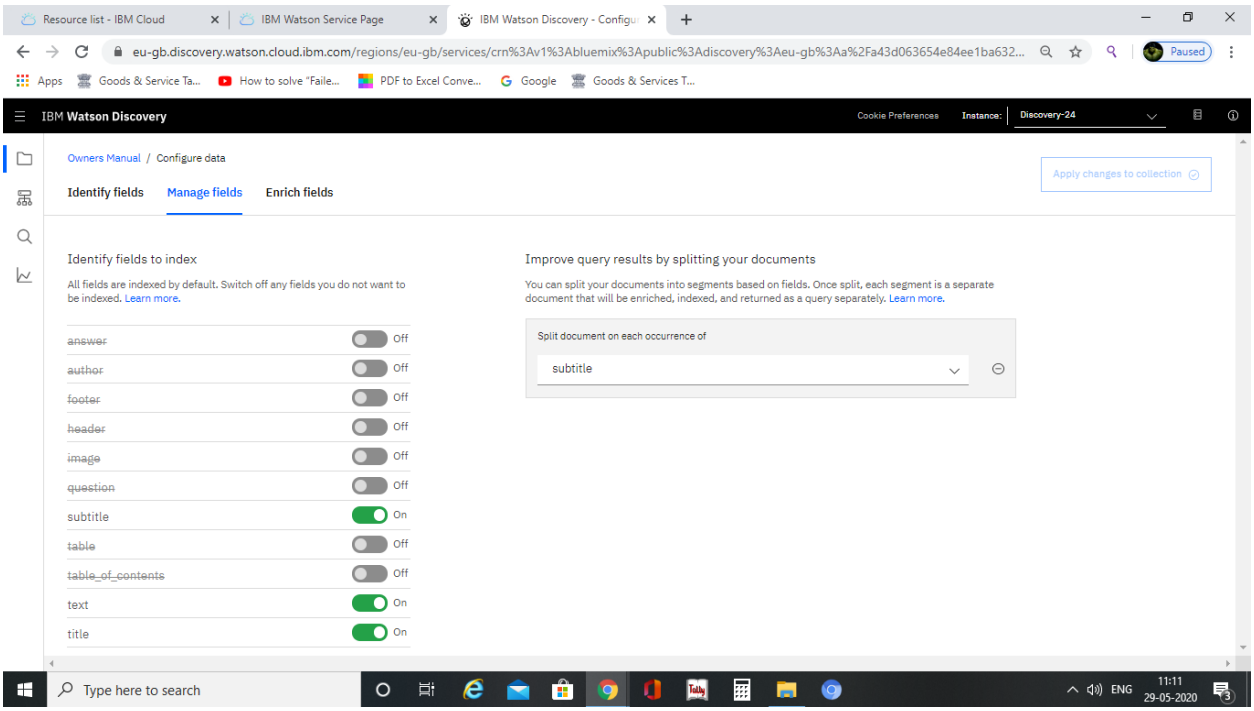
The goal is to annotate all of the pages in the document so Discovery can learn what text is important and what text can be ignored.

Here we need to annotate the page with suitable labels for the text.

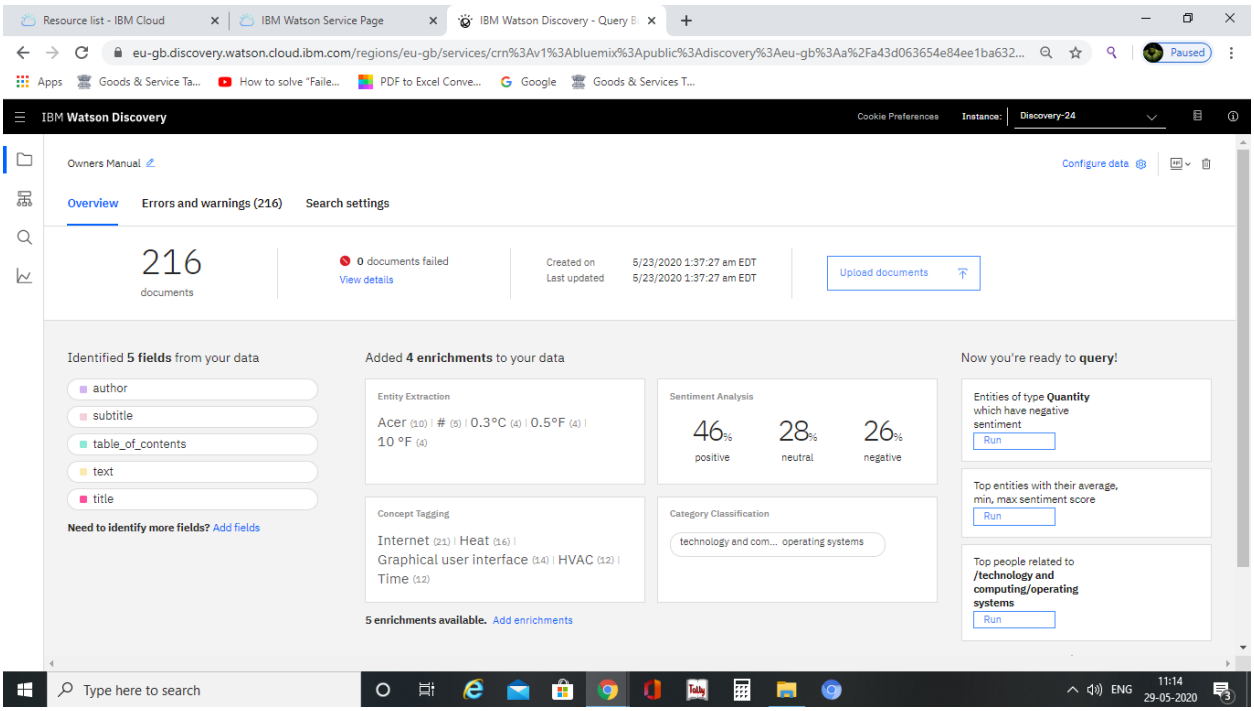
we need to select the text and assign the label and submit the page to Discovery

After Completion of this process click on Apply changes to collection button and reload the Document .Choose the same document used before.

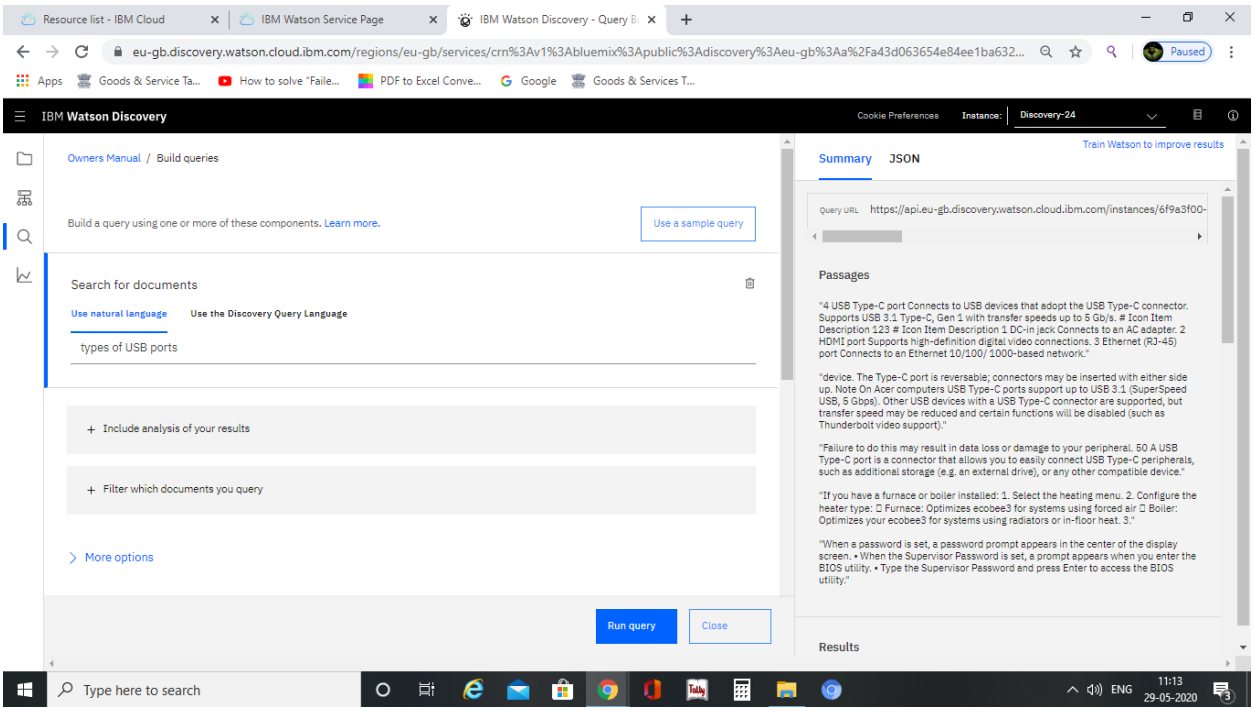
Now,Click on Manage Fields



Select the Required Fields and Select the Field through which we are Splitting the Document.



