Building AI based Banking assistant

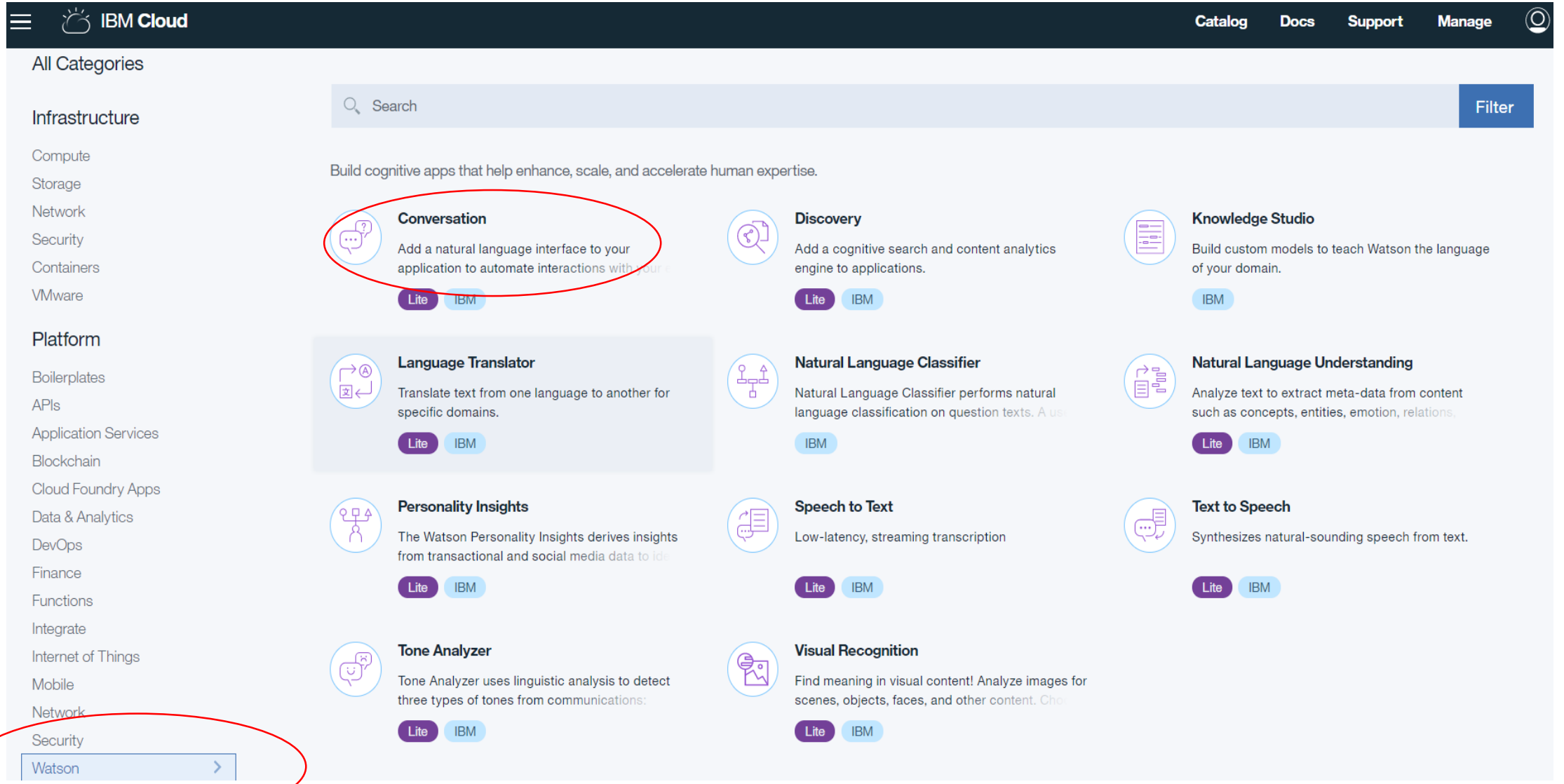
Using Watson Conversation, Discovery and IBM Cloud Functions

Part 1

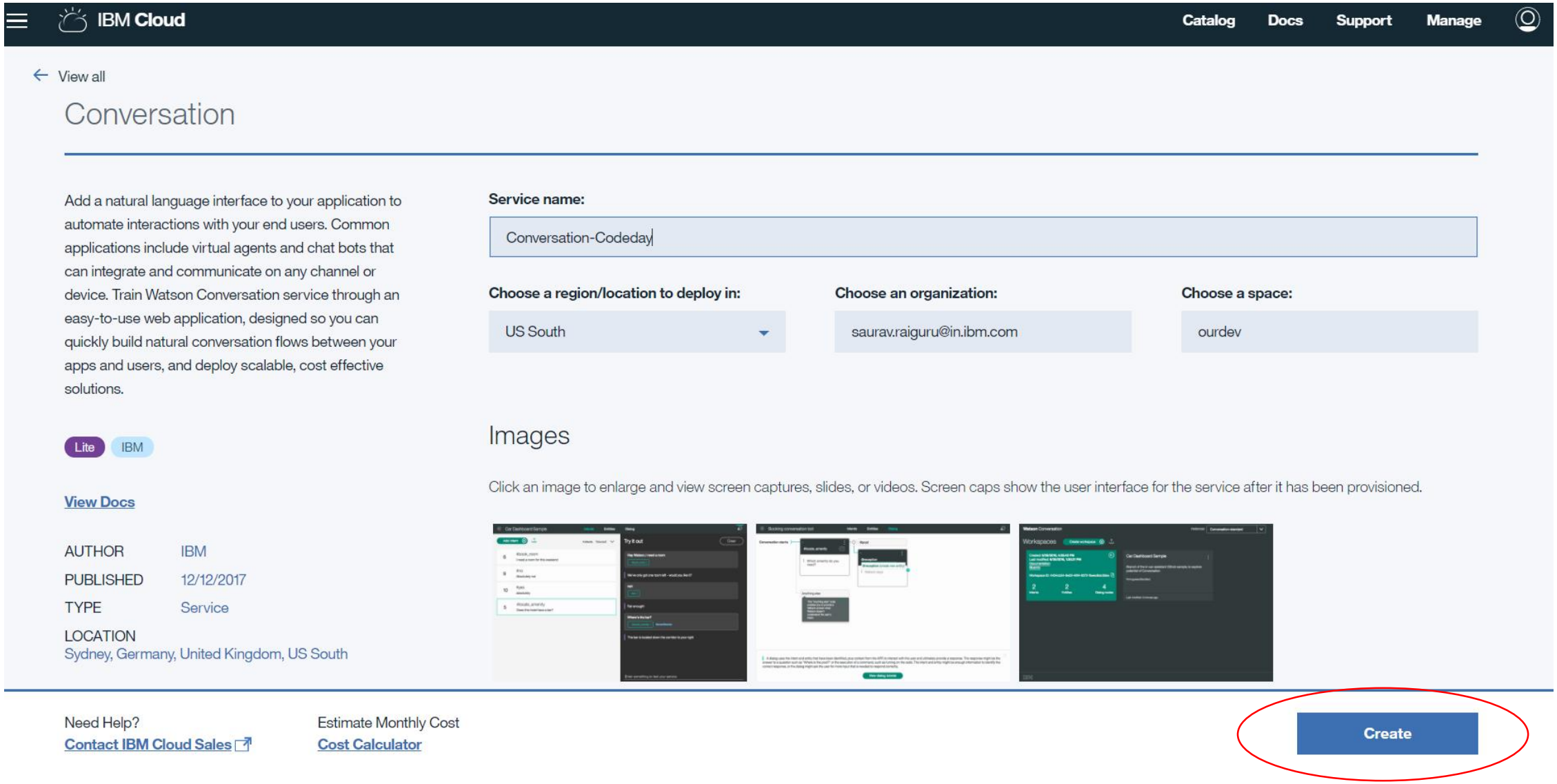
Configuring Watson Conversation -

Building intents, entities & dialogs, creating slots

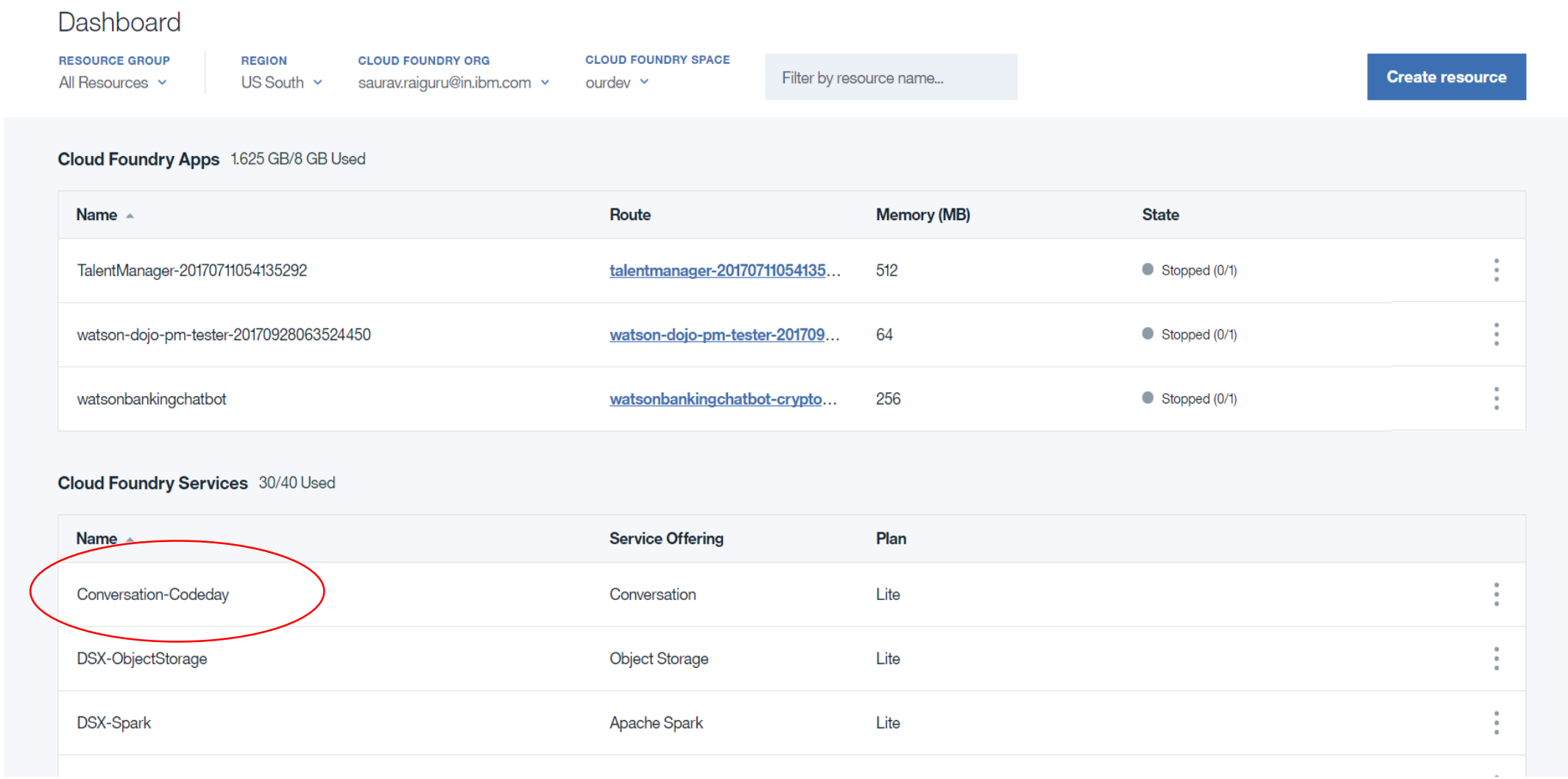
Log into IBM Cloud (https://console.bluemix.net/) , click on the Catalog menu.
Click on Watson on bottom left and click on Conversation as highlighted below



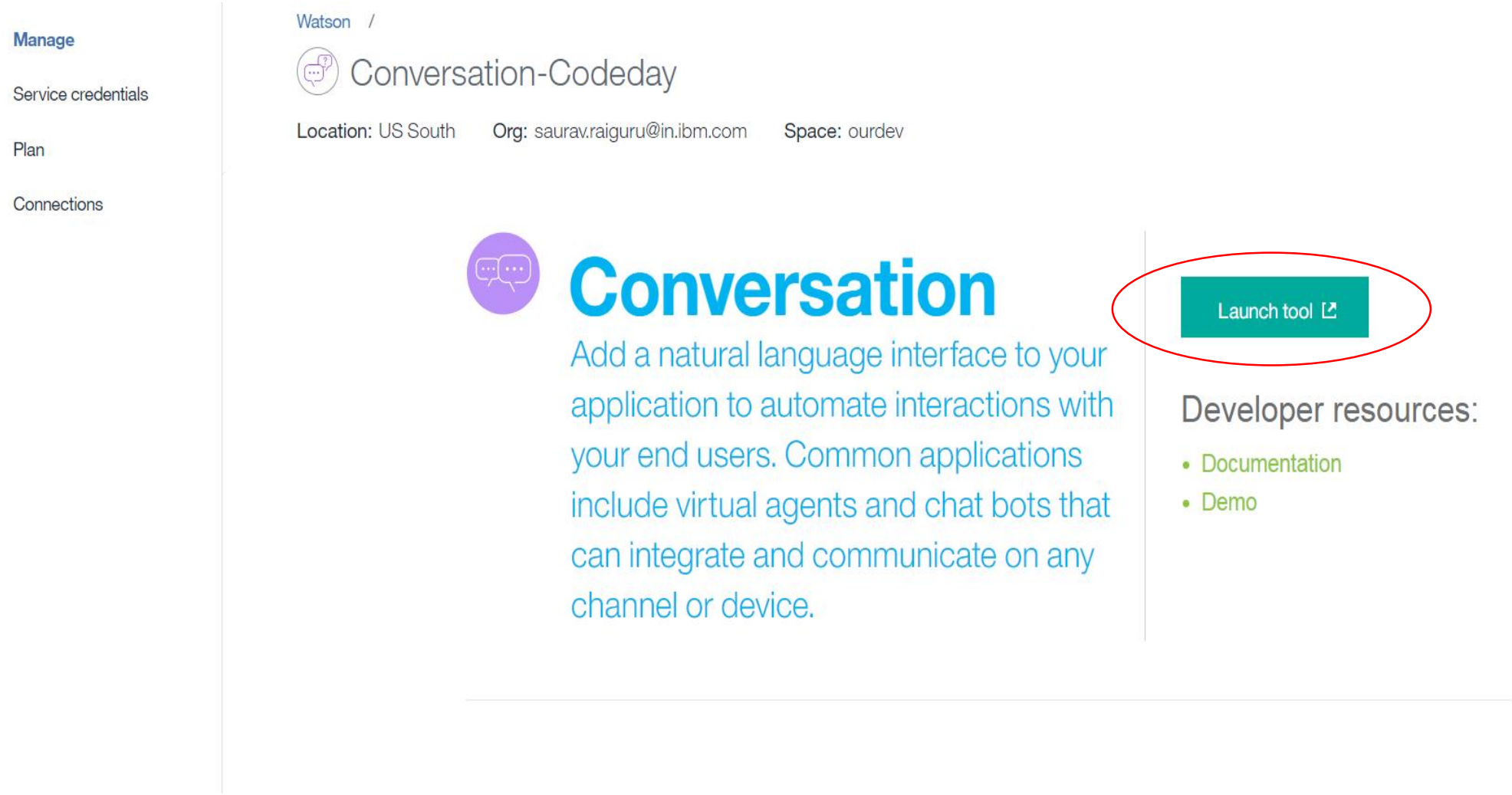
Give a service name for Conversation, select US South as region, choose your organization and space.
Click on Create



