

# **Project Report**

*on*

**Intelligent Customer  
Helpdesk with Smart  
Document Understanding**

*in*

**Artificial Intelligence**

*by*

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# **Intelligent Customer Help Desk with Smart Document Understanding**

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# 1. Introduction

## 1.1 Overview

We will build a chatbot that uses various Watson AI Services (Watson Discovery, Watson Assistant, Watson Cloud Functions and Node-Red) to deliver an effective Web based UI through which we can chat with the assistant.

We will integrate the Watson Discovery service with Watson Assistant using webhooks.

- Project Requirements : Node-RED, IBM Cloud, IBM Watson, Node JS
- Functional Requirements : IBM Cloud
- Technical Requirements : AI, ML, Watson AI, Node JS
- Software Requirements : Watson Assistant, Watson Discovery, Watson Cloud Functions, Node-RED
- Project Deliverables : Intelligent Chatbot with Smart Document Understanding
- Project Team : Xylene Vinitha Dsouza
- Project Duration : 19 Days

## 1.2 Purpose

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. So unless and until customer specifically asks for a customer representative the bot will try to solve all your queries.

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. Then using Watson actions as webhook, Watson Discovery can be integrated with Watson assistant. Finally using Node-Red, Watson assistant can be integrated with a web UI. This UI can then be used to connect with Watson assistant and chat with it.

### **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

## **2. Literature Survey**

### **2.1 Existing Problem**

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.

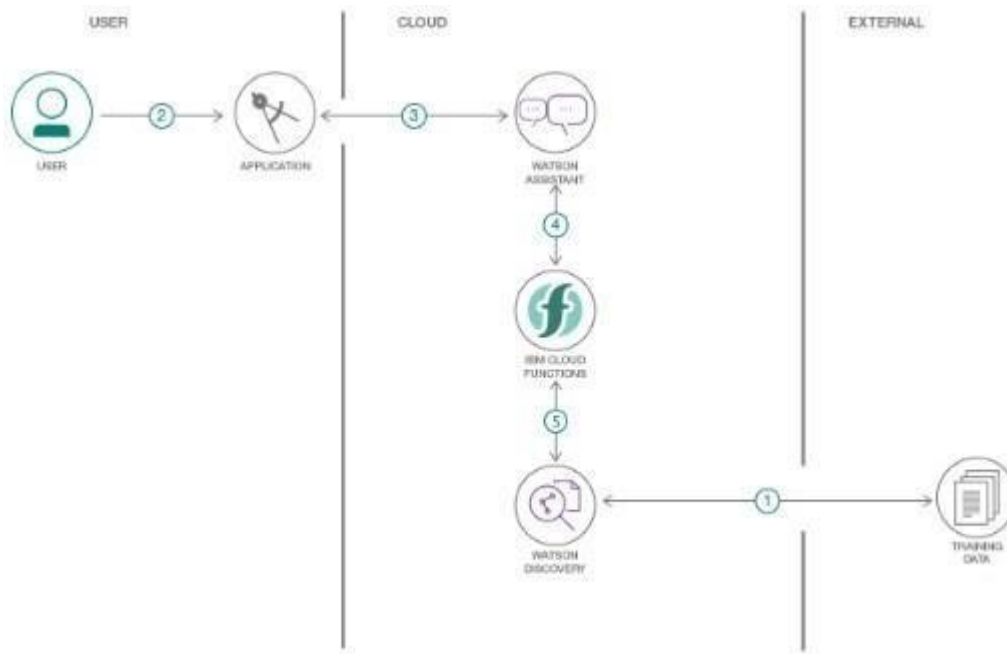
### **2.2 Proposed Solution**

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. So unless and until customer specifically asks for a customer representative the bot will try to solve all your queries.

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. Then using Watson actions as webhook, Watson Discovery can be integrated with Watson assistant. Finally using Node-Red, Watson assistant can be integrated with a web UI. This UI can then be used to connect with Watson assistant and chat with it.