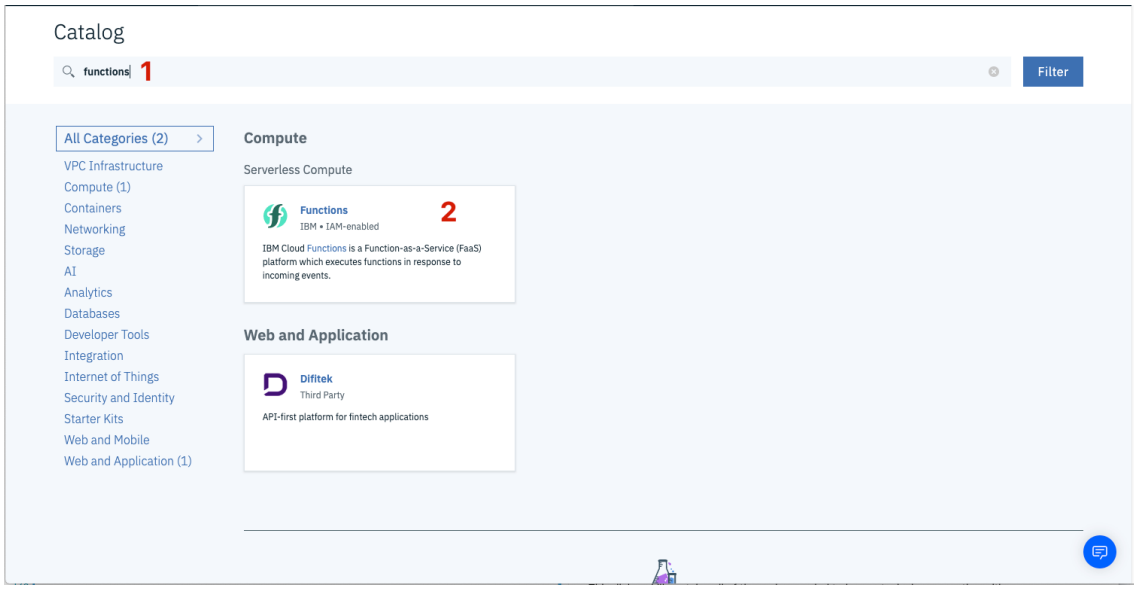
The Document is Splitted into Multiple Documents Based on the Field we have selected. The Return to the panel and see the Results Again.



Here we get Better Responce than before.

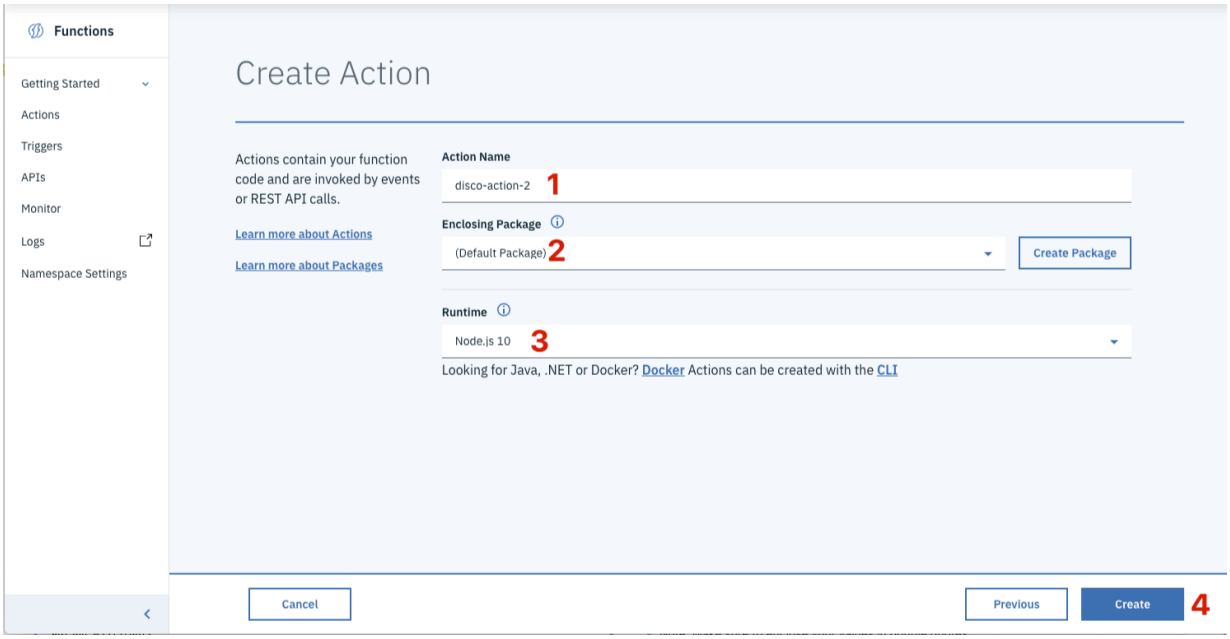
3.Create IBM Cloud Functions action

Now lets create the Web action that will make queries against our Discovery collection.

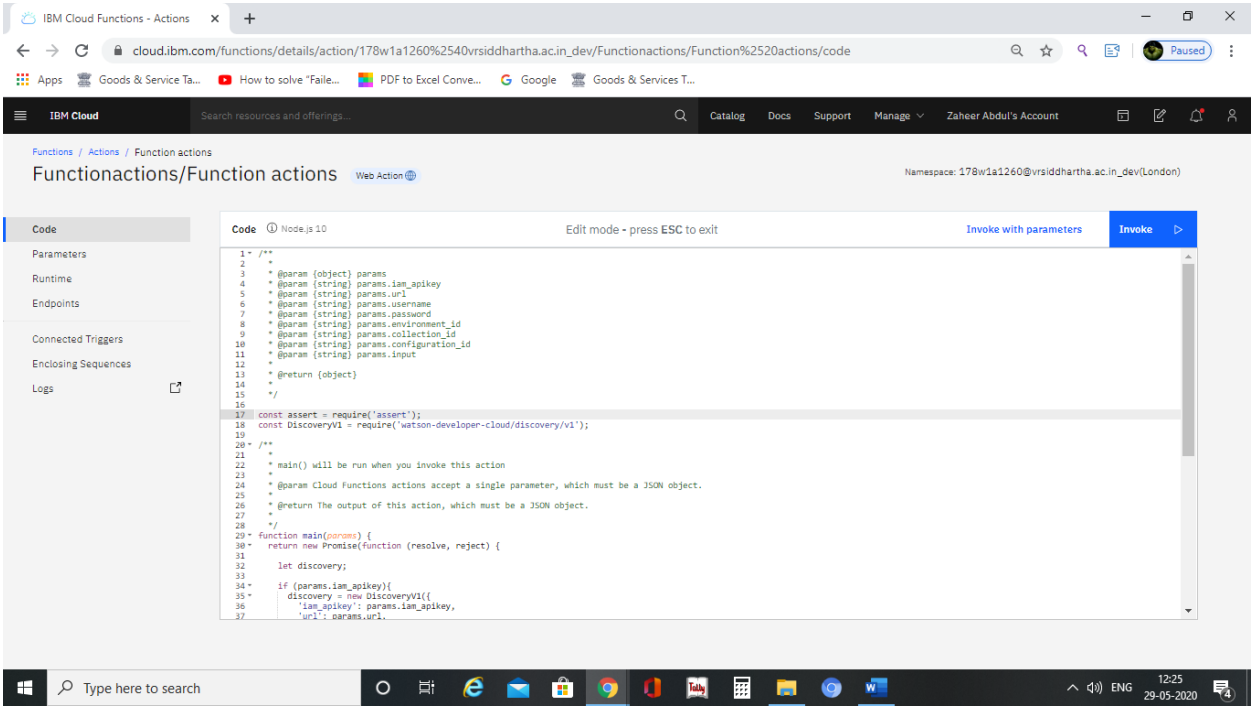


From the create panel ,select the Create Action option
Now provide Action Name ,Defaut Package,slect Node.js 10 and click the Create

Button.