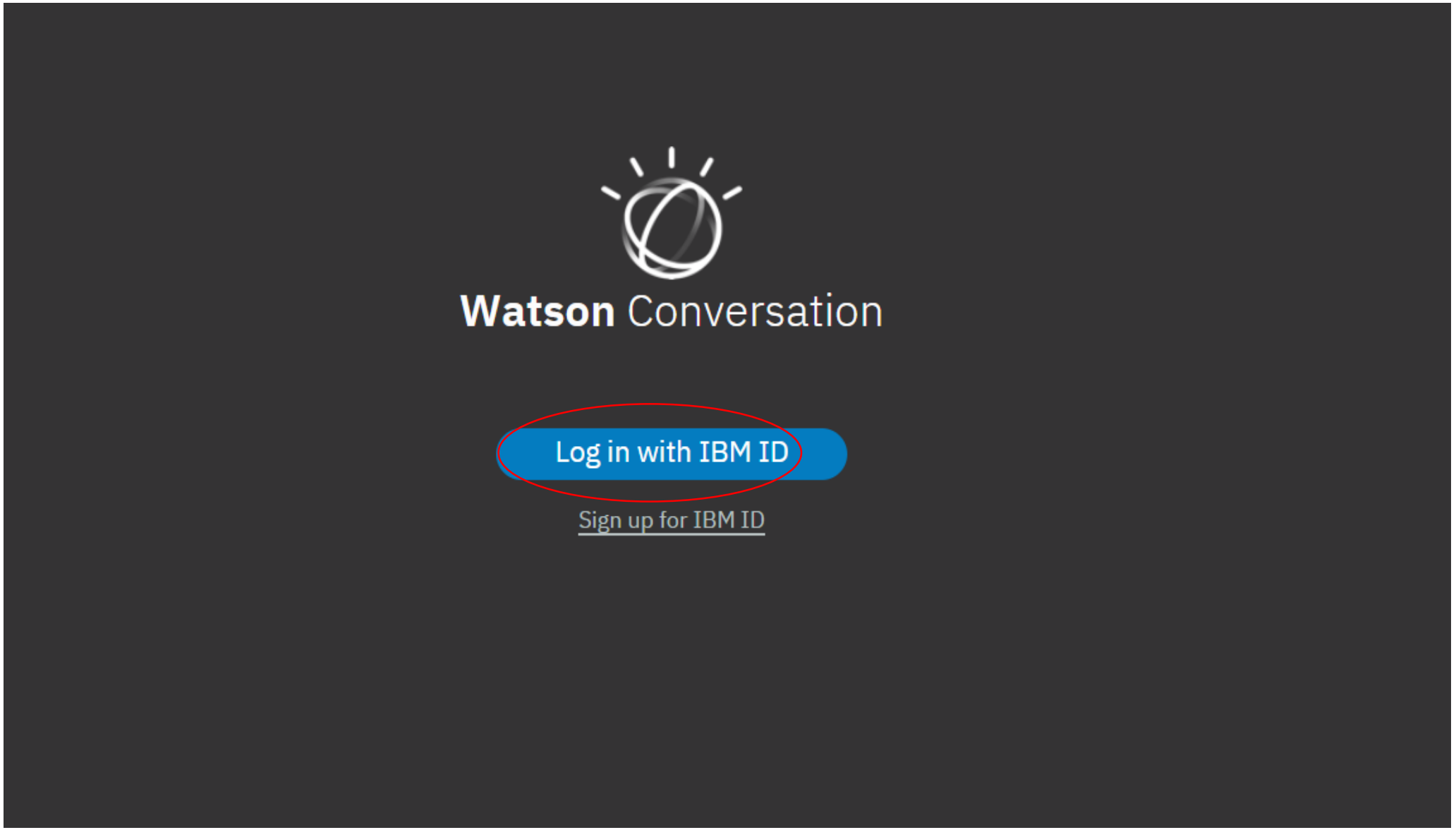
The service will get created. Click on Dashboard menu, you will find the newly created service.
Click on the service as shown below.



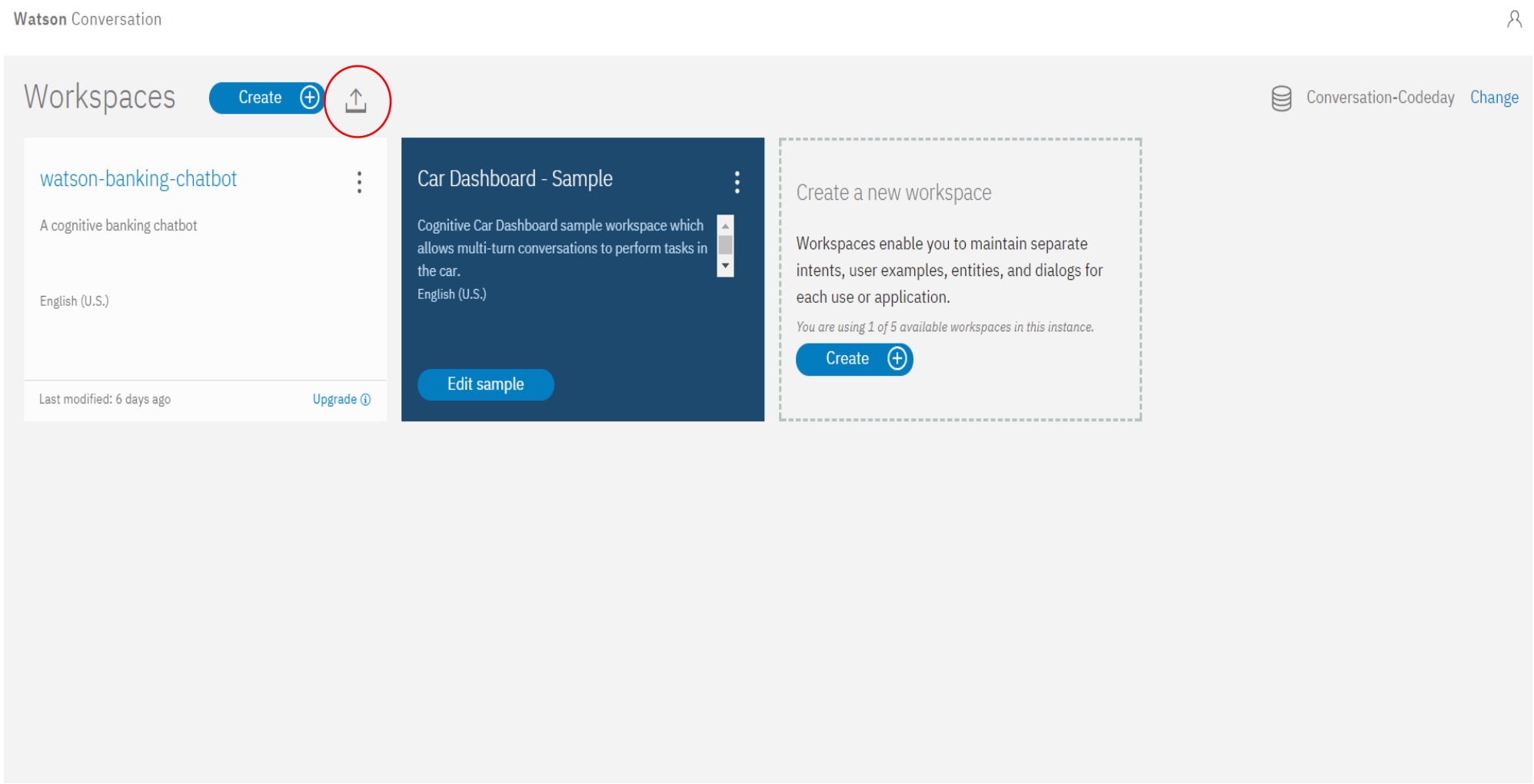
Click on Launch tool button



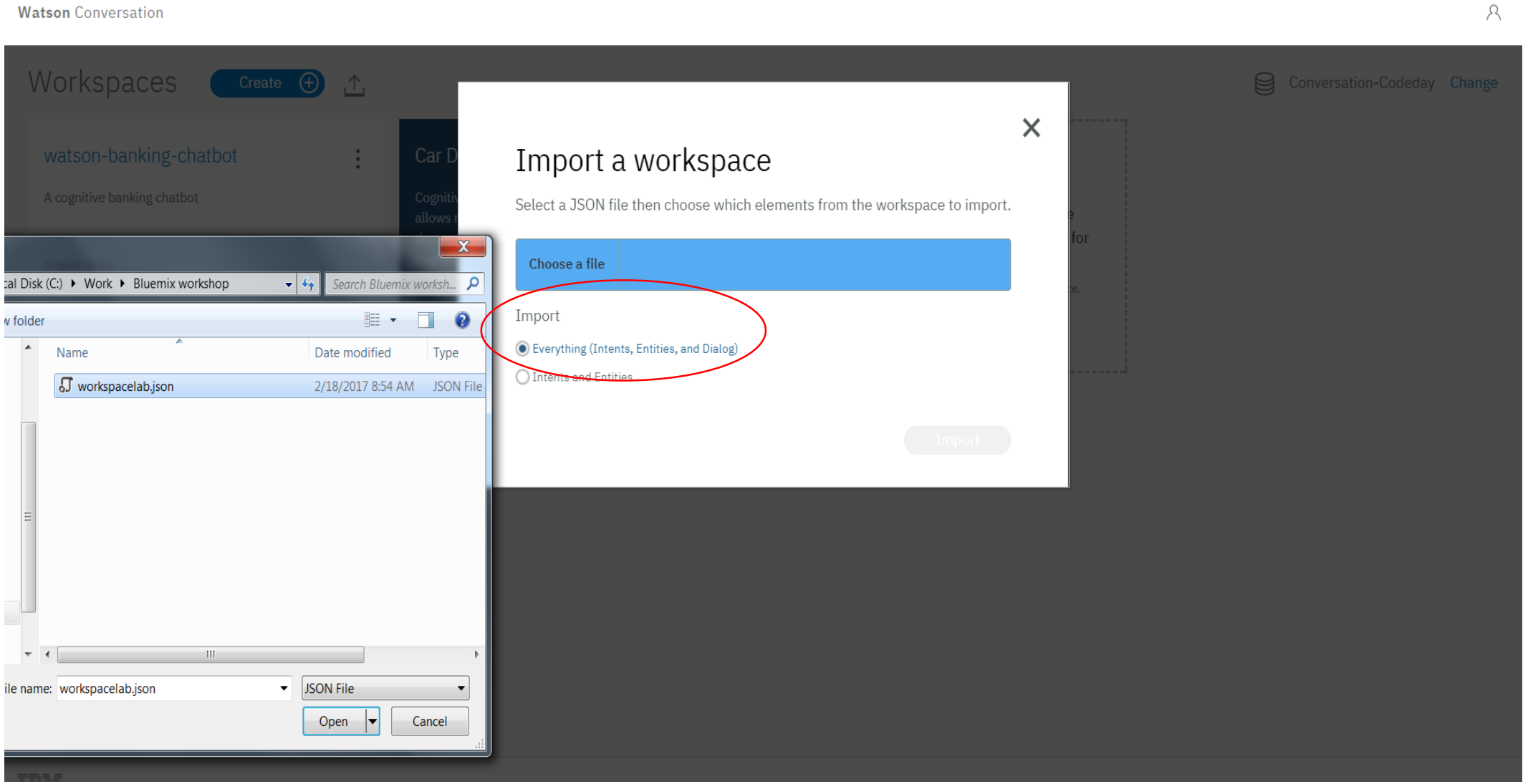
Login with IBM ID.



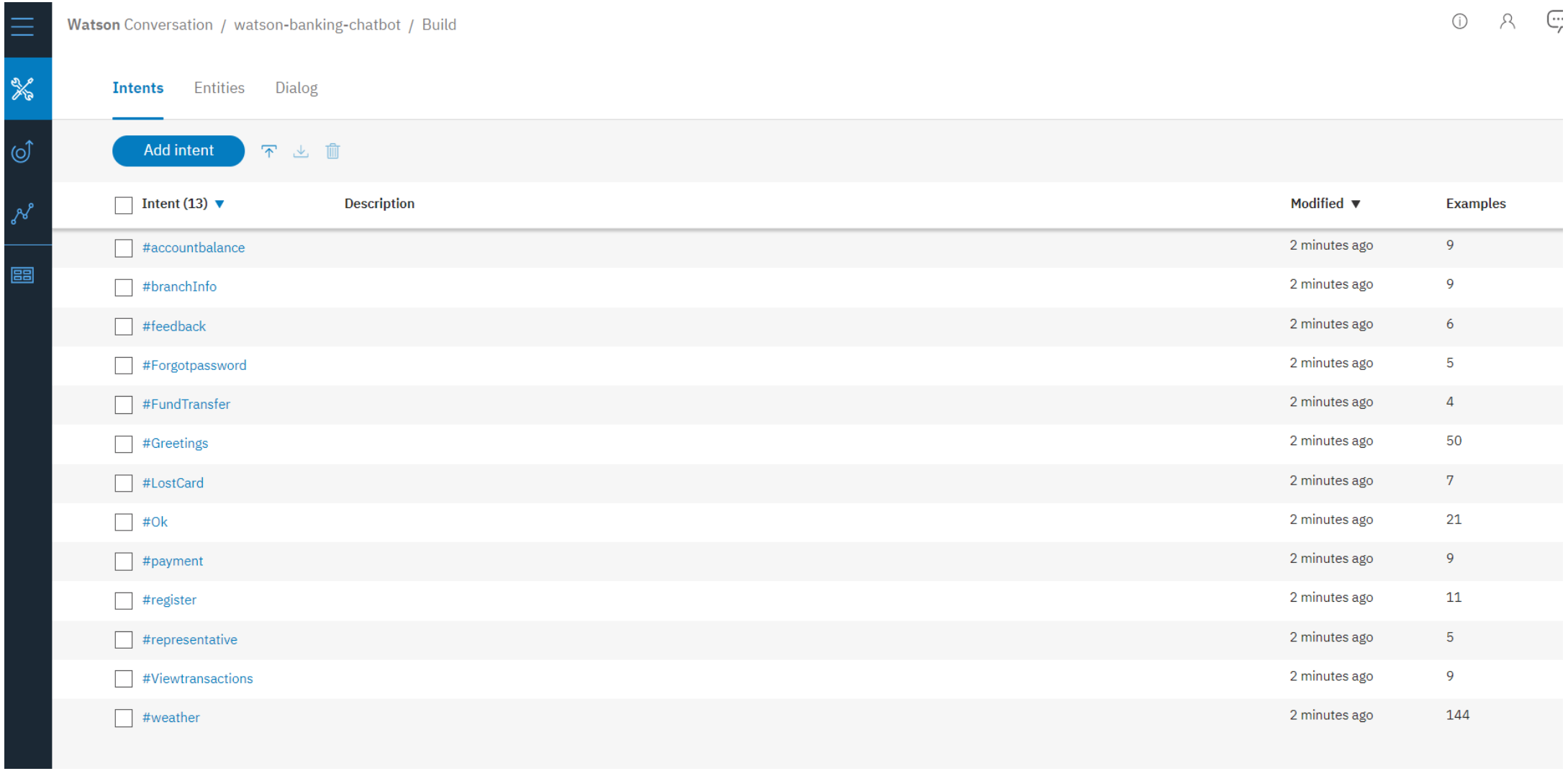
The workspace page will open. Click on Import button.