### 3. Theoretical Analysis

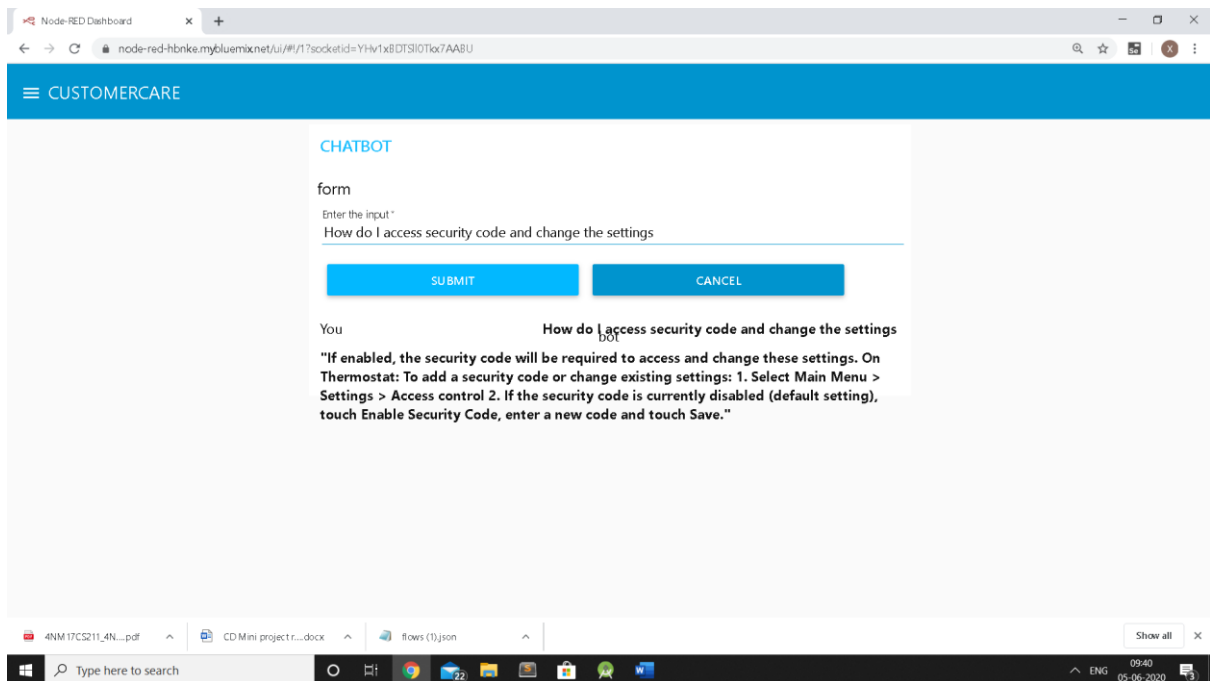
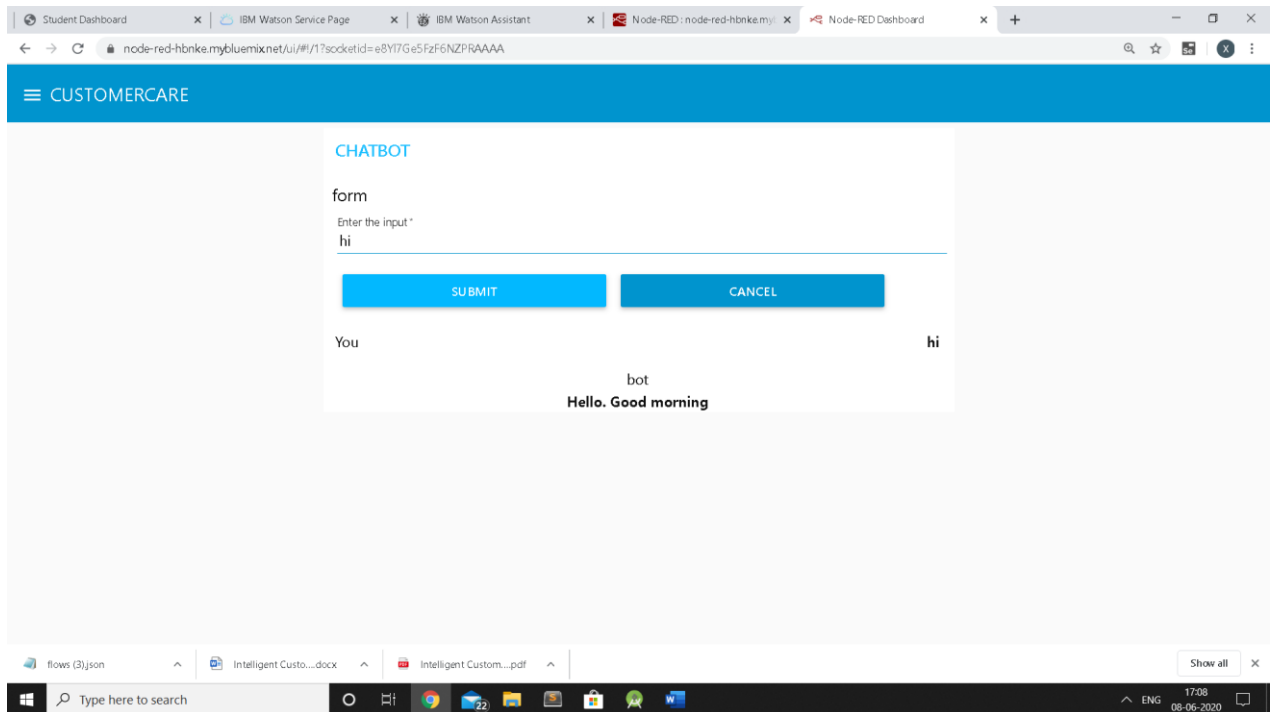
#### 3.1 Block / Flow Diagram