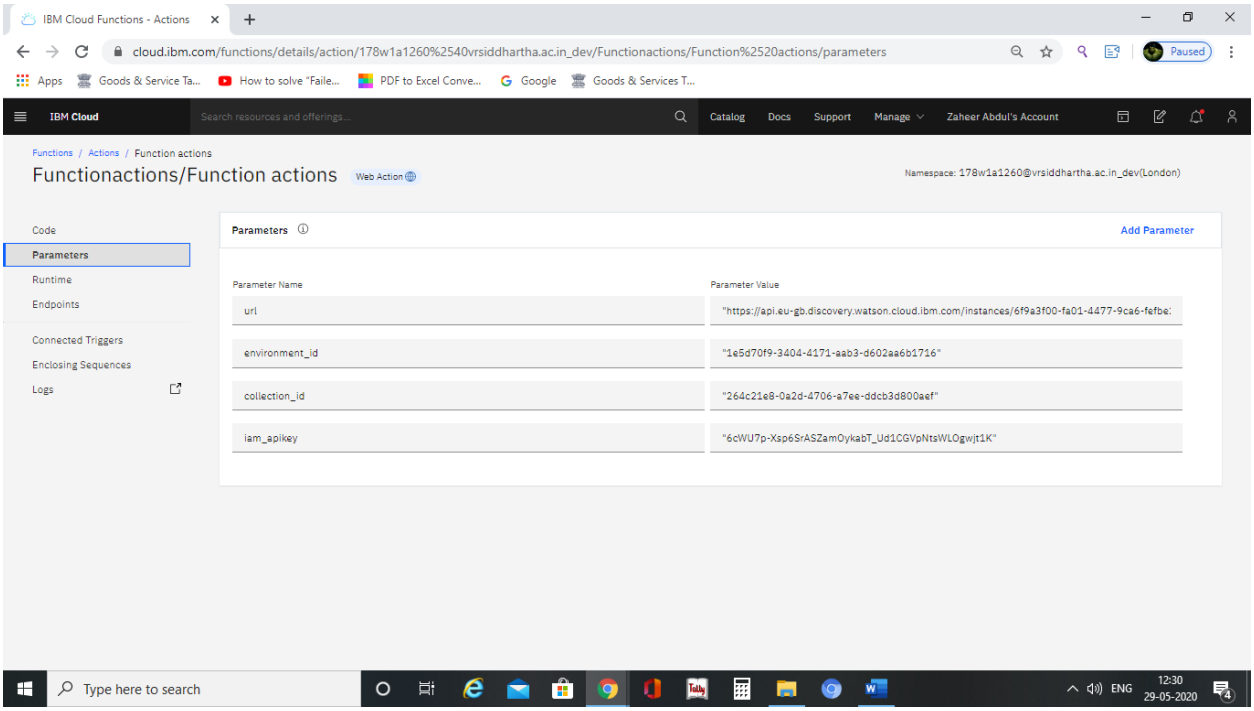


Here in Actions we have Code[1],Parameters[2],Runtime[3],Endpoints[4].
In Code [1] we need to import the code from disco-action.js

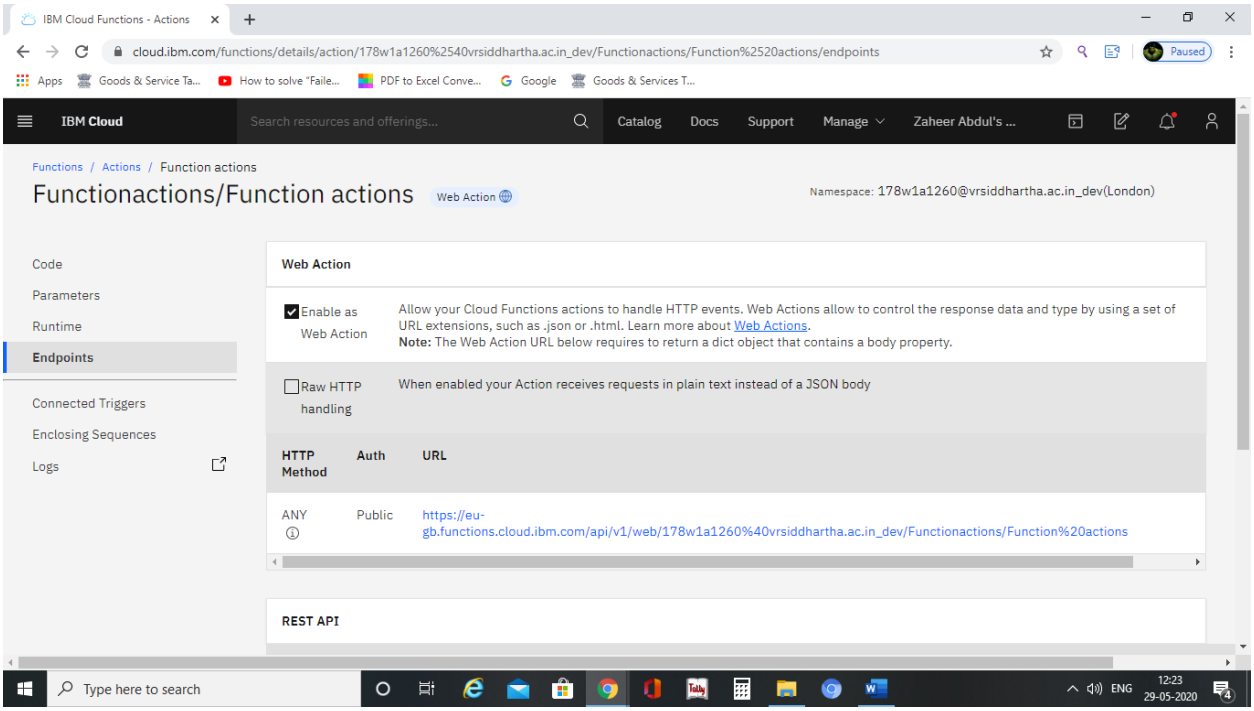


next in Parameters we have 4 parameters:
1.url
2.Environment ID
3.Collection ID

4.Api key



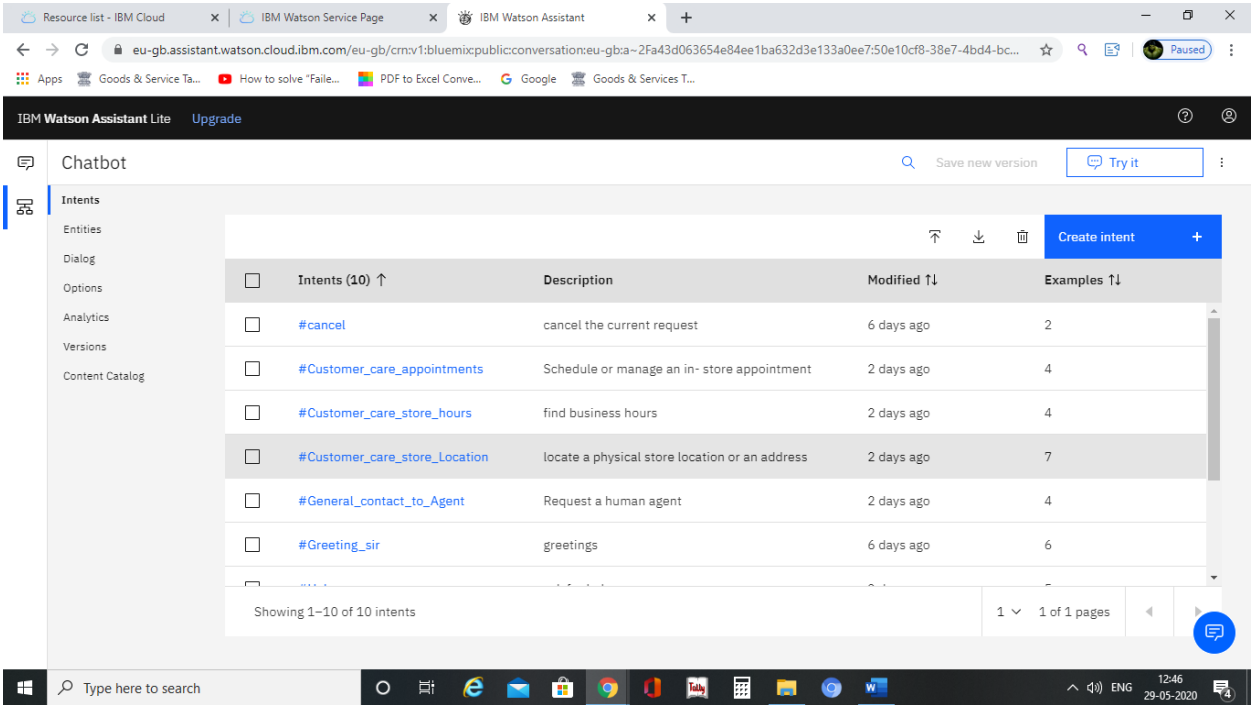
Next in Endpoints[4] we have to select the Enable as WebAction and copy the Url