Browse to the workspace json file downloaded and select “everything (Intents, Entities and Dialog)” and click on Import button.

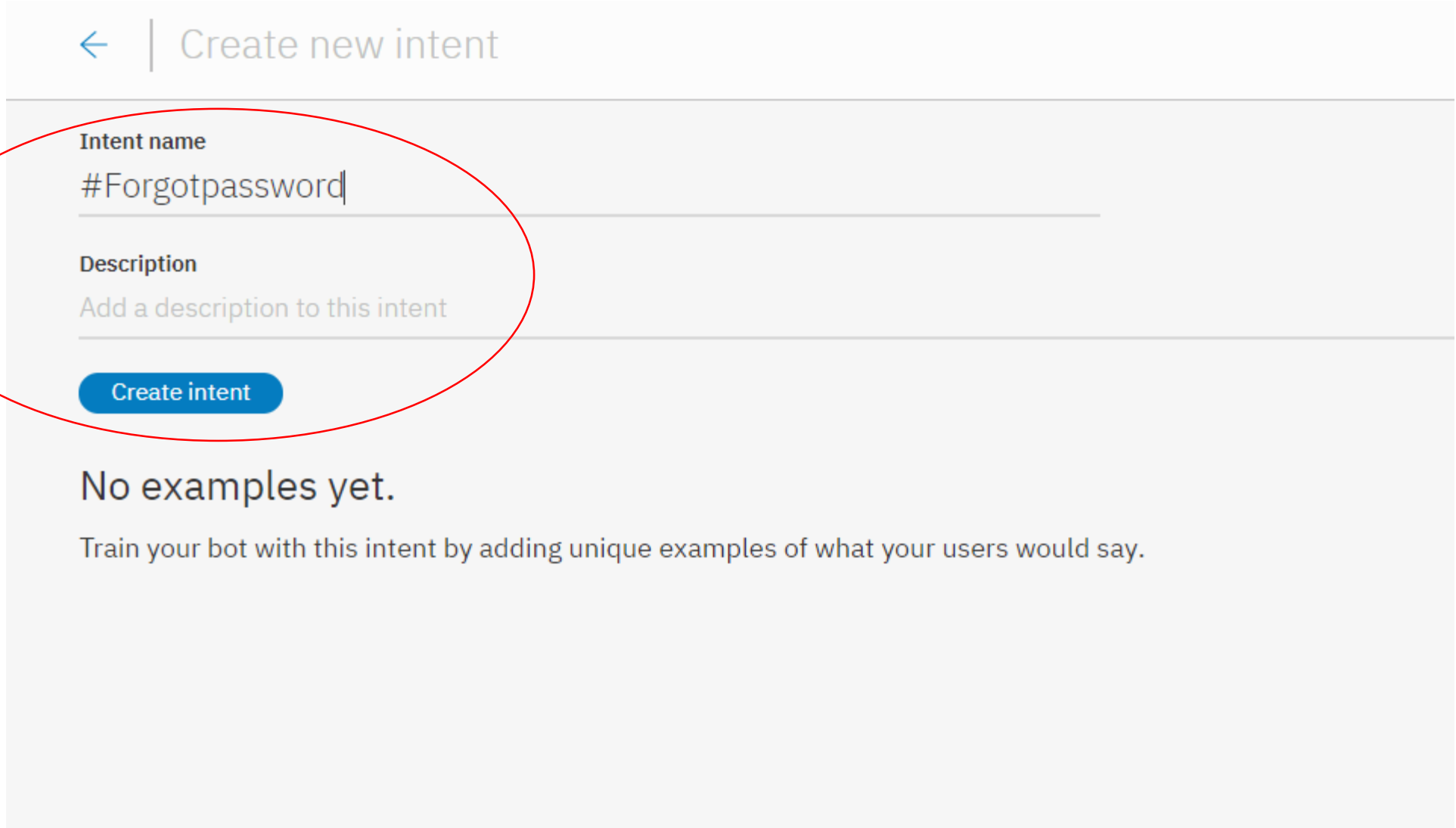


After importing, all the intents/entities and dialog will appear as below. Click on Intents tab.

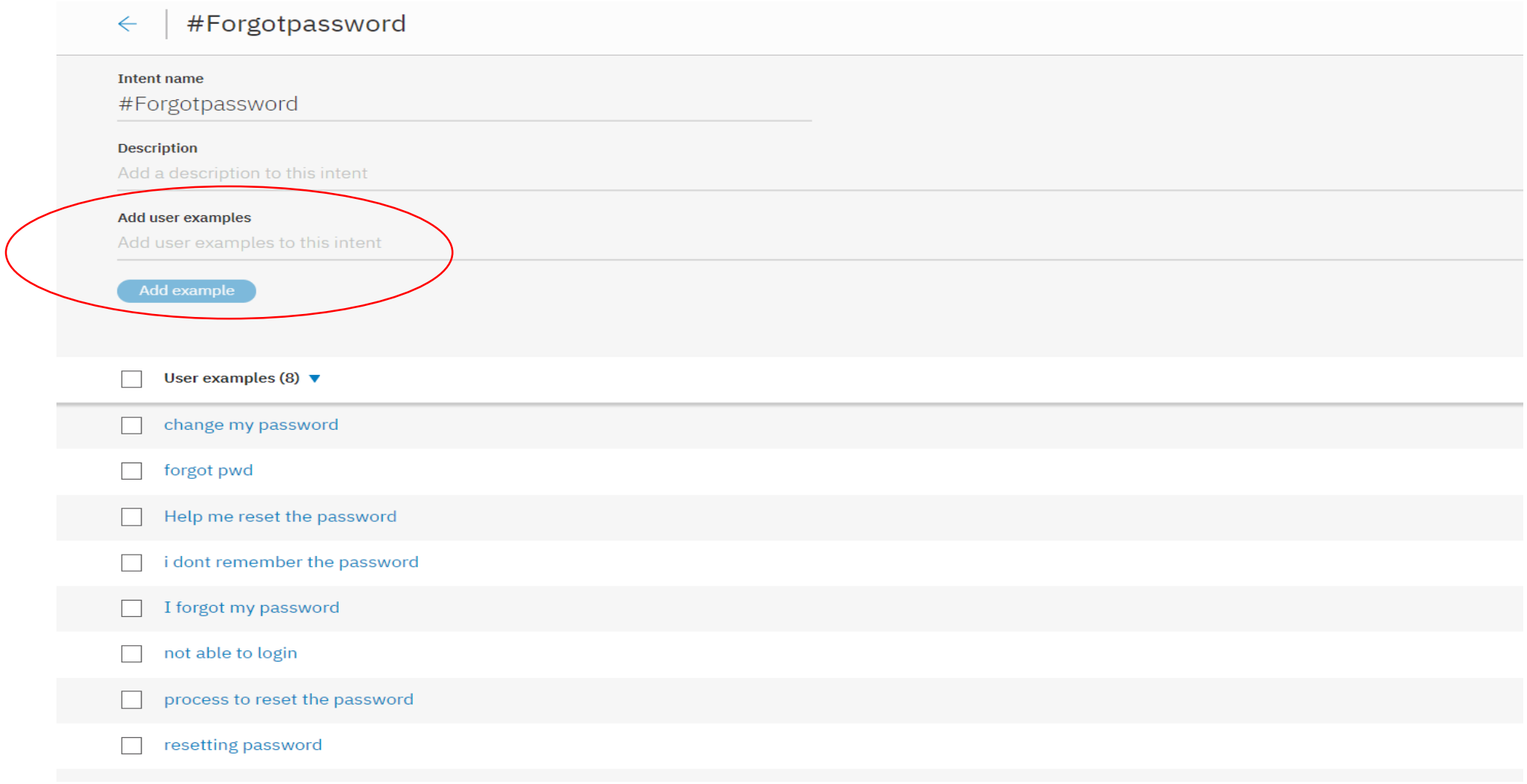


Click on Add Intent

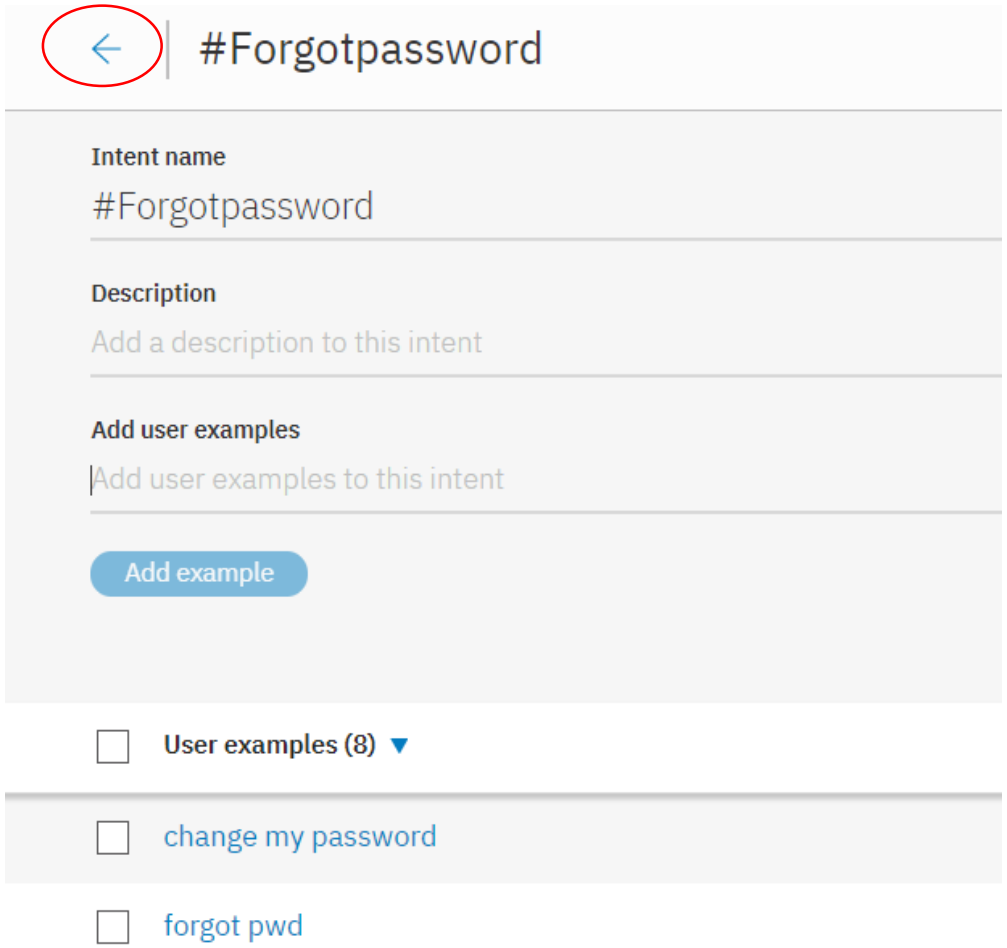
Provide Intent name as Forgotpassword and click on Create intent.



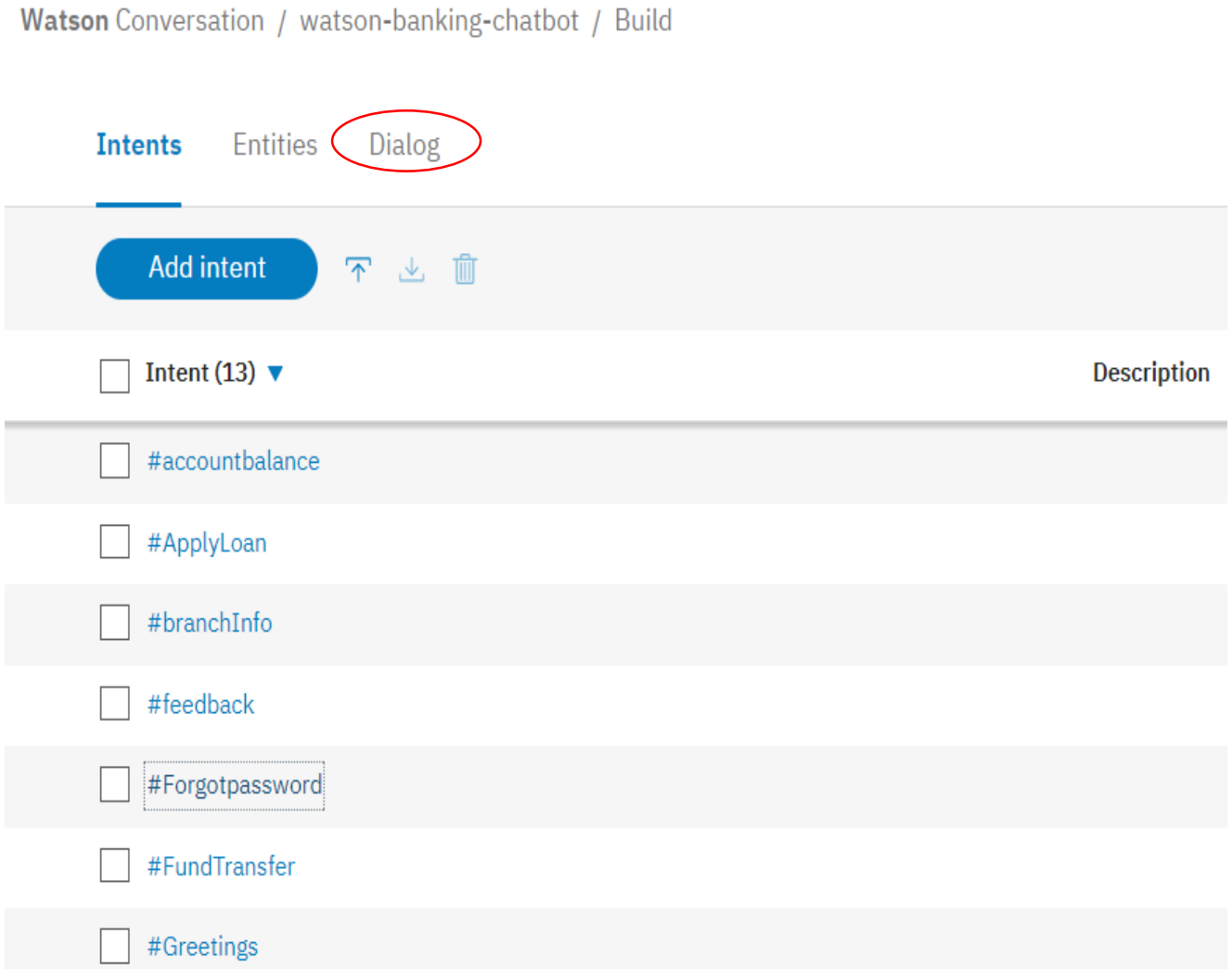
Click on Forgotpassword from the list of intents.
Start training the intent by adding few examples as shown below.
Provide 5-10 examples.