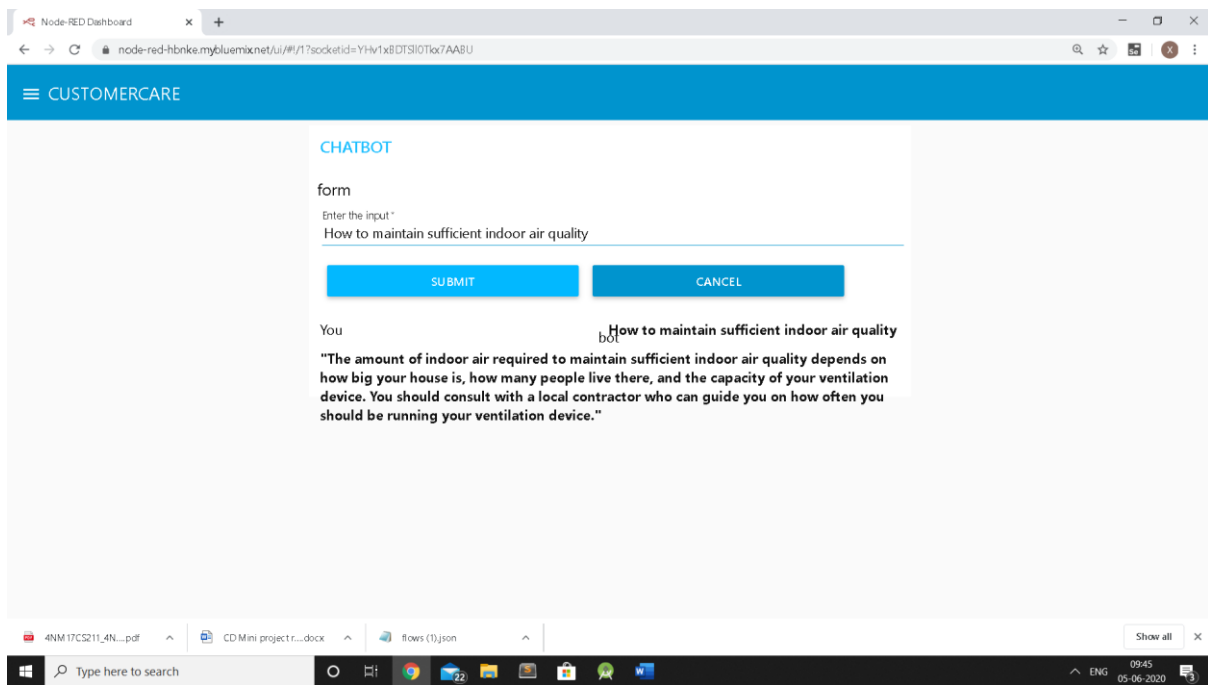
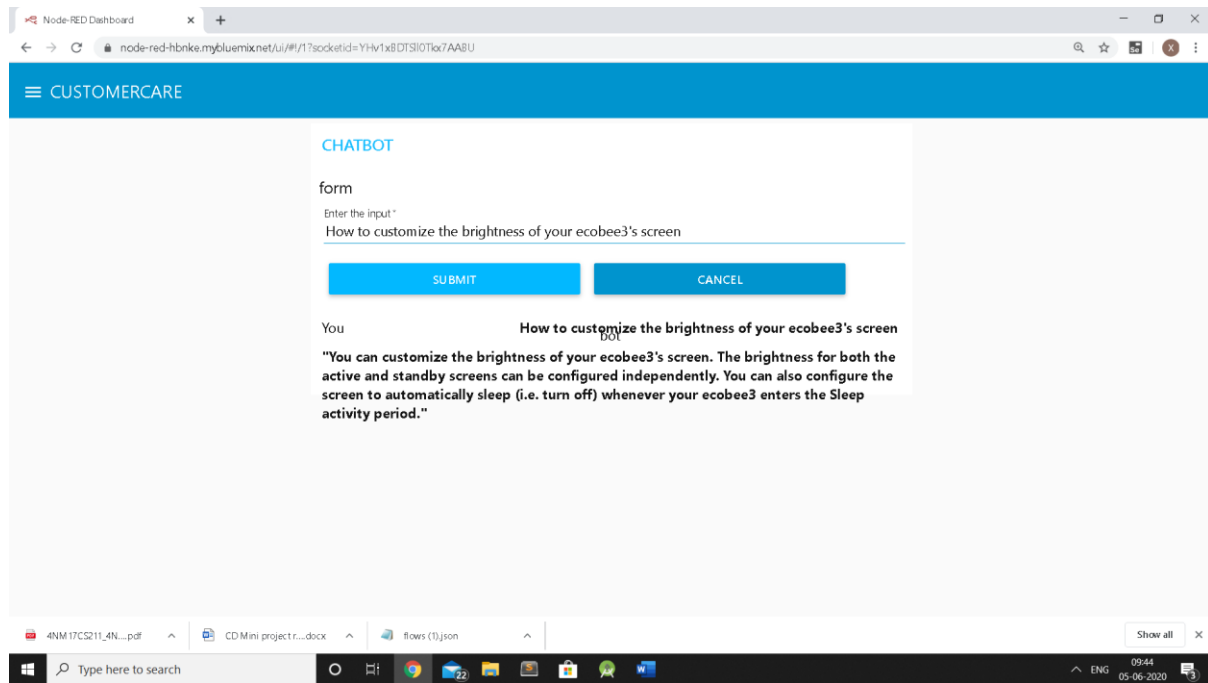
#### 3.2 Hardware /Software Designing