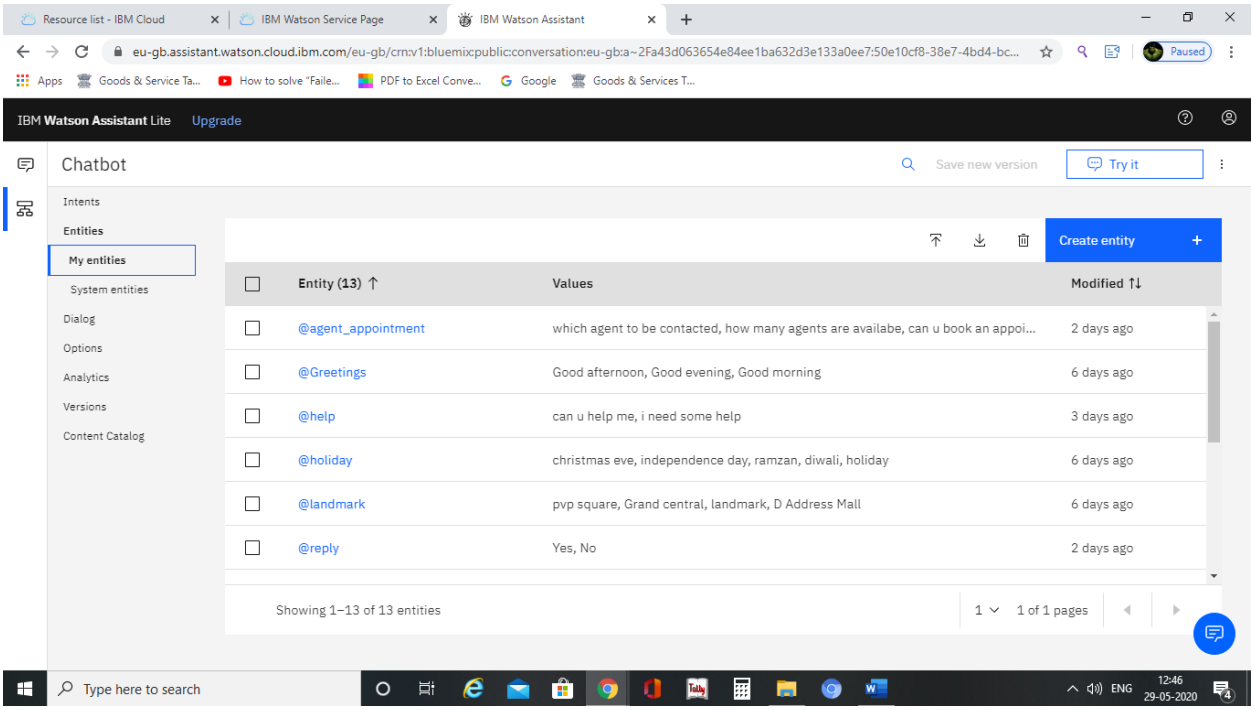
4.Configure watson Assistant

from the Dashboard select the Watson Assistant and Launch theWatson Assistant and

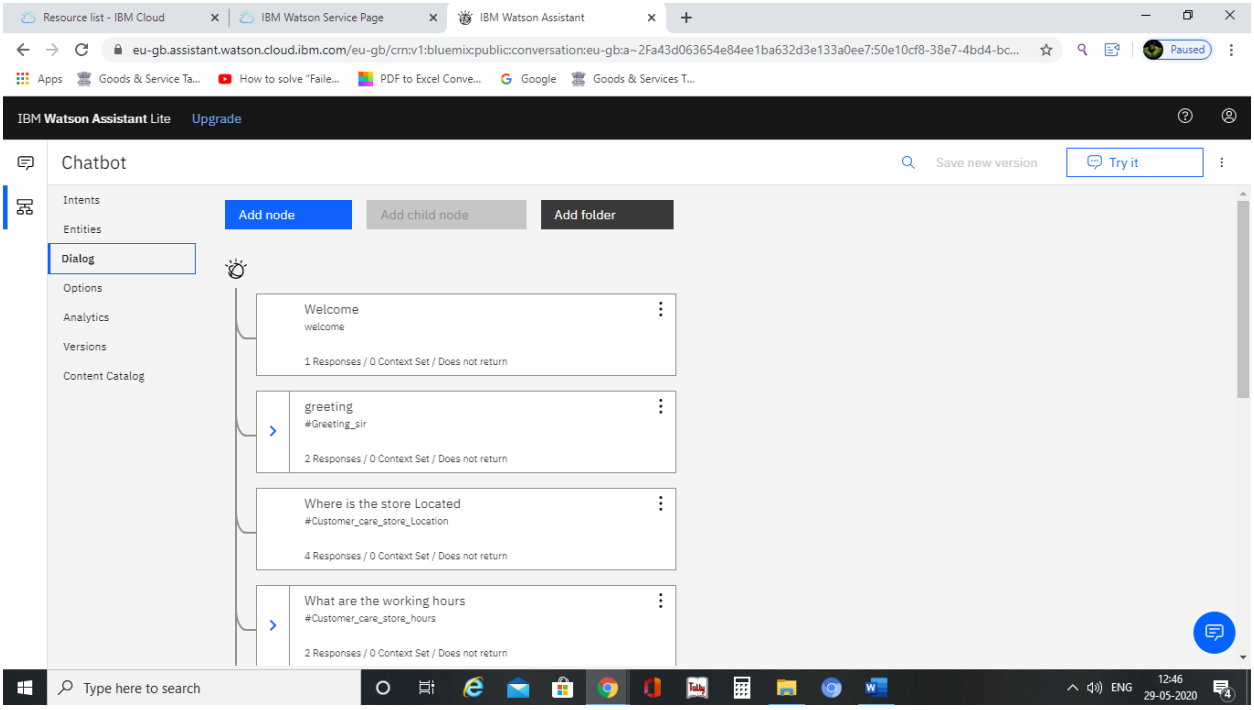
then Create an Assistant and a Skill in that Assistant.
After creating the skill we need to add Intents ,Entities and Dialog for that Skill



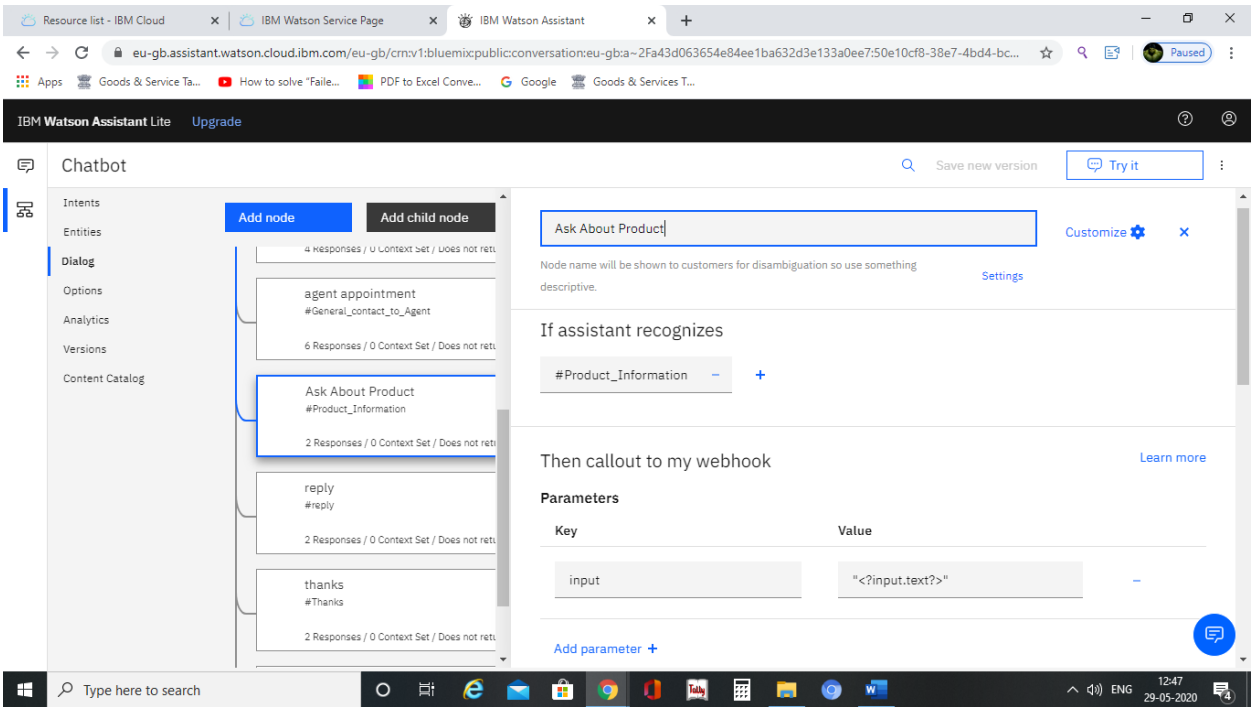
These are the Intents for the skill We can add any number of Intents based on our Requirement
After this we need to add the Entities



These are some of the Entities used .We can use any no of Entities based on our Requirement.