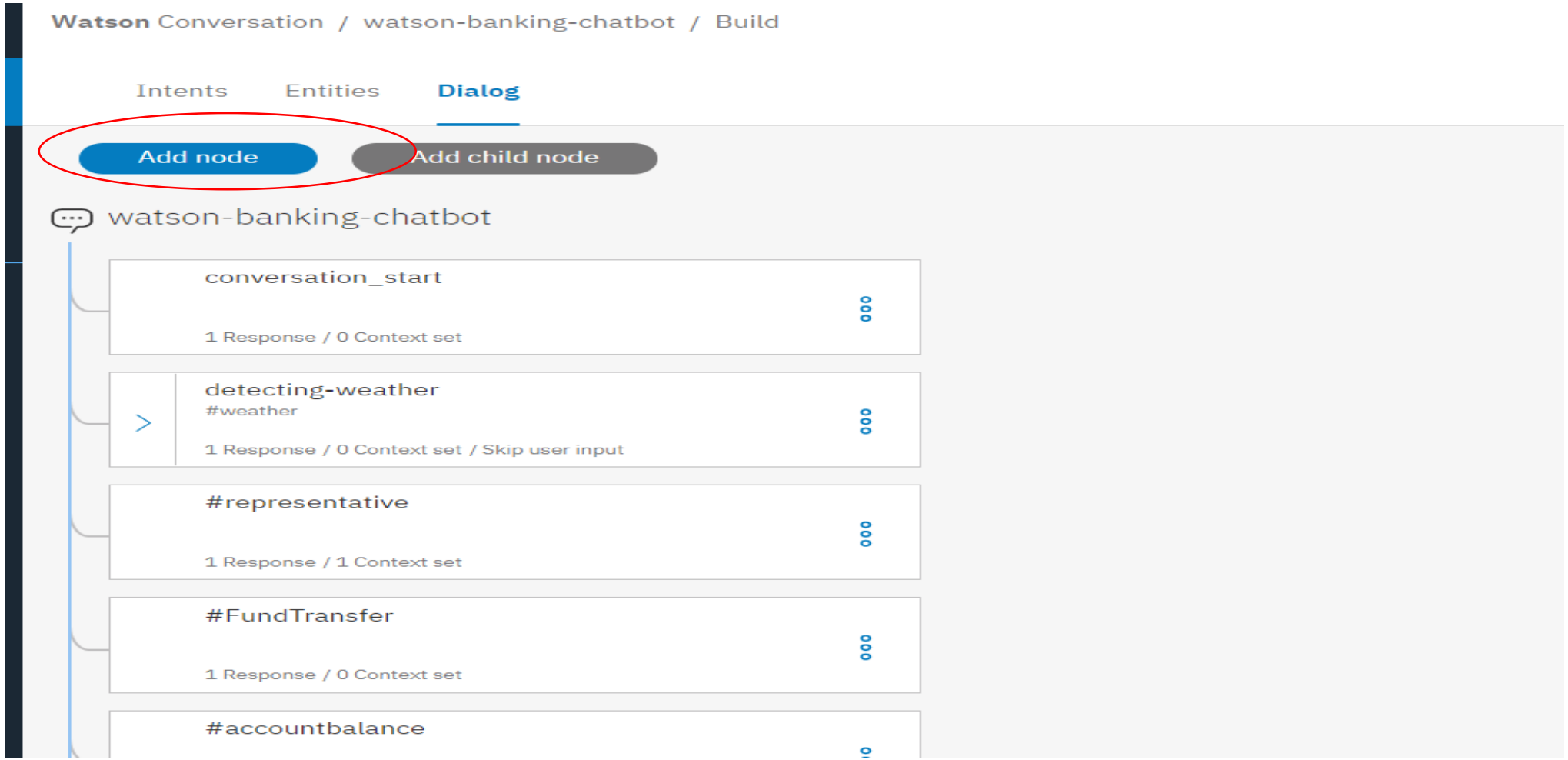
Once you have added enough examples, click on the left arrow button.



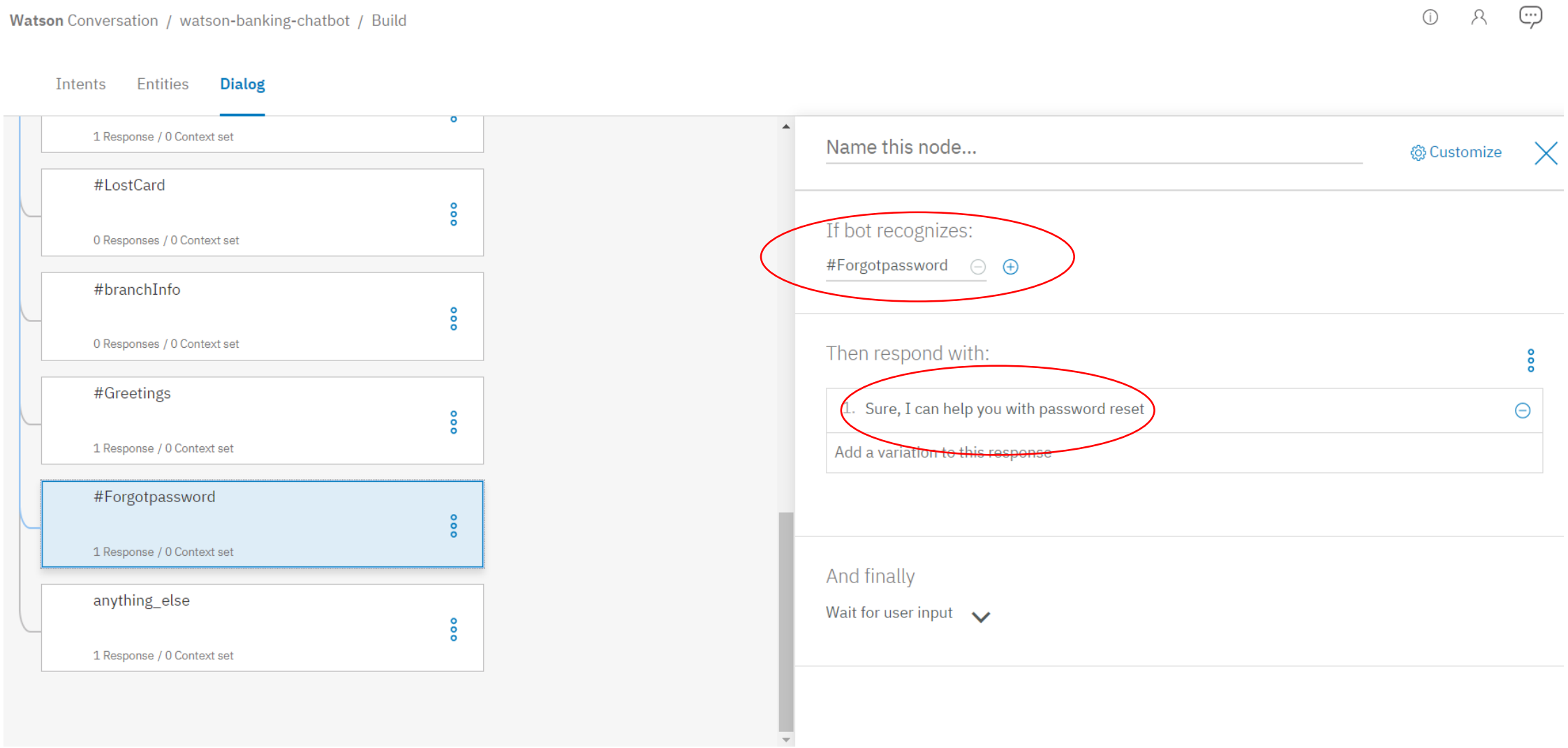
Click on the “Dialog” tab



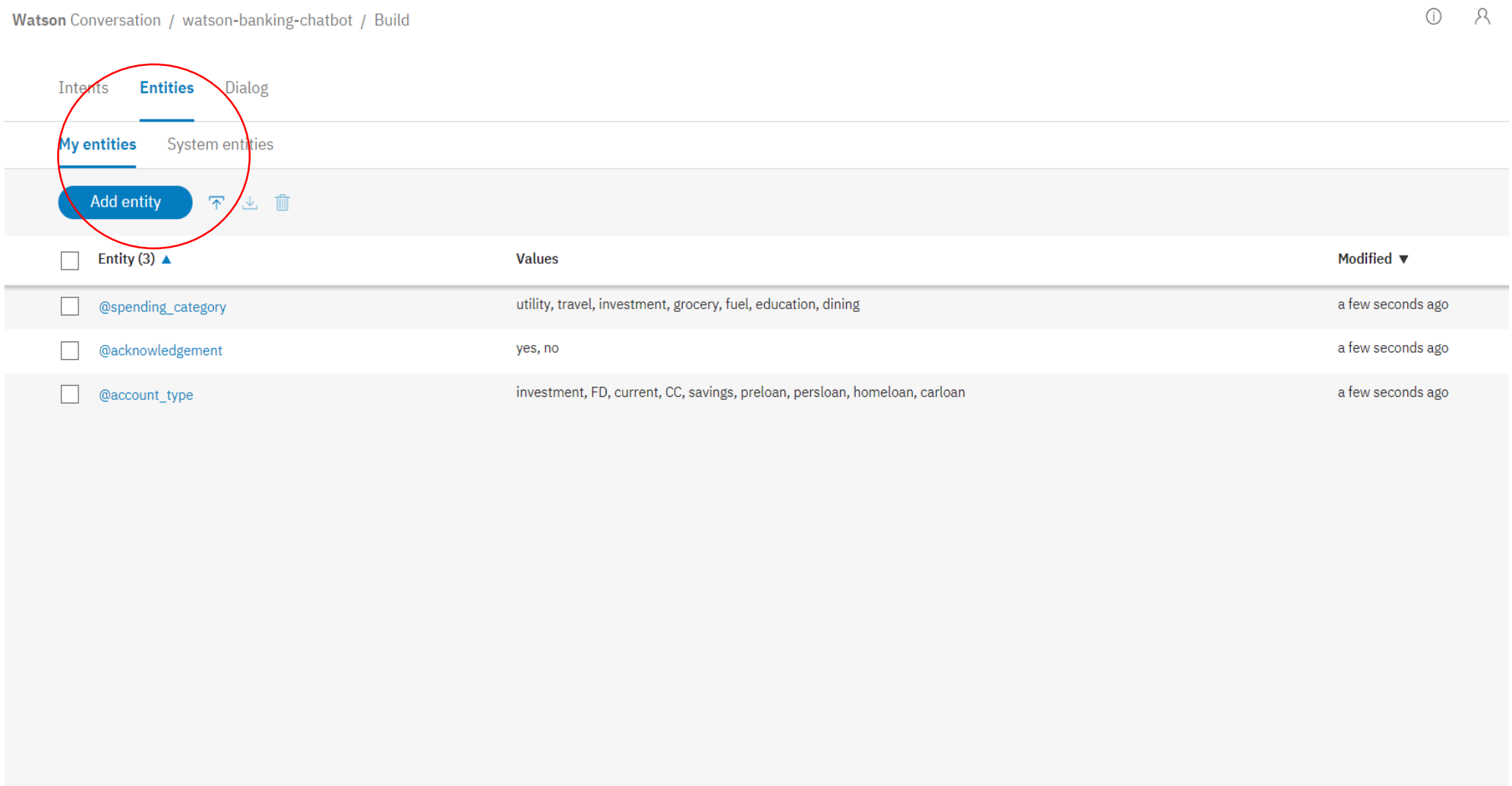
Once in the Dialog tab, click on “Add node”



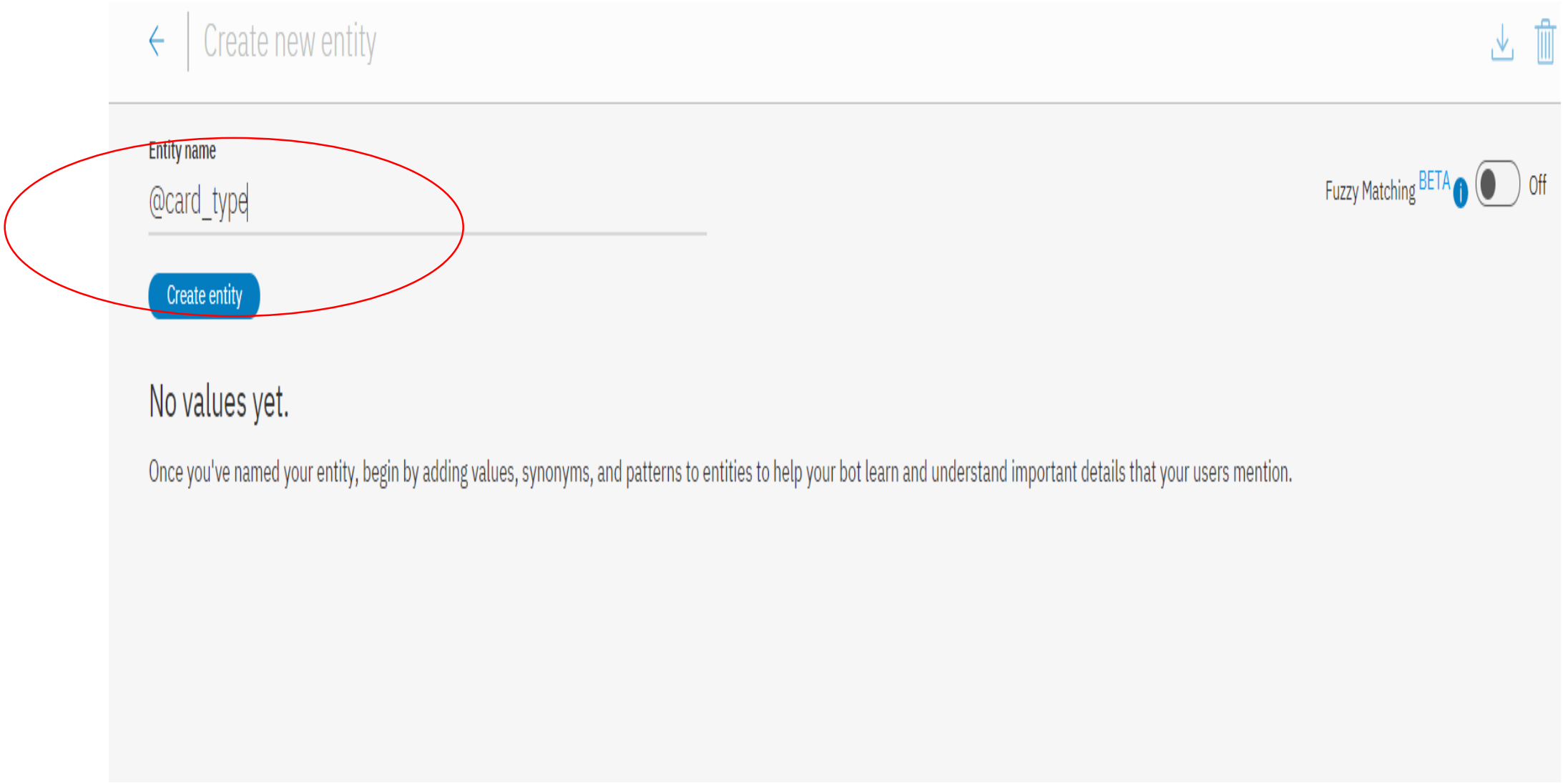
On the new node, type # into the place for “If bot recognizes” and select #Forgotpassword.
Provide a suitable response similar to shown below.