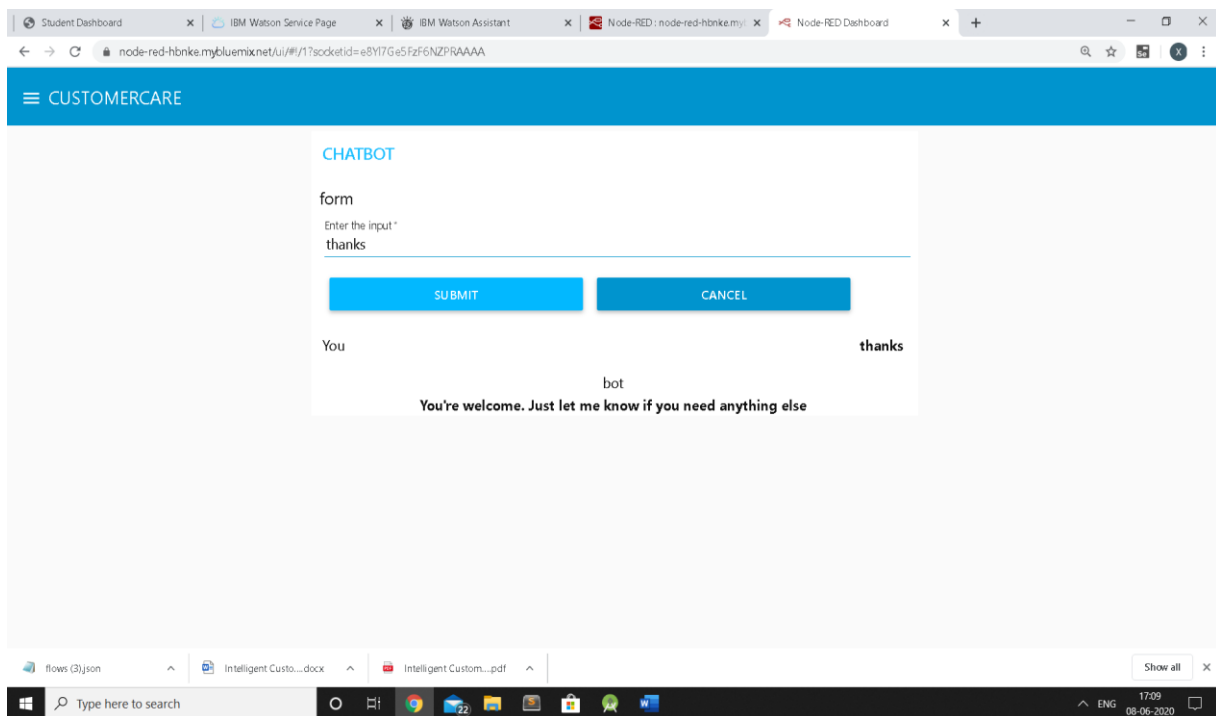
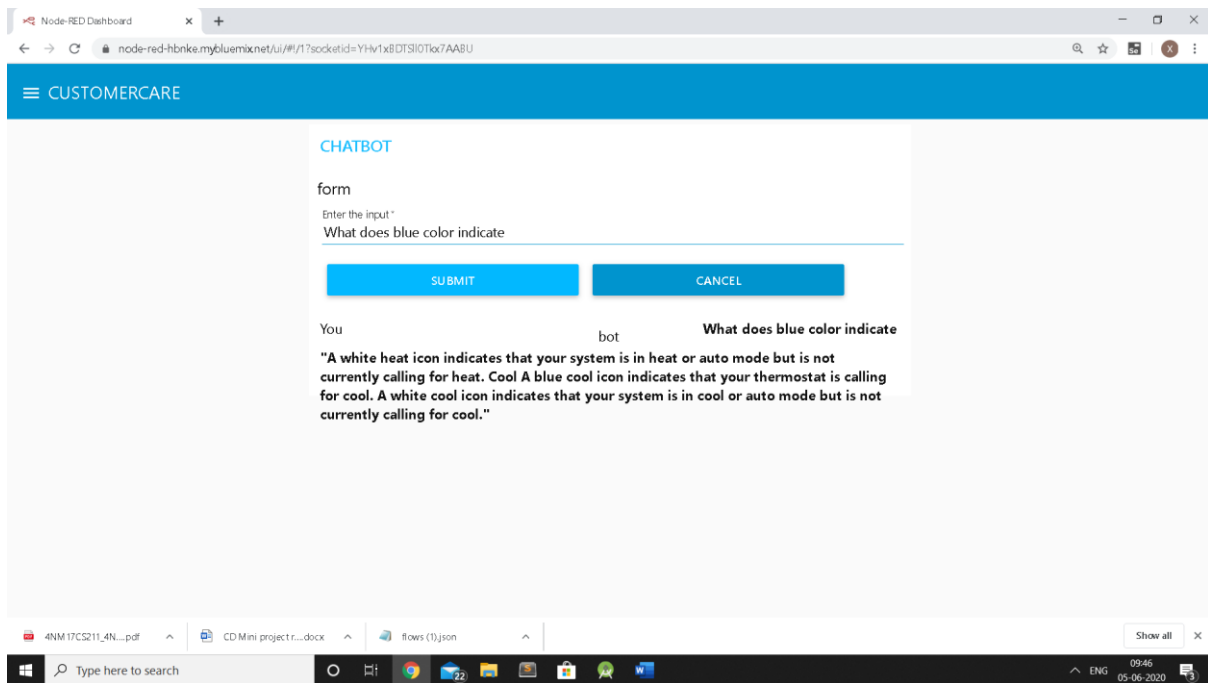
1. Create necessary Watson Services.
2. Configure Watson Discovery.
3. Create Watson Cloud Functions Action.
4. Configure Watson Assistant.
5. Integrate Watson Discovery with Watson Assistant using webhook.
6. Build Node-RED flow to integrate Watson Assistant and Web Dashboard.