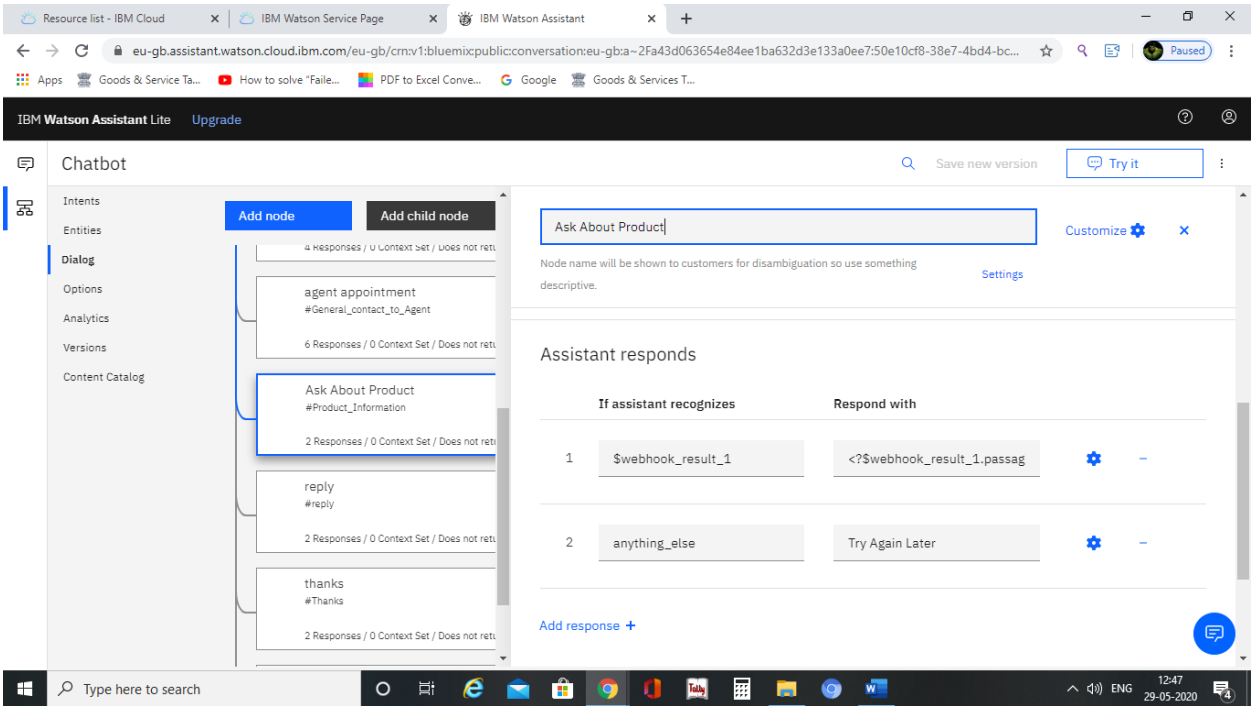


This is the Dialog Secton where we give Responce for the Relevent Queries asked by the user.

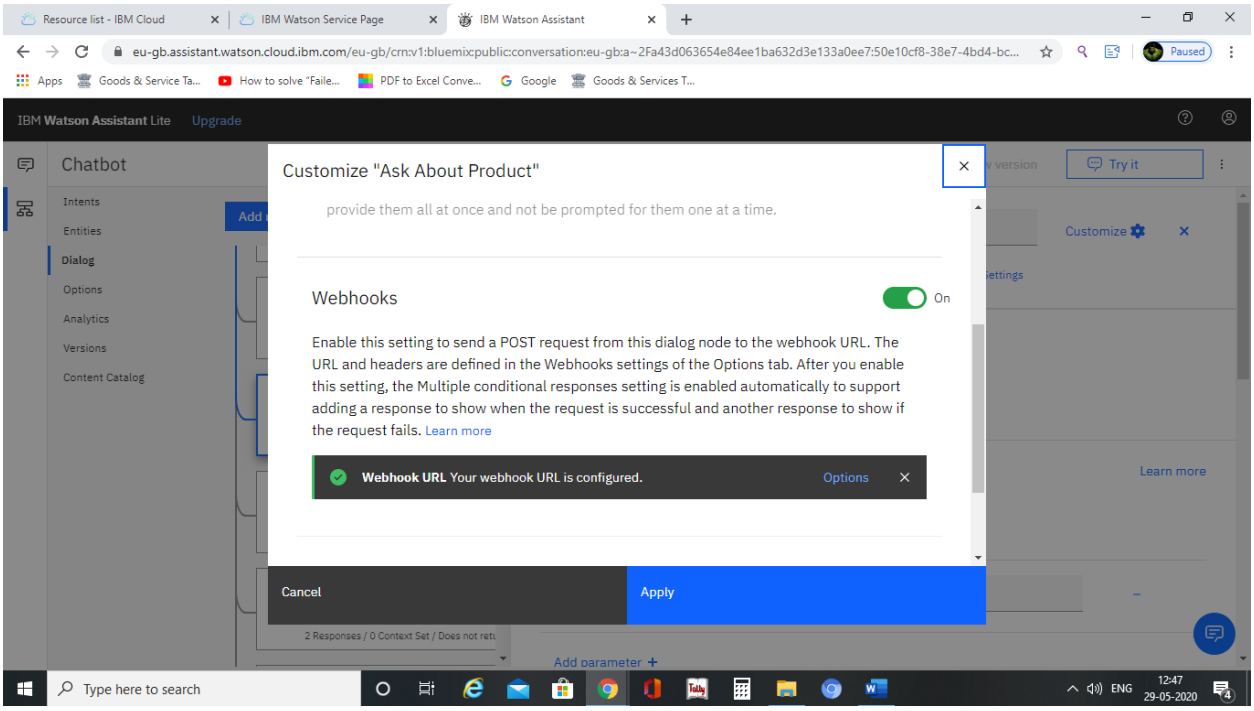


This the Dialogue node where we use the Discovery queries from the Document we

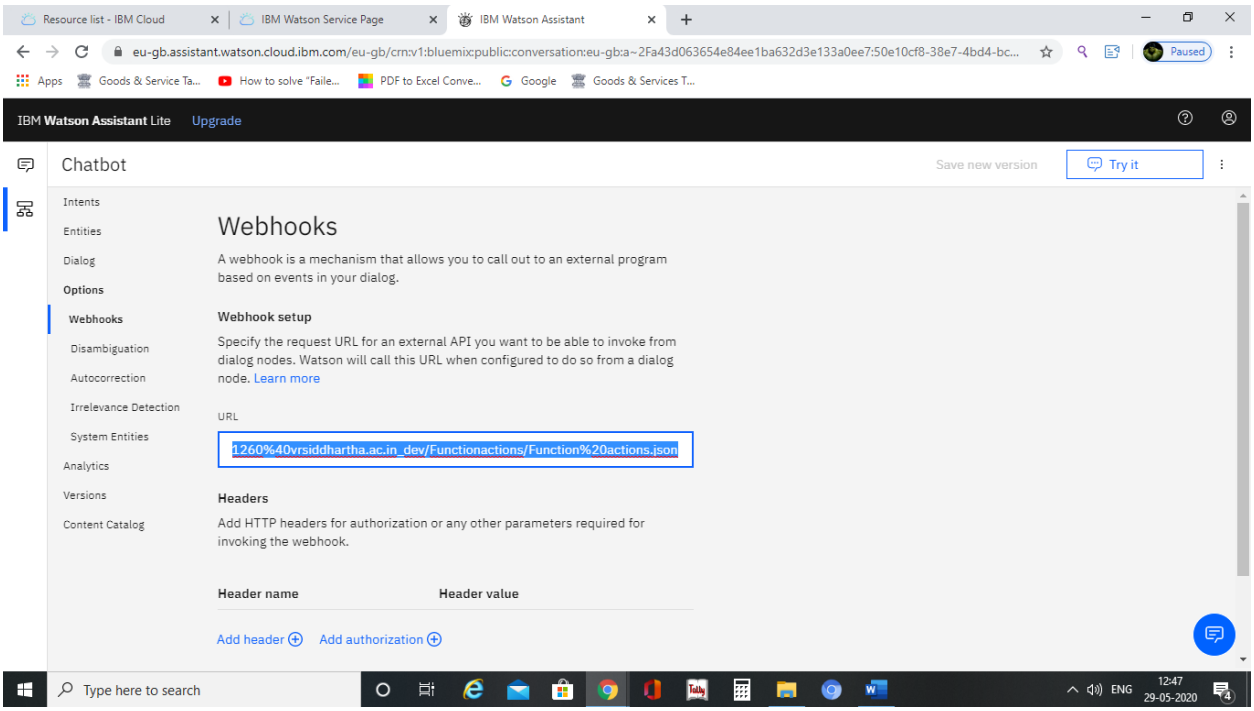
used for Smart Document Understanding SDU.