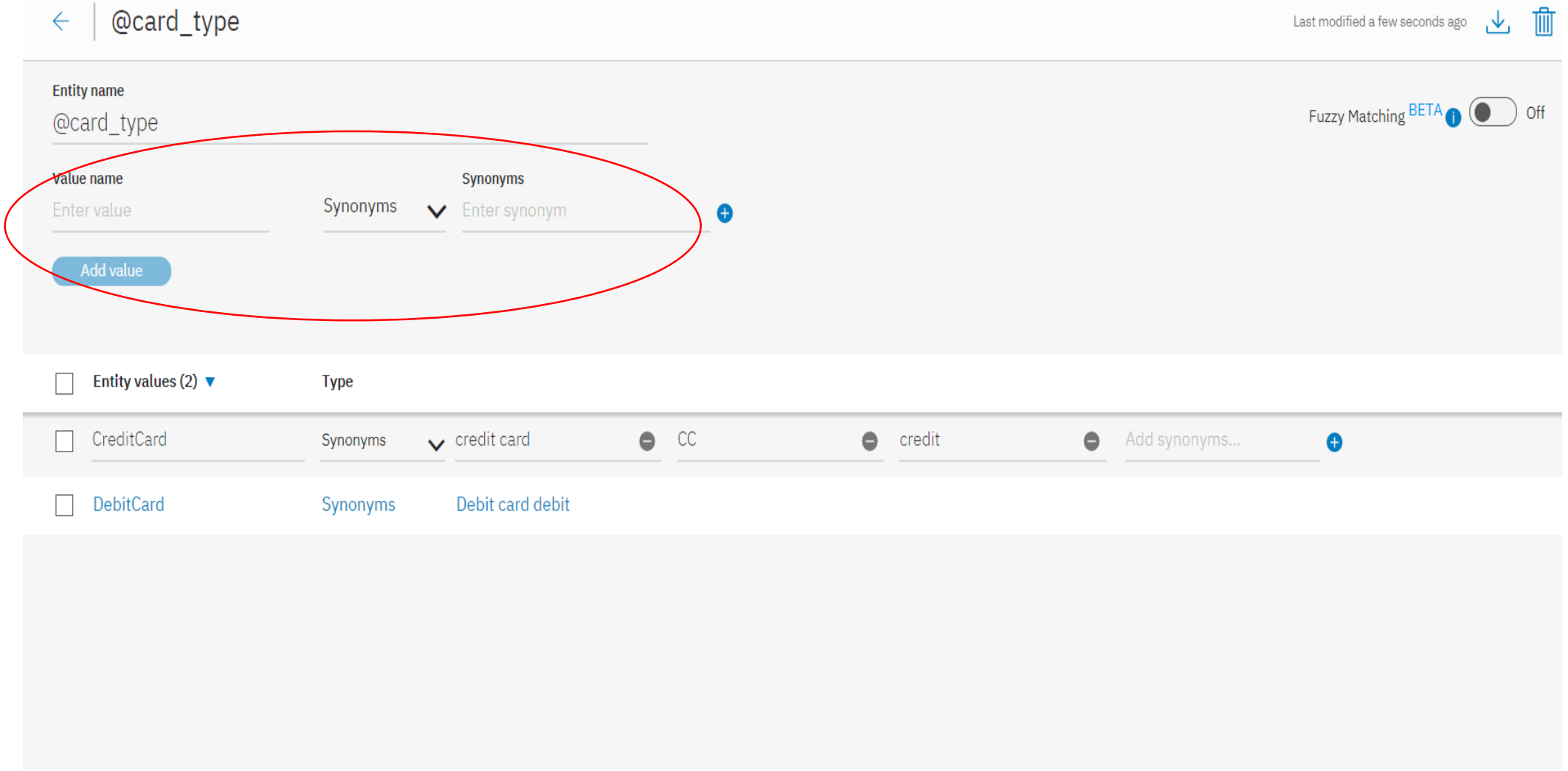
Click on Entities tab -> my entities -> Add entity



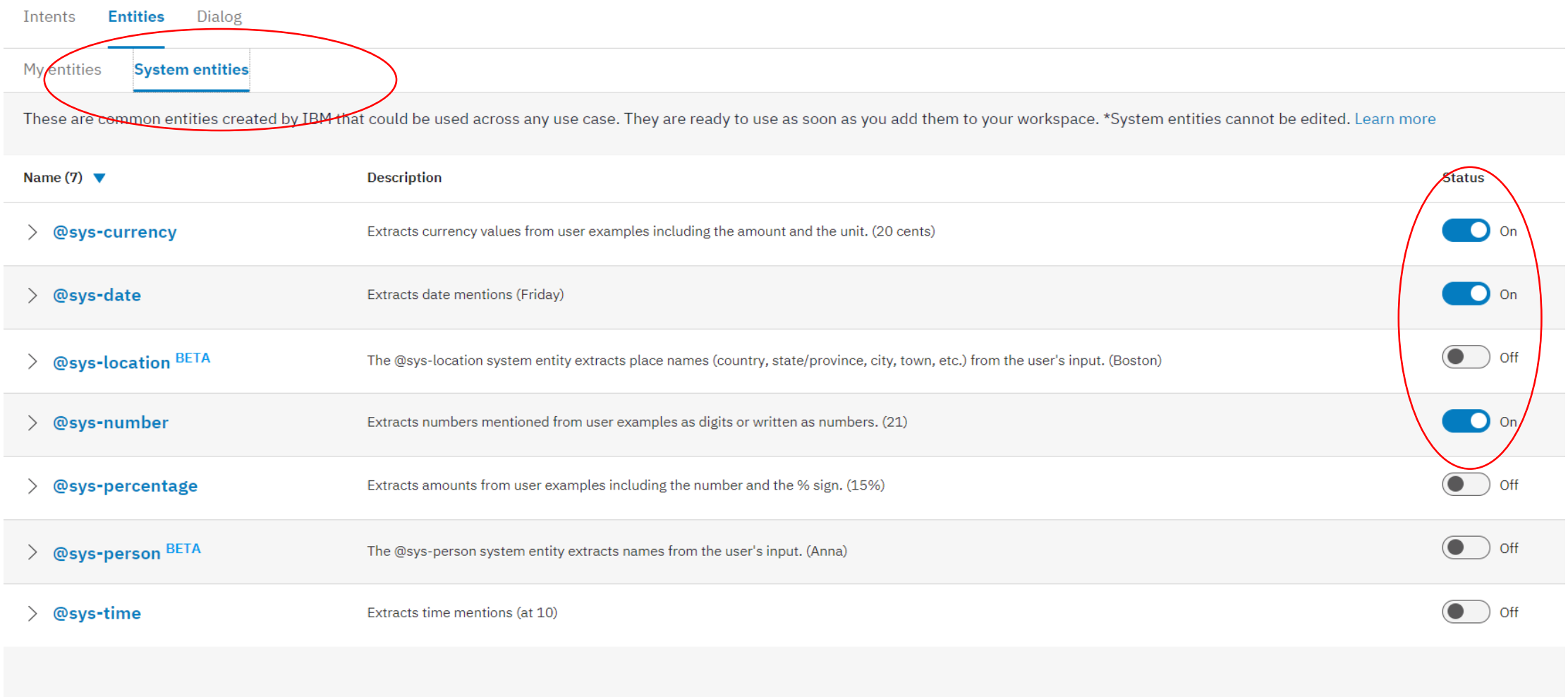
Provide a name as @card_type and click on Create entity.



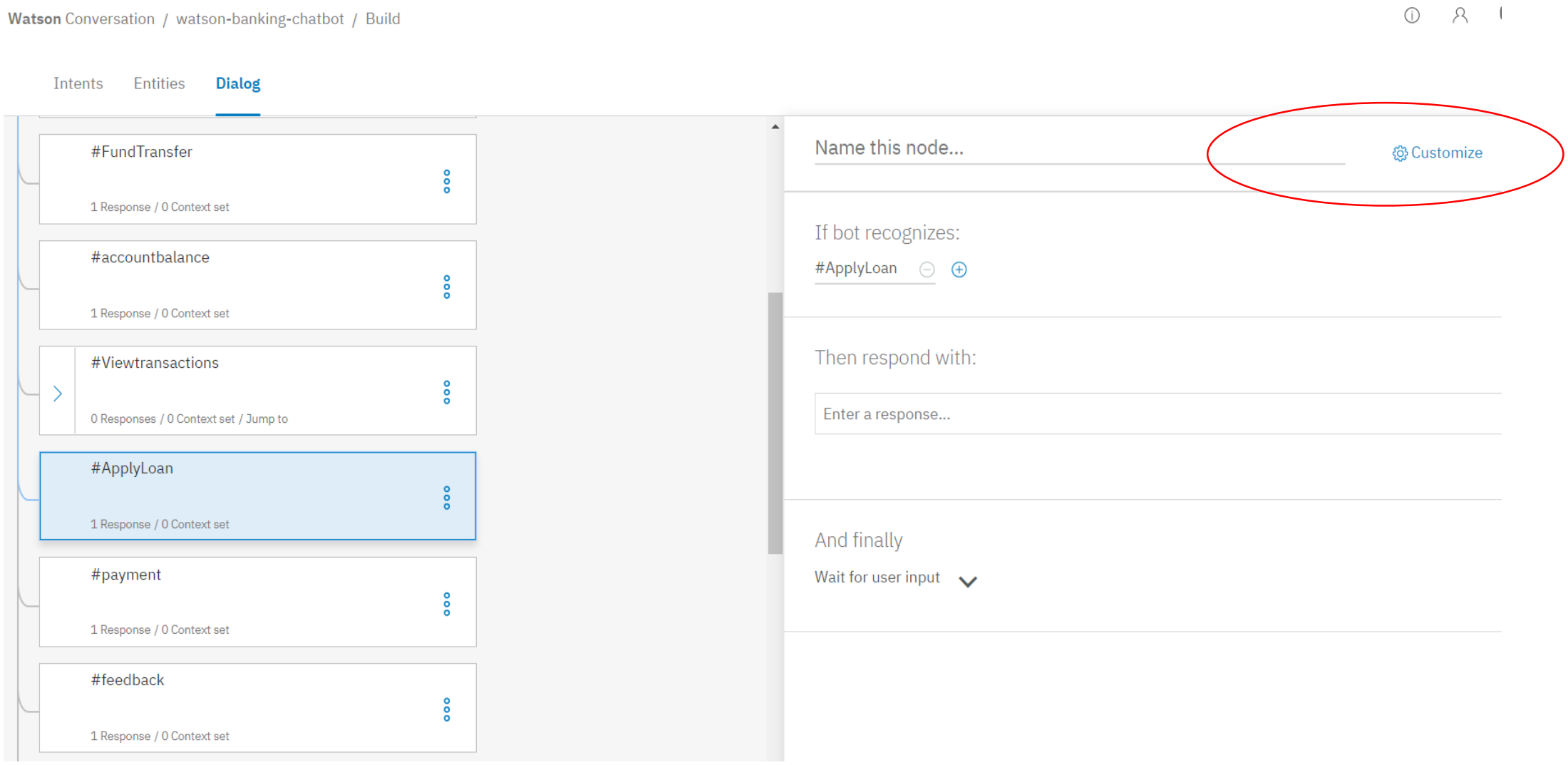
Start adding values to the entity as CreditCard and provide few synonyms as shown.
Add value of Debit card and provide few synonyms.



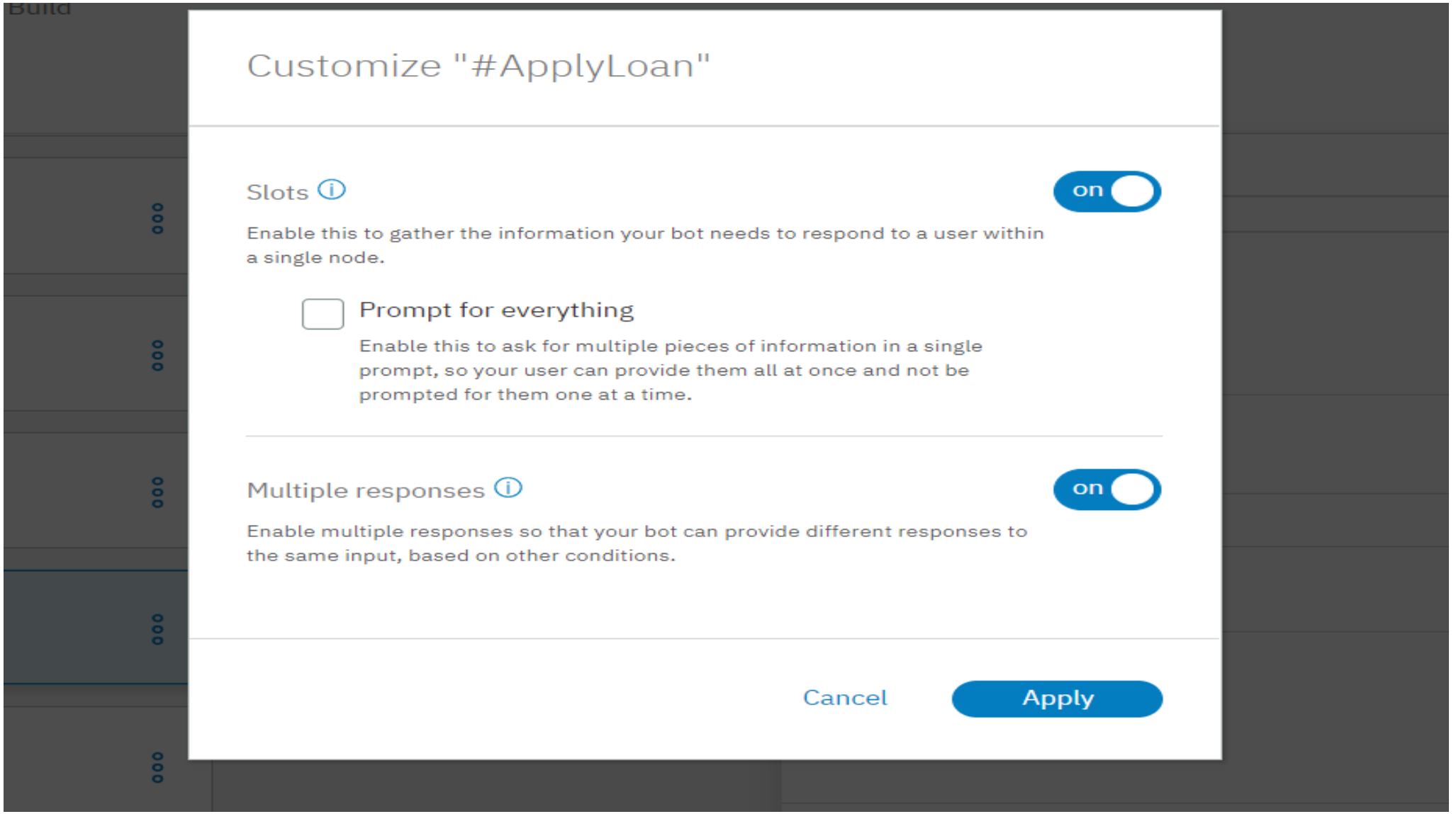
Click on System entities tab, here you will find pre built entities. These can be used in your dialog.
Enable sys currency, sys-date and sys-number entities.