## 4. Experimental Investigation





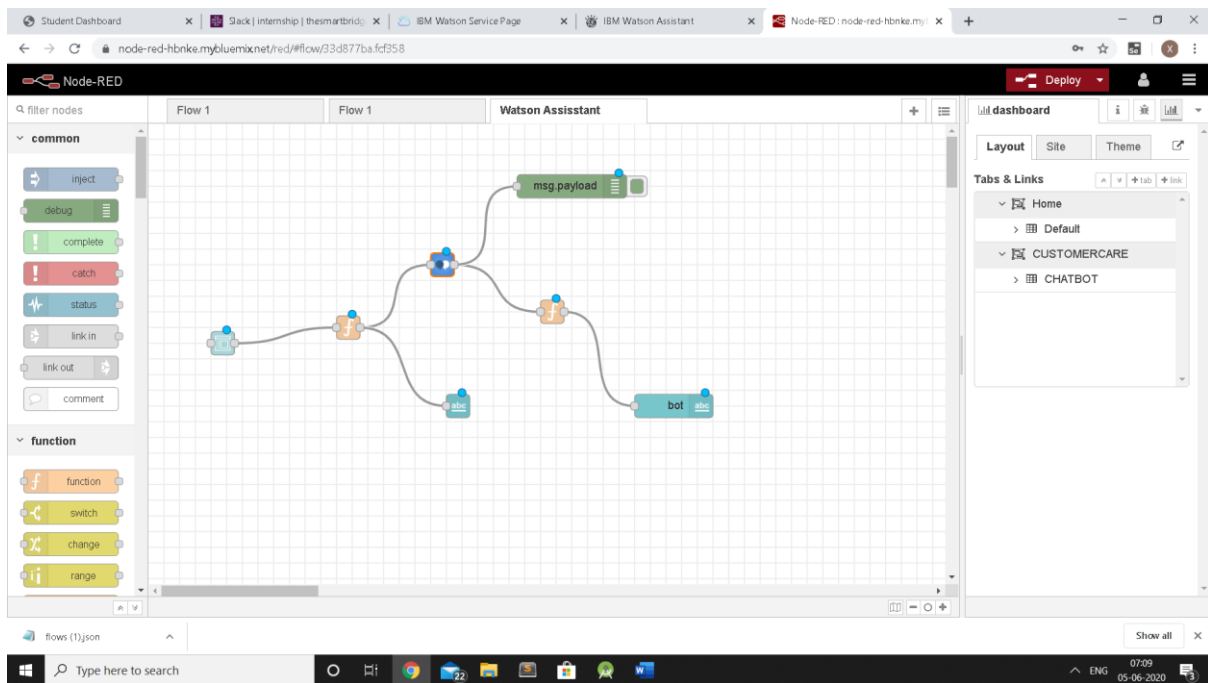




## 5. Flowchart

Insert the following nodes into the flow in Node-RED.