We give Direct Responce from the Document using this webhook which can be Enabled in the Customize Option.



After Enabling the Webhooks for the node click on Apply and then go to Options and add the link from the Discovery with .json Extention in the Webhook.

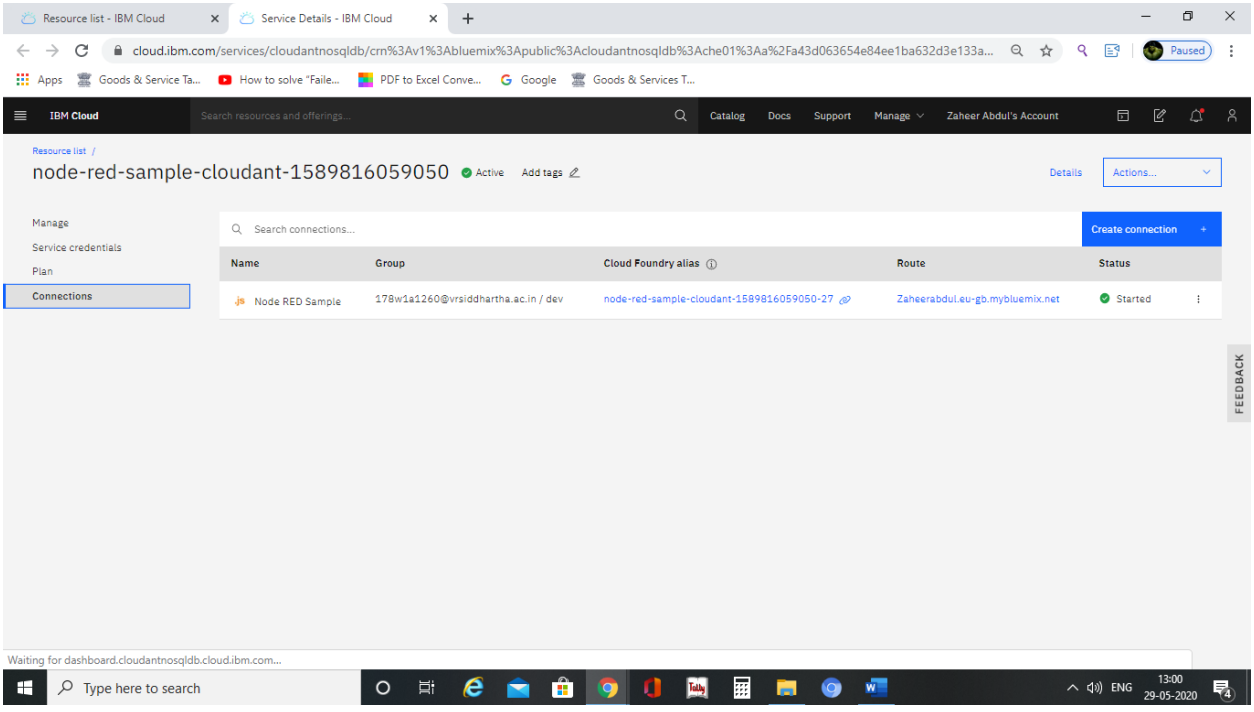


After Adding the Webhook Link we Can directly Acess the Discovery queries in the Watson Assistant.