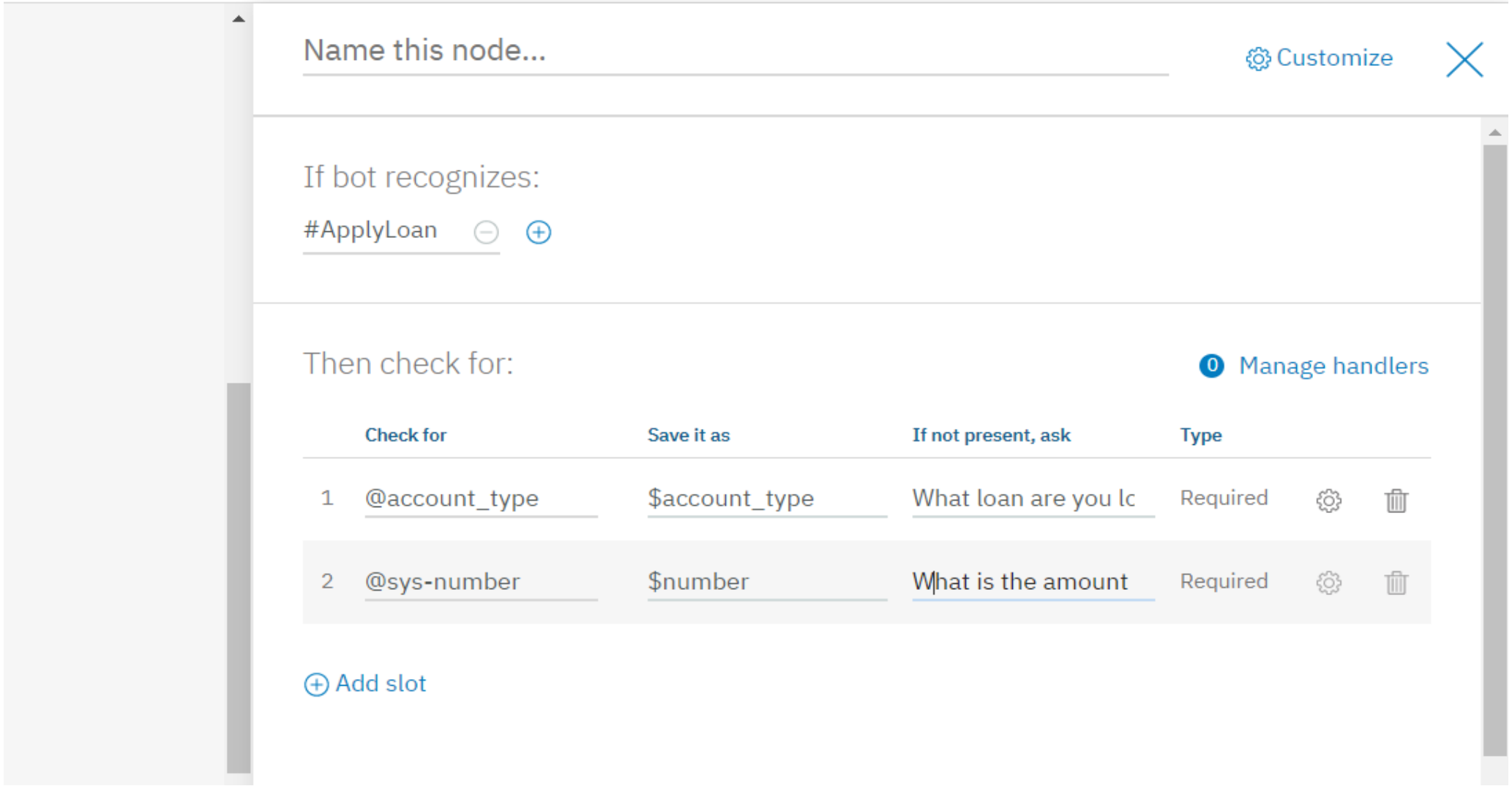
We will now look into creating slots.
Click on Dialog tab, go the node with #Applyloan.
Click on Customize button highlighted below.



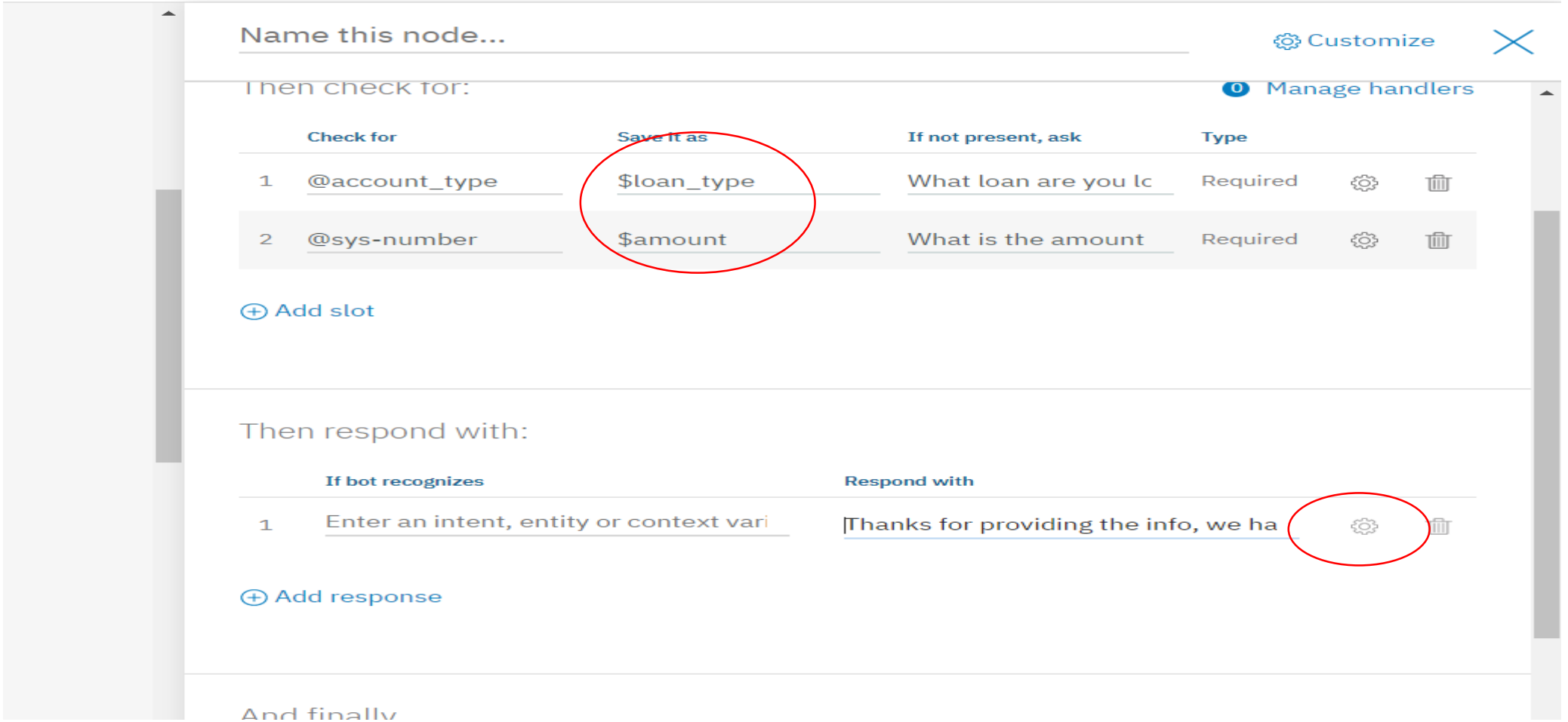
Enable slots and multiple responses as shown below and click on Apply button



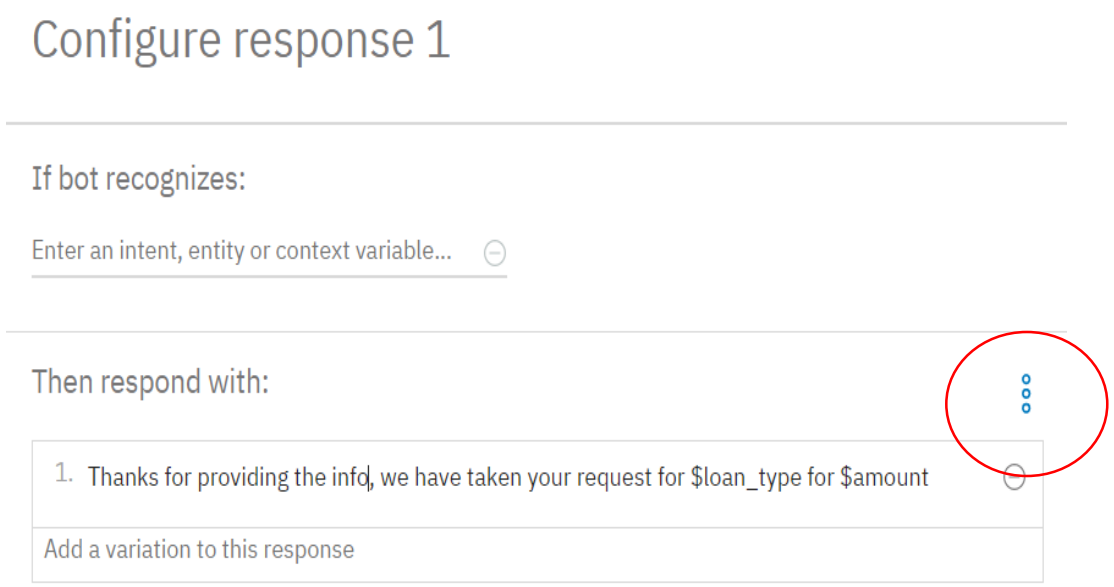
Enter the values as shown below.
Here we are checking for @account_type and @sys-number entities.



Change the field “Save it as” to $loan_type and $amount as shown below.
Enter a response in the field “Respond with”. Click on the settings button next to the response.

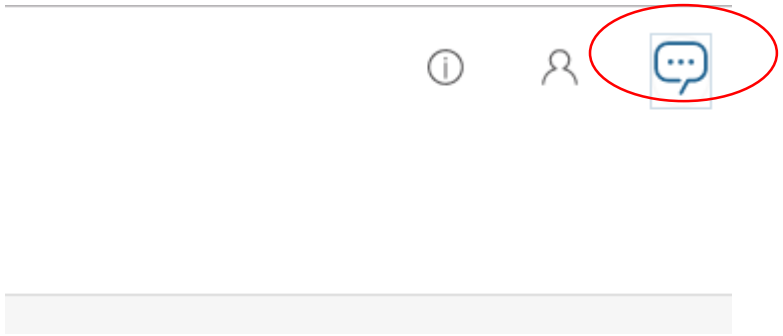


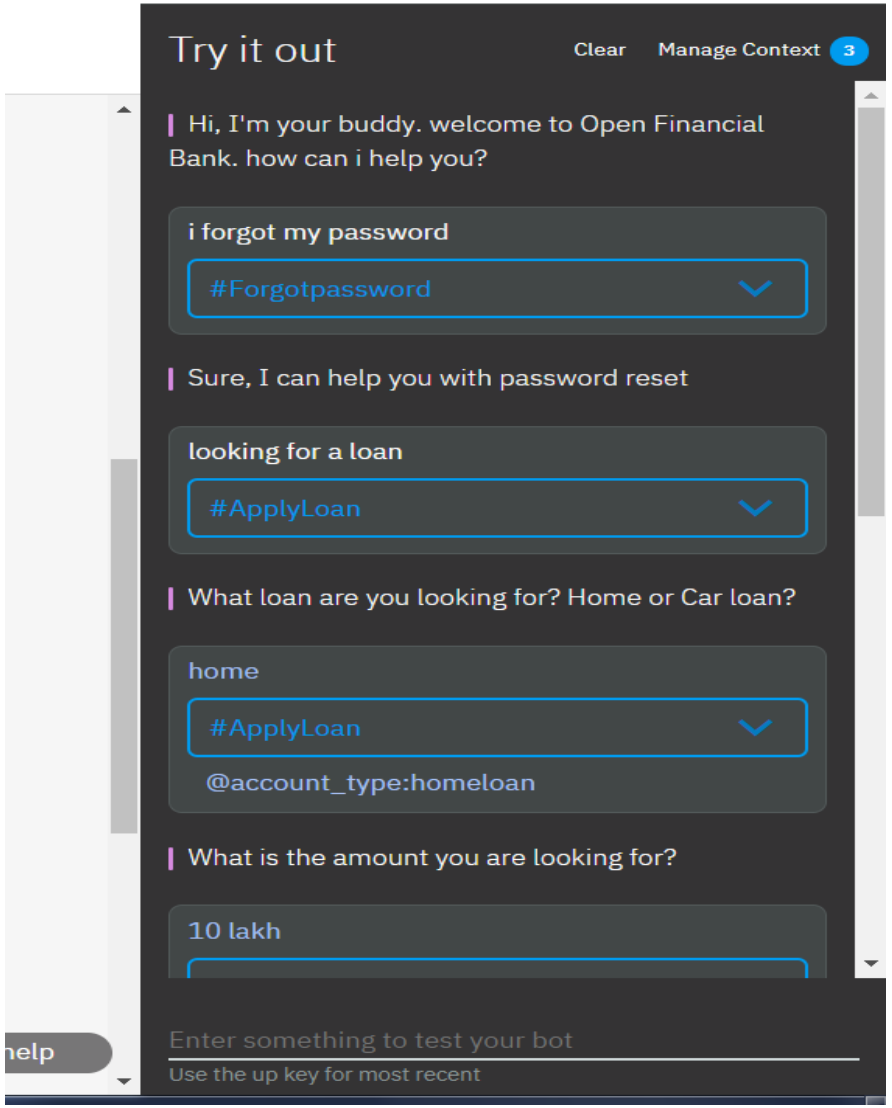
The configure response window opens up. Click on three dots to open the JSON editor.