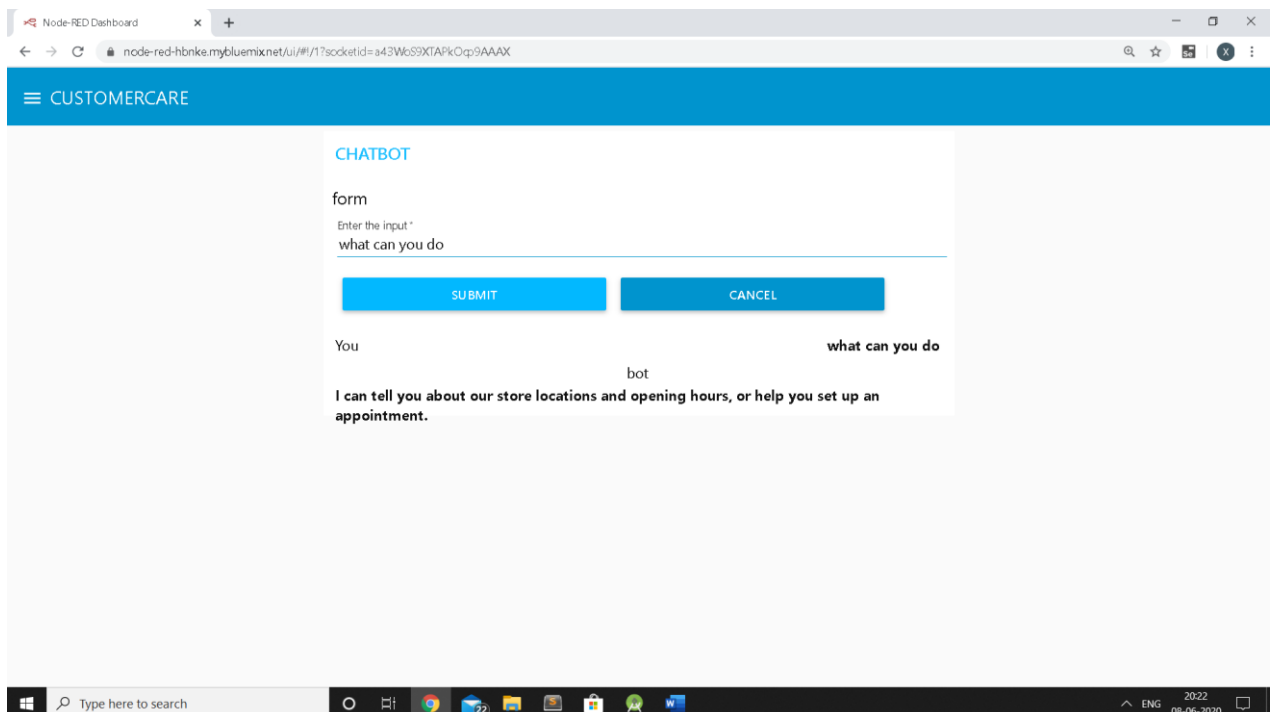
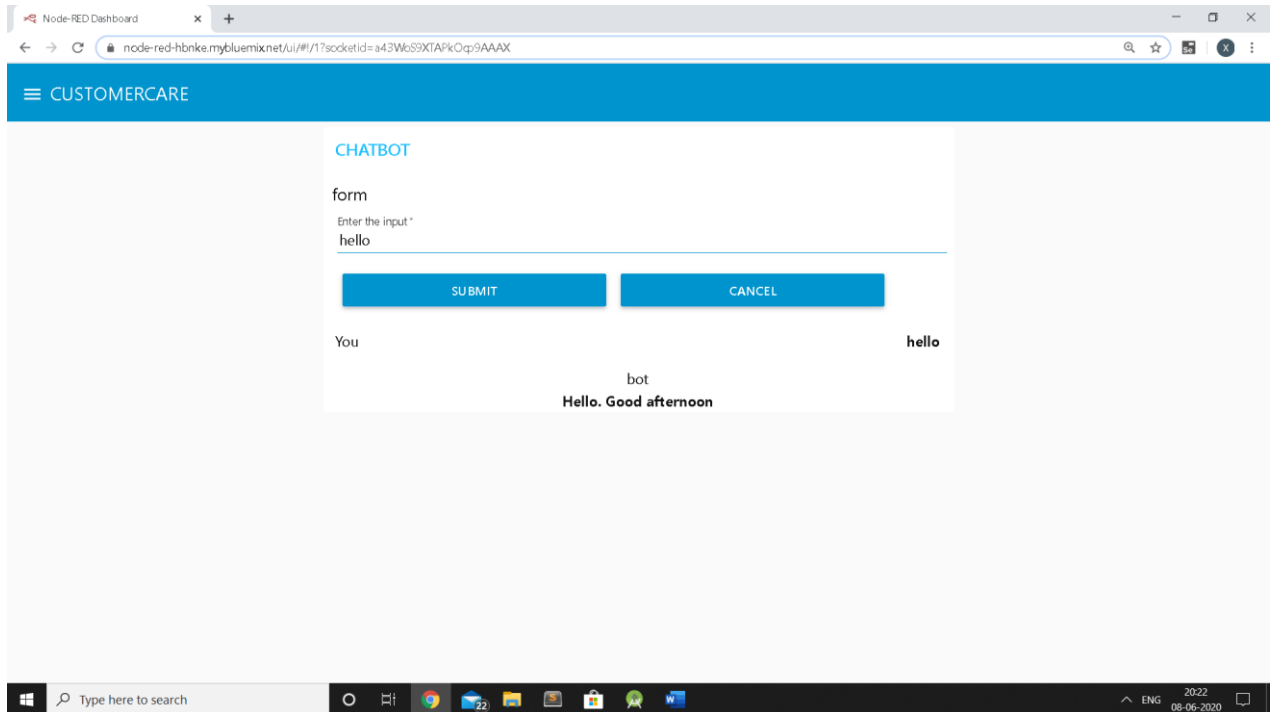
- Debug
- ui\_Form
- ui\_Text
- ui\_Button
- Function
- Assistant