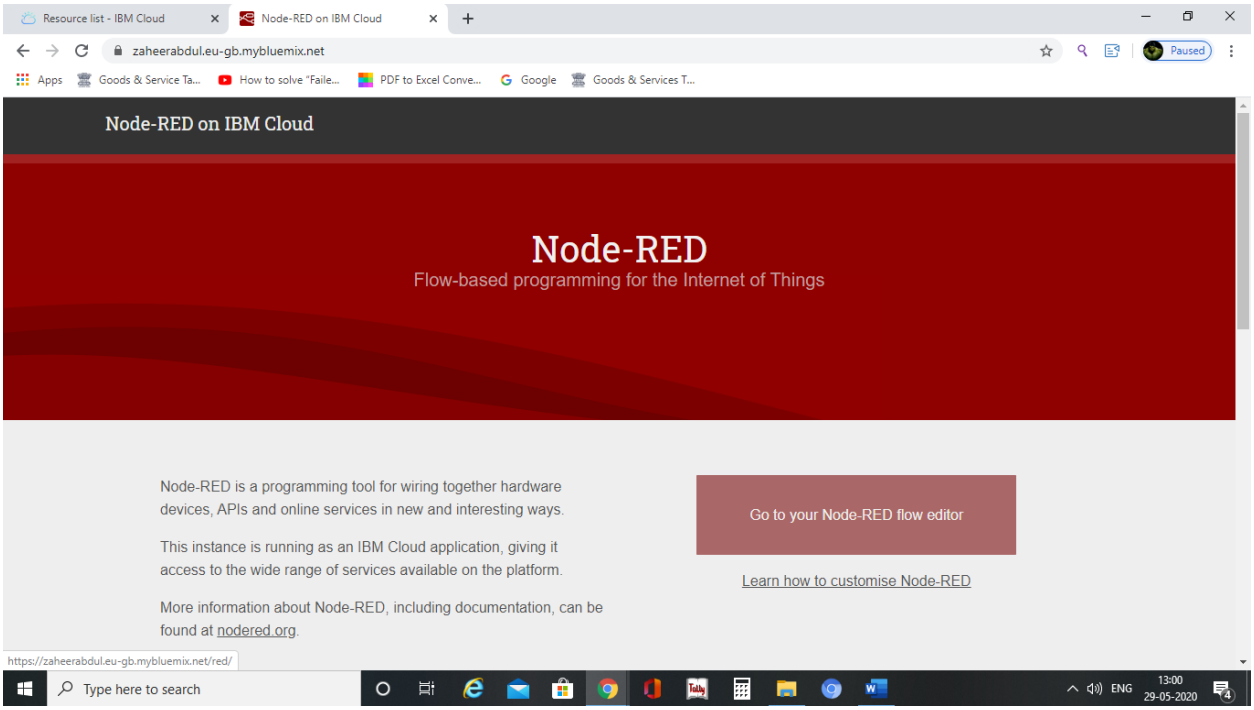
5.Integrate the Services to NODE RED

Go to the IBM Dashboard and Select the Node Red

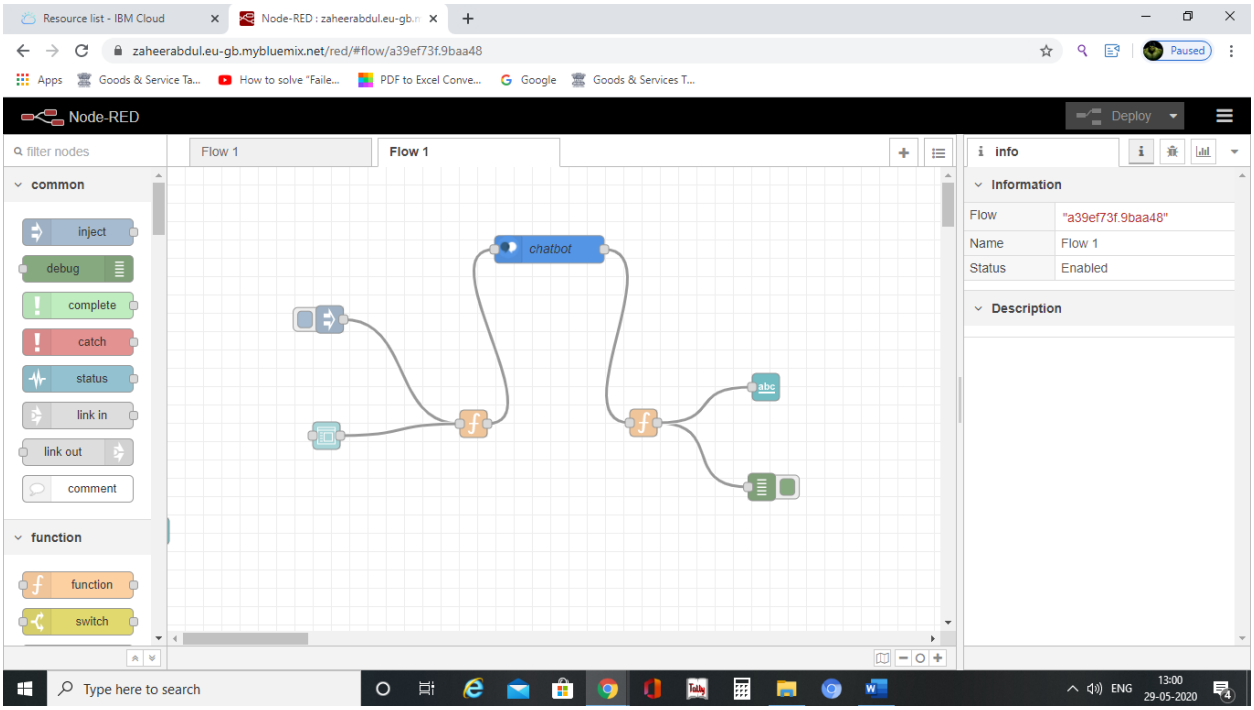
As i have already created the flow click on the link if not created create the node red by cicking in Create.



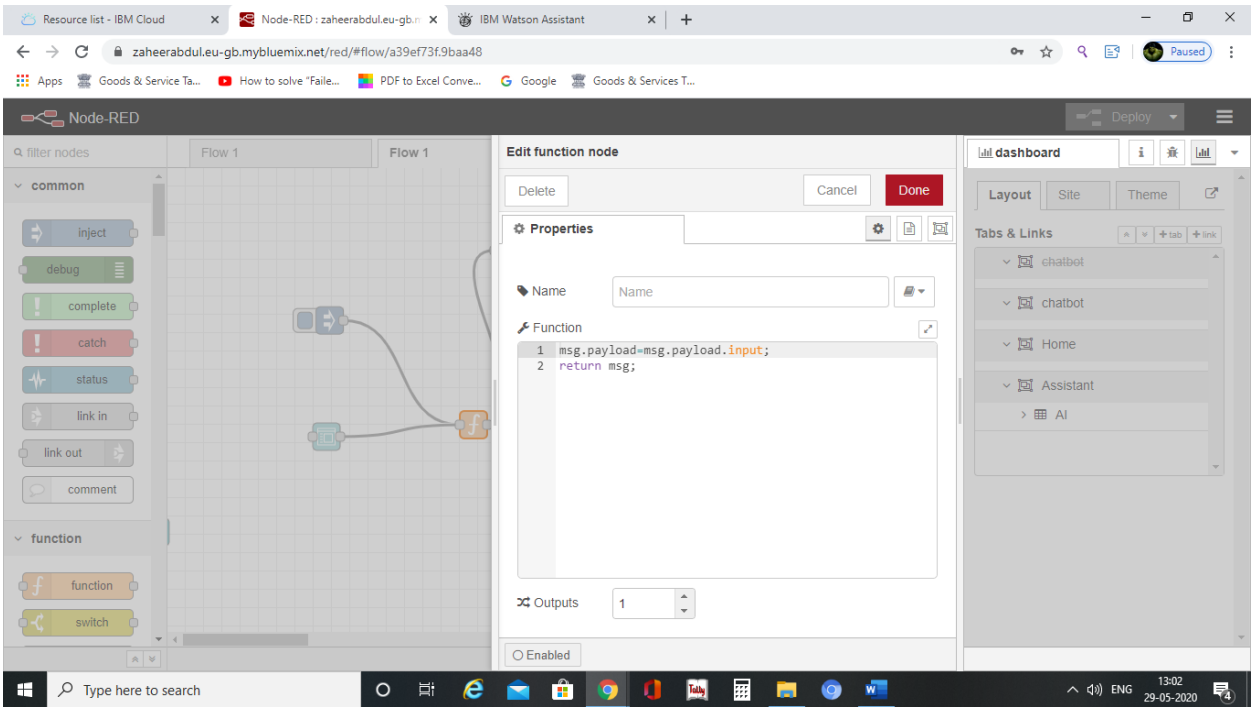
Now Open the NODE RED Flow by clicking on Go to your Node-Red Flow editor



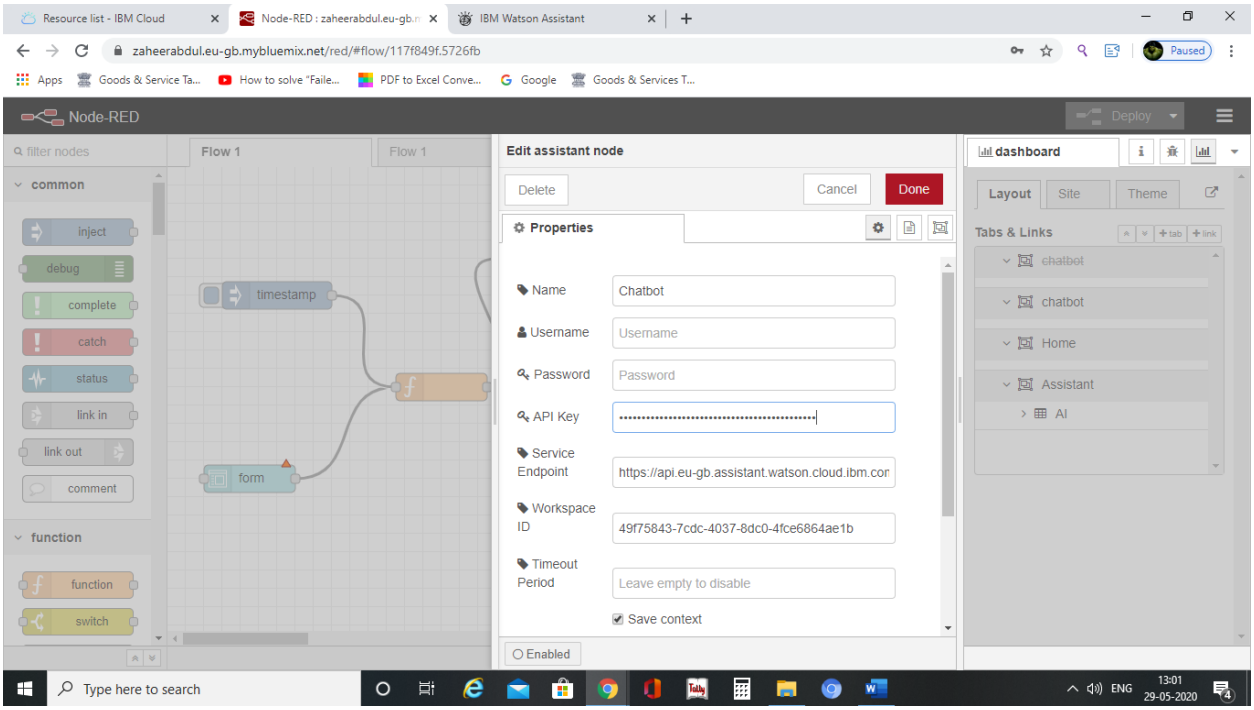
After this create the flow as Below by Draging the Required Nodes