Modify the JSON response as below

You can now try out the bot response by clicking on Try out

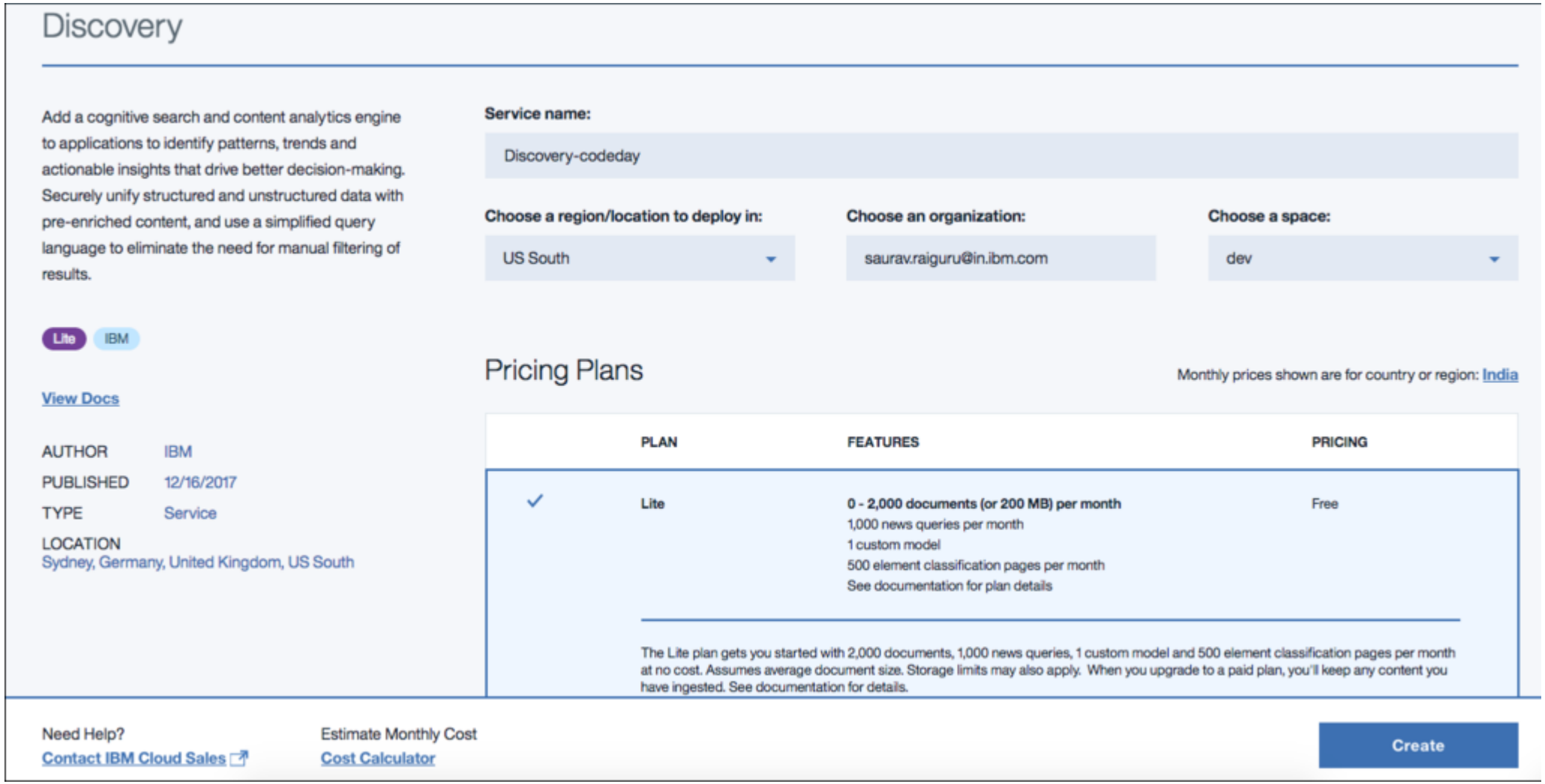




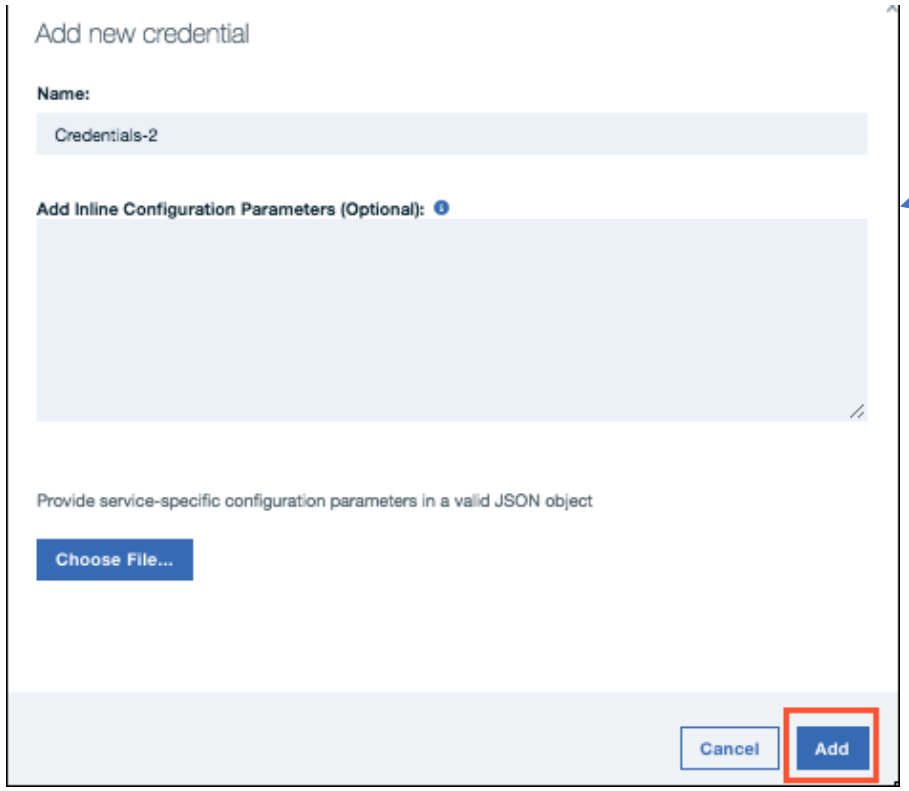
Part 2

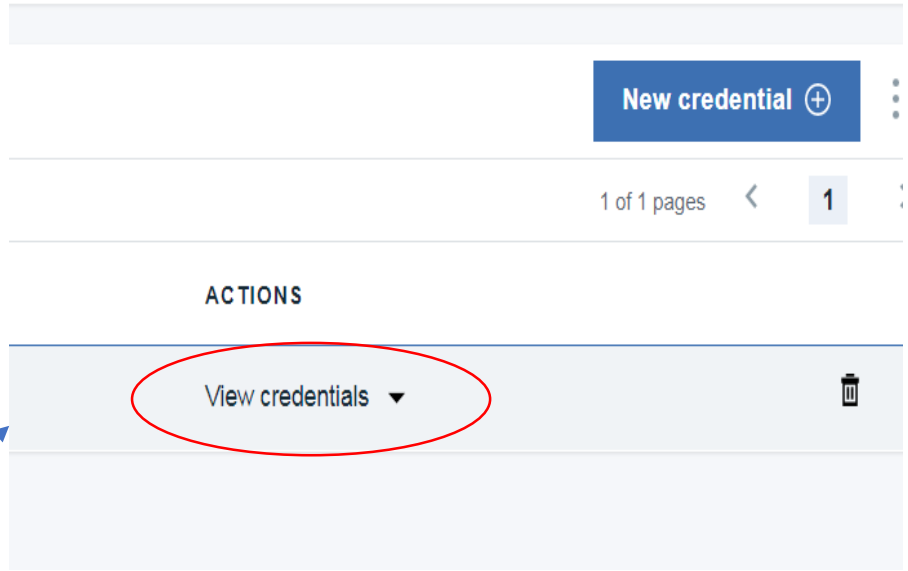
Configuring Watson Discovery and Cloud Functions

Lets create our **discovery** service to get started with this part of the lab.
- Ensure that your space is in the 'US-South' region, and go to Catalog -> Watson
- Search for 'Watson Discovery' service, give it the name you like and create a '**Lite**' plan.



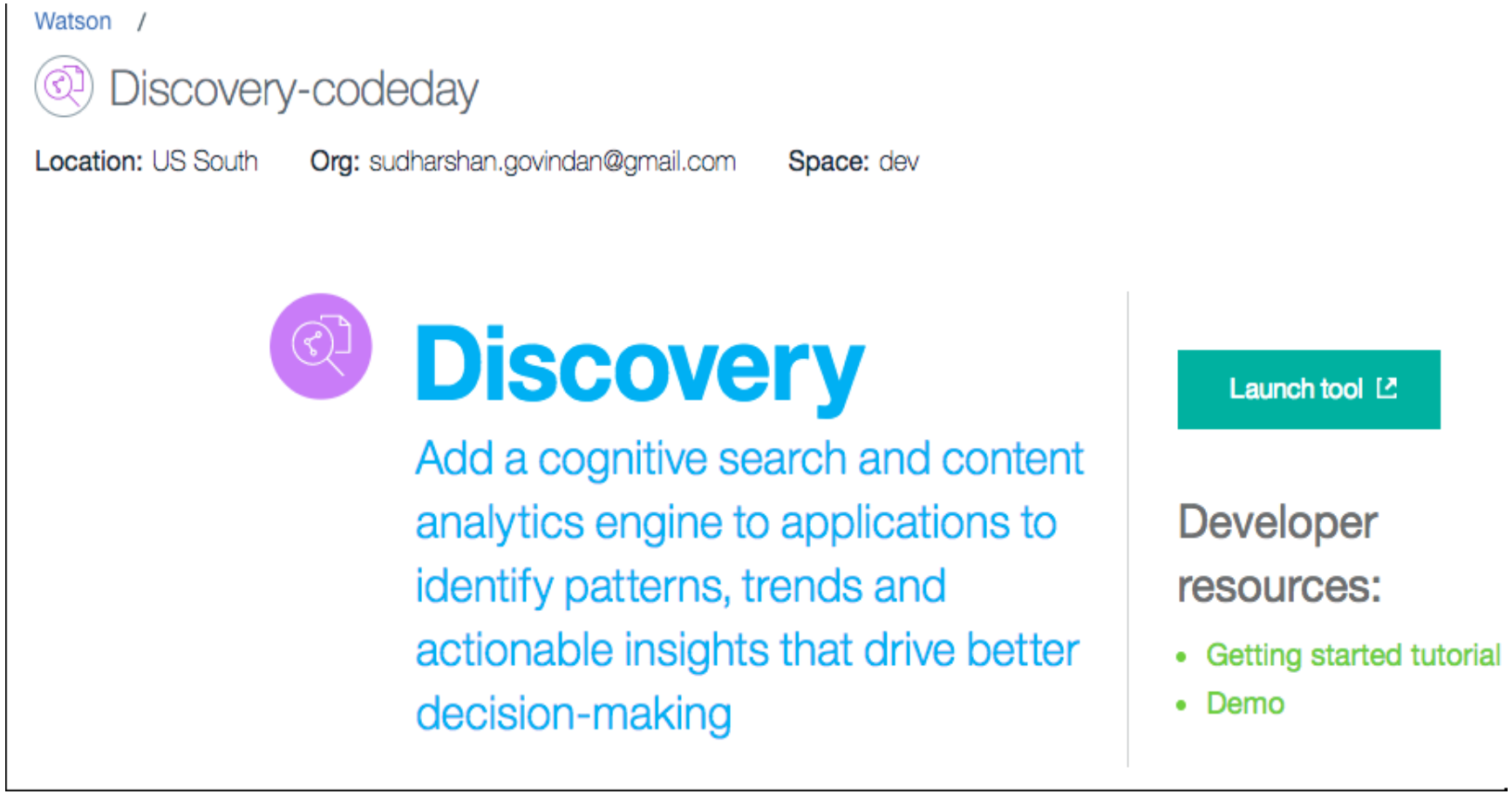
- Click on '**service credentials**' on the left menu and click on '**New Credentials' -> 'Add'**



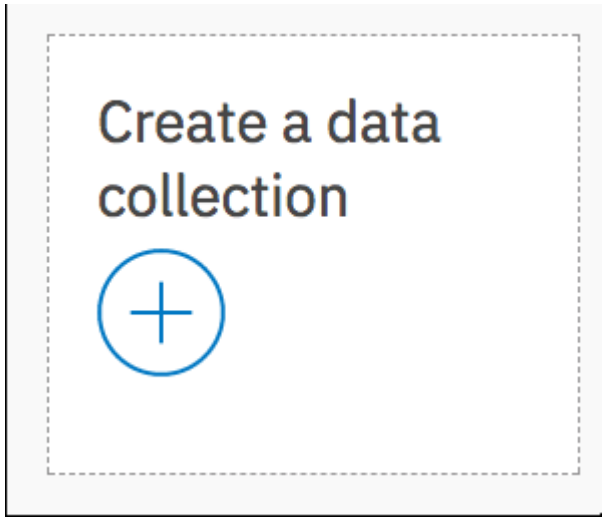


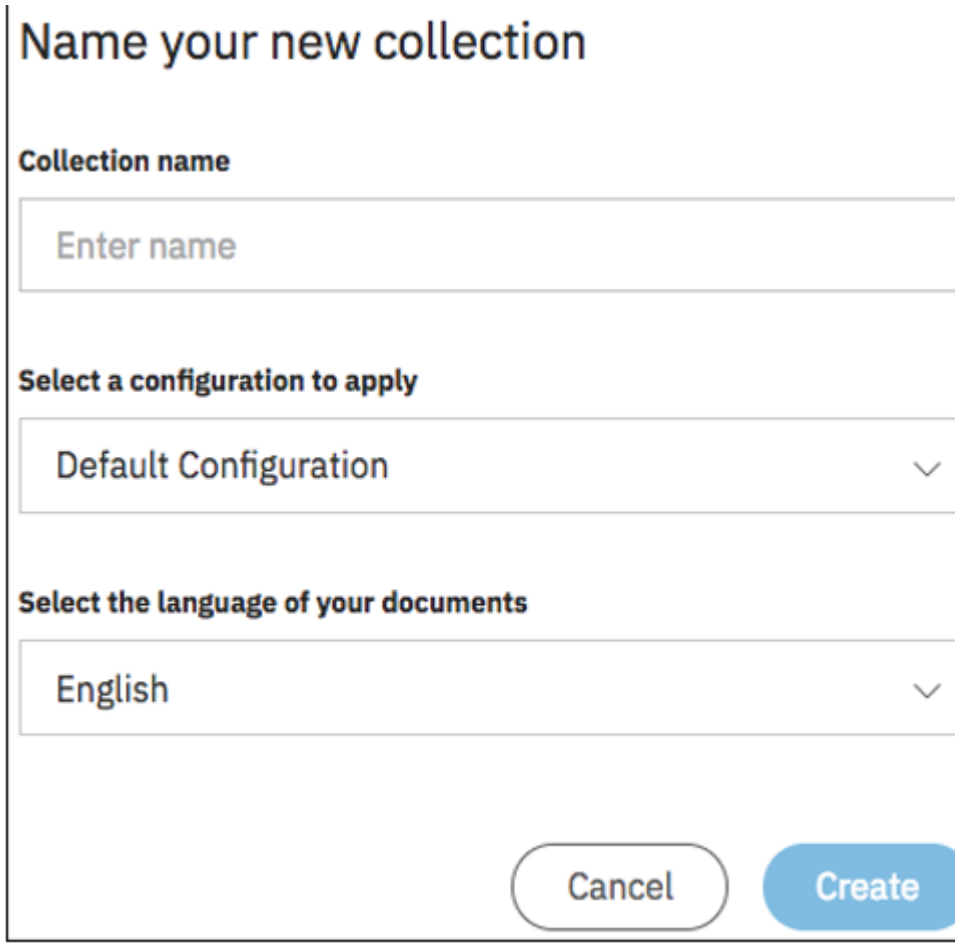
Once added the credentials, click on **View Credentials**
Note: Make a note of the Discovery **Username** and **Password** to be used later.

- Once we have created the service, click on **Manage** (left menu) and '**launch**' the tooling, wherein we can add our documents required for cognitive searching.

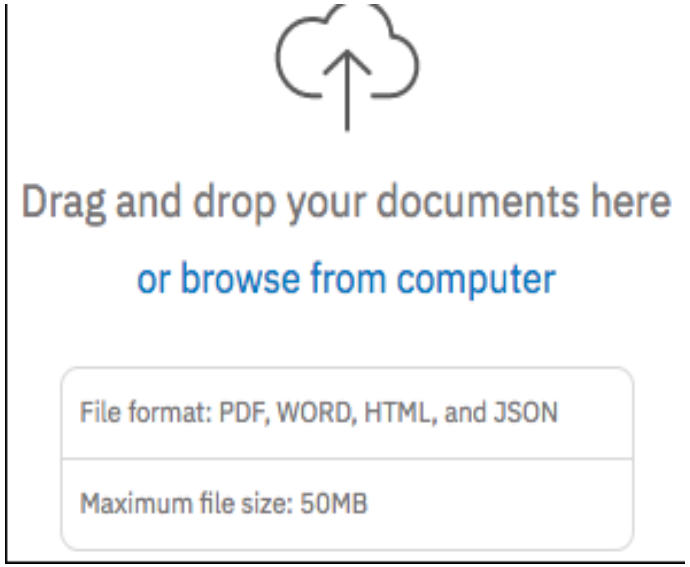


Lets create our own discovery '***Collection***', which will contain information related to banking domain.
Click on 'create a data collection -> Collection Name -> Create



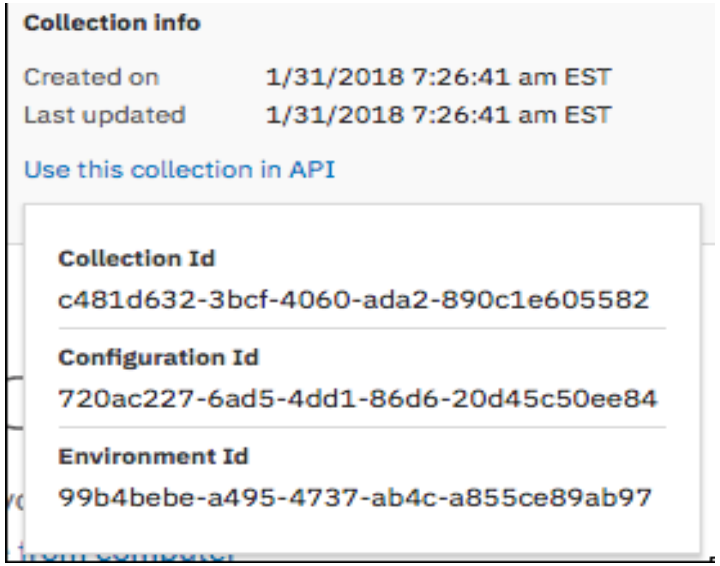


- Use the downloaded documents (**https://github.com/IBMDevConnect/IBMCodeDay-2018/tree/master/AIBankingWorkshop/discovery-docs)** as a sample content to ***upload*** documents into your collection.



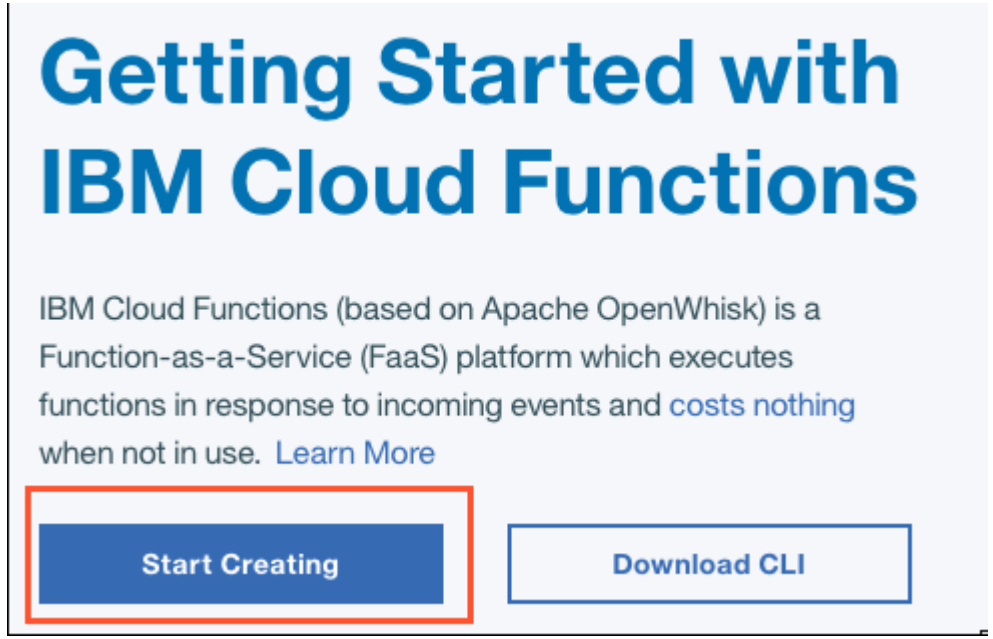
Note: You will see default analysis of your contents such as sentiment, entity-relationships, context extraction etc.

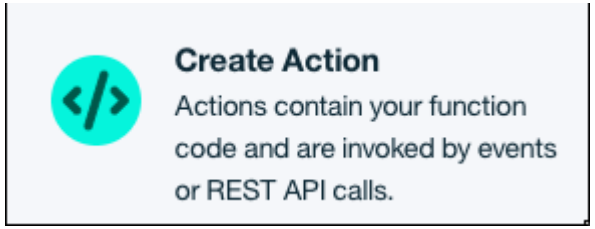
- Click on 'Use this collection in API' to gather the credentials, and make a note of the variables ***Collection Id*** & ***Environment Id***



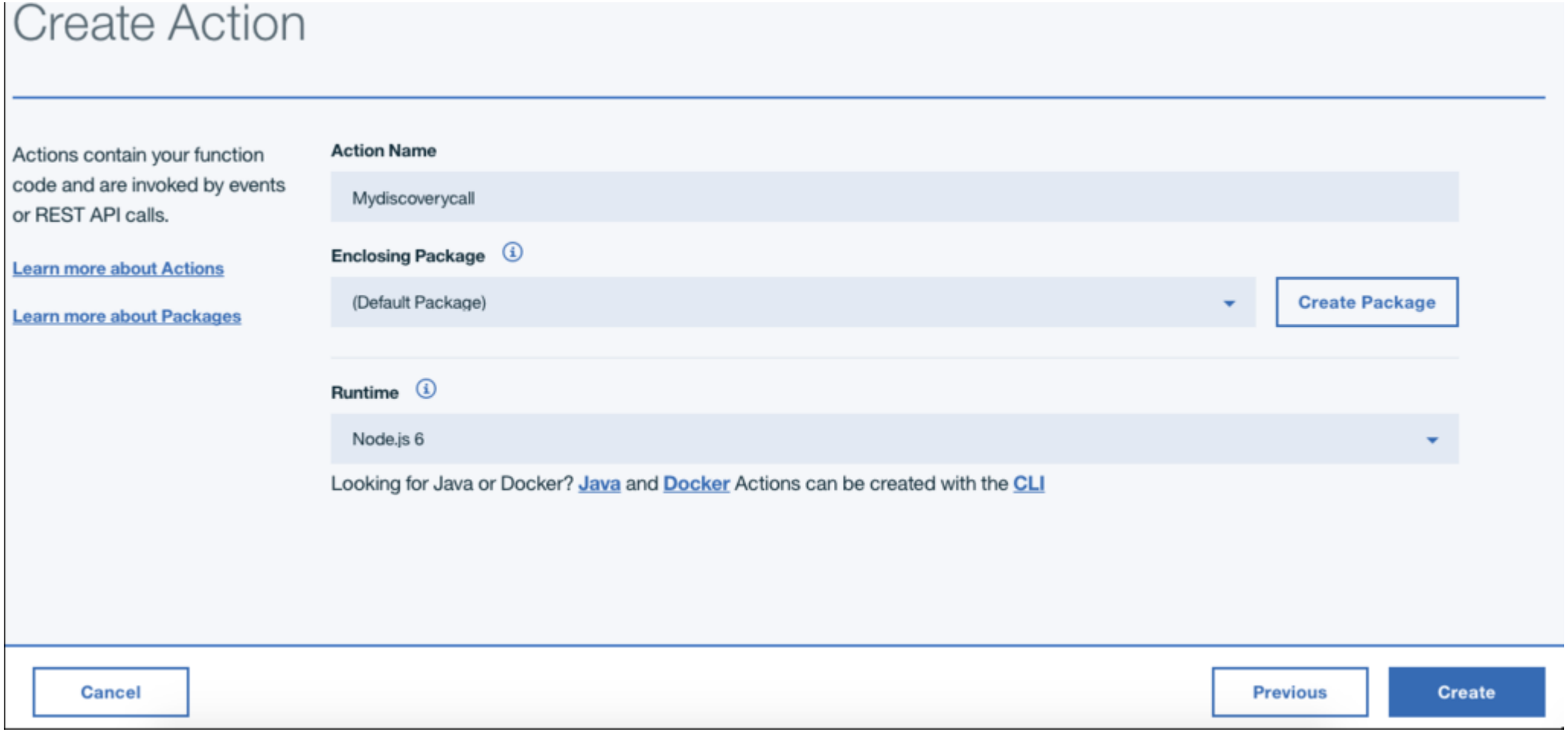
2. We will now create our IBM Function ***action*** which will implement the discovery REST APIs to query our sample collection.

- Go to IBM Cloud -> Catalog -> Functions





lets give our action name as - ***mydiscoverycall***
enclosing package as - default
Runtime - NodeJS 6.0 distribution -> Create



Now lets replace our hello world () nodejs code with the code logic that can query the discovery service and return us the values.

Copy the below code from the **FunctionsActionScript.txt** file downloaded earlier (available at **https://github.com/IBMDevConnect/IBMCodeDay-2018/tree/master/AIBankingWorkshop/)**

```
function main(params) {
const DiscoveryV1 = require('watson-developer-cloud/discovery/v1');
  return new Promise(function (resolve, reject) {

var discovery = new DiscoveryV1({
       username: params.username,
       password: params.password,
       version_date: '2017-11-07'
     });

     discovery.query({environment_id: params.environment_id,
       collection_id: params.collection_id,
       query: params.input
     }, function(err, data) {
       if (err) {
         return reject(err);
       }
      return resolve(data);
     });

  });
}
```

- By clicking on **Endpoints, w**e need to make a note of some REST API credentials such as ***URL*** (also is the action name). Please note the highlighted part which will be used as Action name later (replace the %40 with @)

- Click on ***API-KEY*** and copy the credentials from IBM Function into the following format. The segment before the colon (:) is your user ID. The segment after the colon is your password. {"user":"<left part of colon>","password":"<right part of colon>"}

We are in our final step to call our Action from the conversation workspace being used previously.

- Lets go back to **Dialog** and search and click on a node called '**Others**'
- Open the JSON editor and paste the below code which is available in the file **WCSNodeScript.txt** downloaded earlier (available at **https://github.com/IBMDevConnect/IBMCodeDay-2018/tree/master/AIBankingWorkshop/)**
- The value for the "name" parameter under "actions" is the one which you saved in previous step
- The username, password, collection_id and environment_id are as per saved in earlier step.

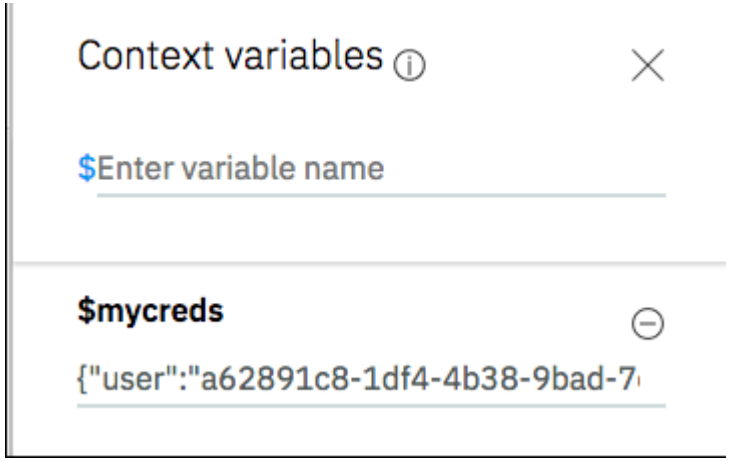
```
{
  "output": {
    "text": {
      "values": [
        "$data"
      ],
      "selection_policy": "sequential"
    }
  },
  "actions": [
    {
      "name": "<yourIBMCloudId>_dev/actions/mydiscoveryCall",
      "type": "server",
      "parameters": {
        "url": "https://gateway.watsonplatform.net",
        "input": "<? input.text ?>",
        "password": "<Discovery password saved earlier>",
        "username": "<Discovery username saved earlier>",
        "collection_id": "<replace-collectionid>",
        "environment_id": "<replace-environmentid>"
      },
      "credentials": "$mycreds",
      "result_variable": "$data"
    }
  ]
}
```

- Now, we need to set the context of WCS workspace.

From the ***Try it out*** pane, click ***Manage context***, and then (temporarily) set the context variables to your Cloud Functions username and password saved earlier.

Create context variable name – mycreds
Copy the credentials you saved earlier using API key into the value field.

{"user":"<left part of colon>","password":"<right part of colon>"}



Try out your first serverless programmatic call to fetch data from Discovery service (cognitive search) from Try out Pane:

Sample questions:

- Can I enter a mobile number other than the one used for downloading the app.
- how to change my aadhaar card address
- My beneficiary's account is not yet credited with the amount I have transferred
- From the list of beneficiaries, I am not able to see the name of beneficiary I have added earlier
- Why I am not able to select loan amount below 25000?