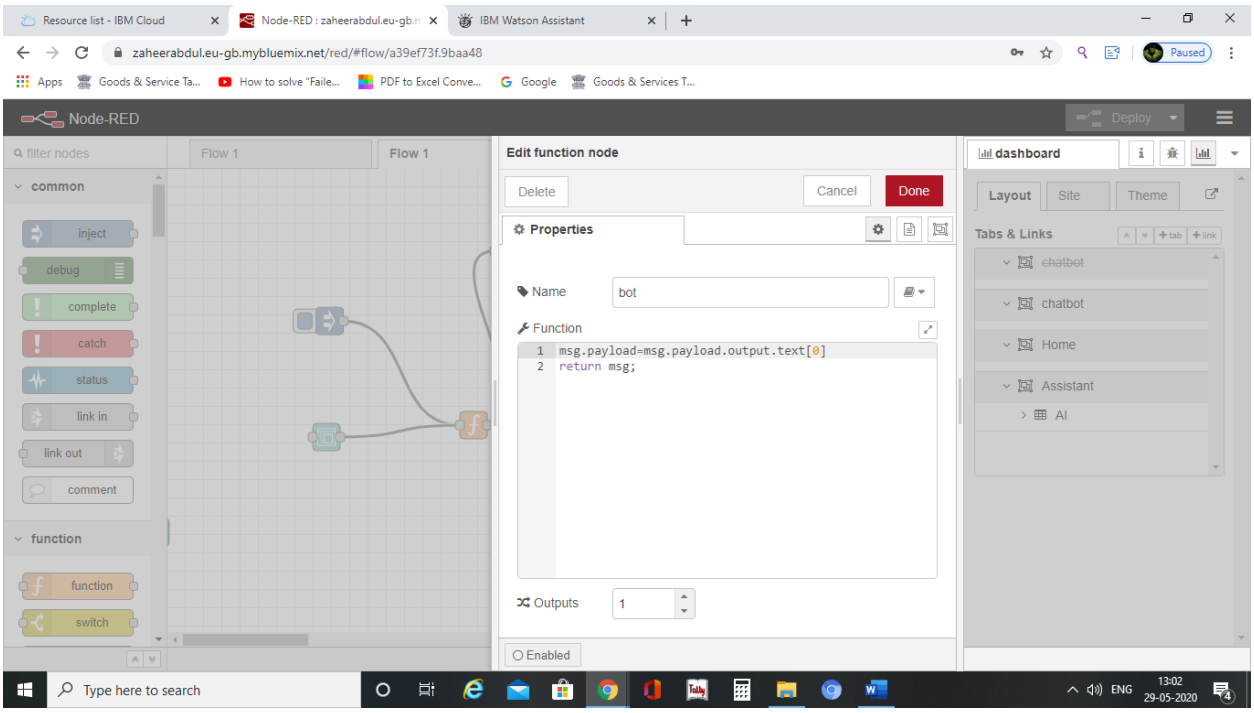
Add Inject node and Form Node Connected to an Input Function Node Containing the input function.



After this Input Function Node Add an Assistant node and give the Credentials of the Watson Assistant like ApiKey,Url and Workspace ID from the Watson Assistant Skill.

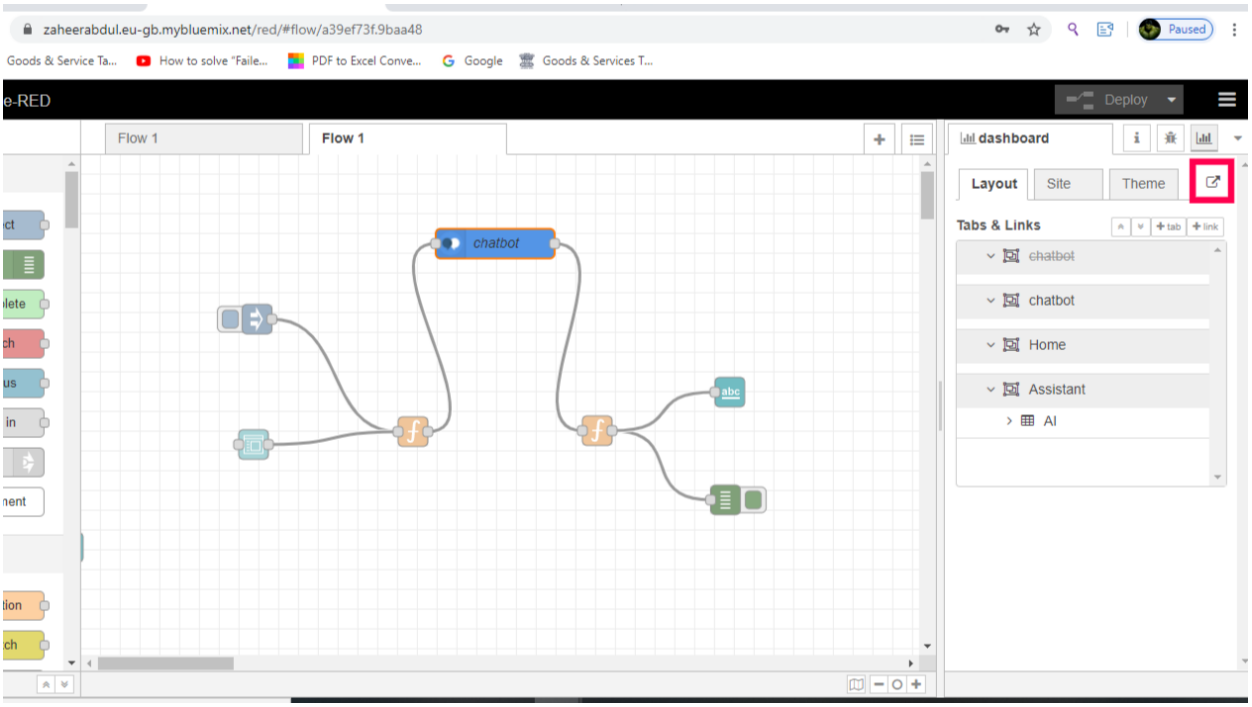


After this Add another function node for Output with the following code



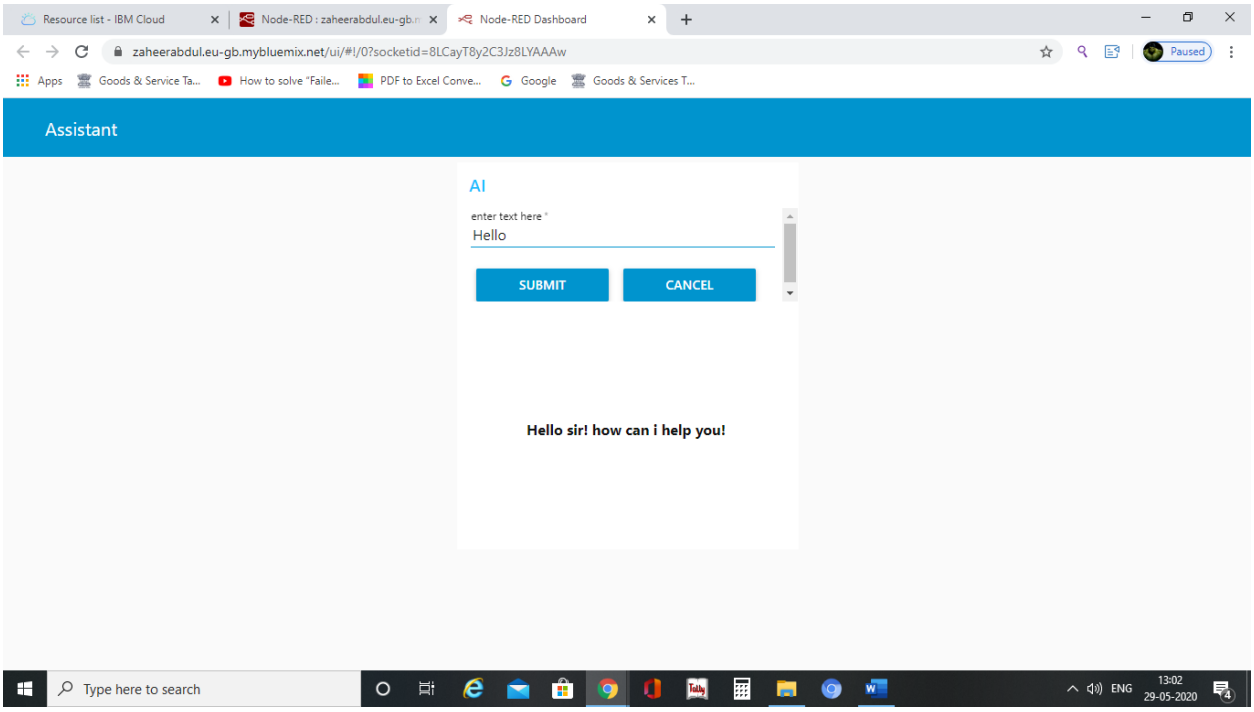
After Adding the Output Function Node add the Text input for displaying output and the Debug node for Debugging as Shown in the Node Red flow Earlier.

Now Deploy the Node Red Flow and Run the Flow by Clicking on the button on the Top-right Corner in Dashboard.



After Clicking on the Sown Red Square box the Node Red flow gets Executed in the

Web Page



This is the Output of the Node Red Flow for the Queries of Watson Assistant as well as Watson Discovery .