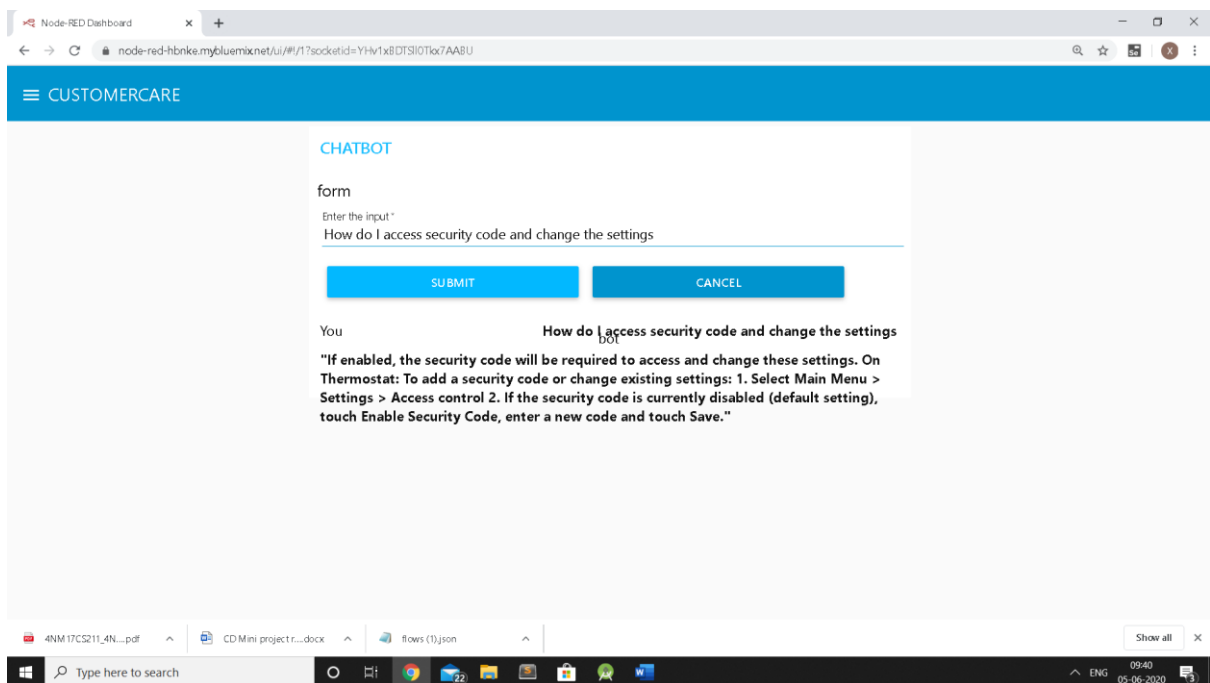
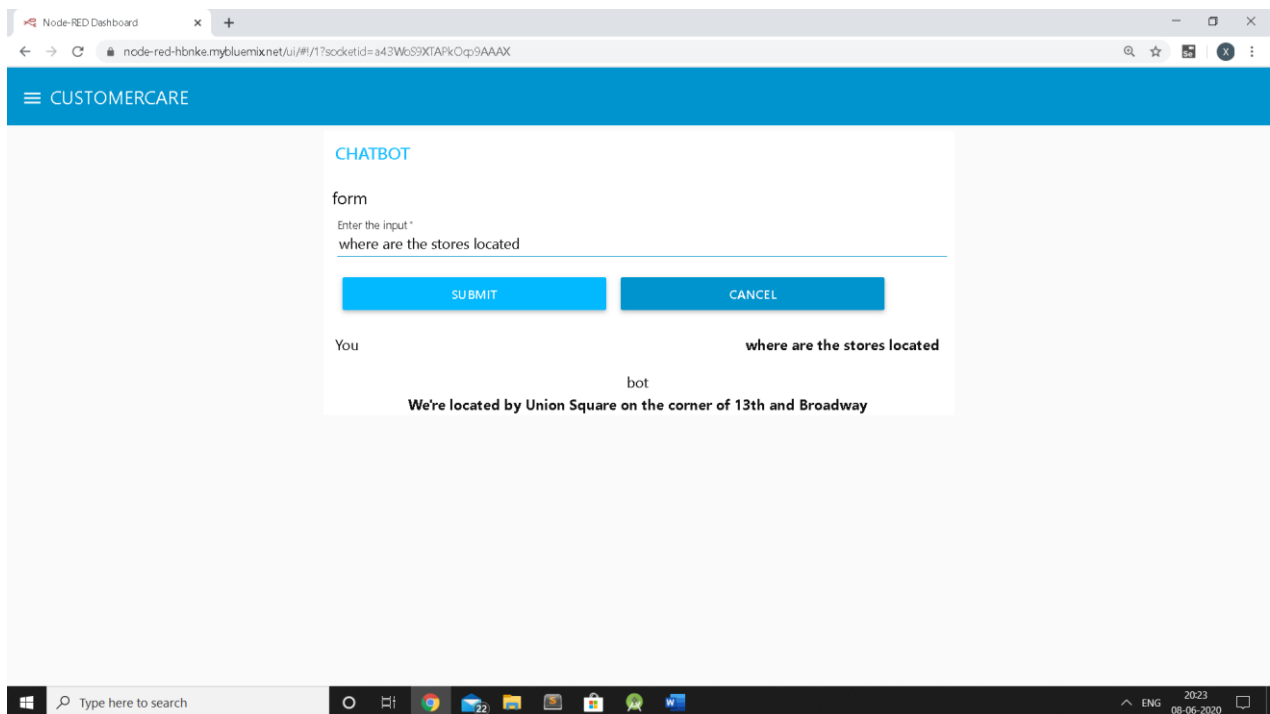


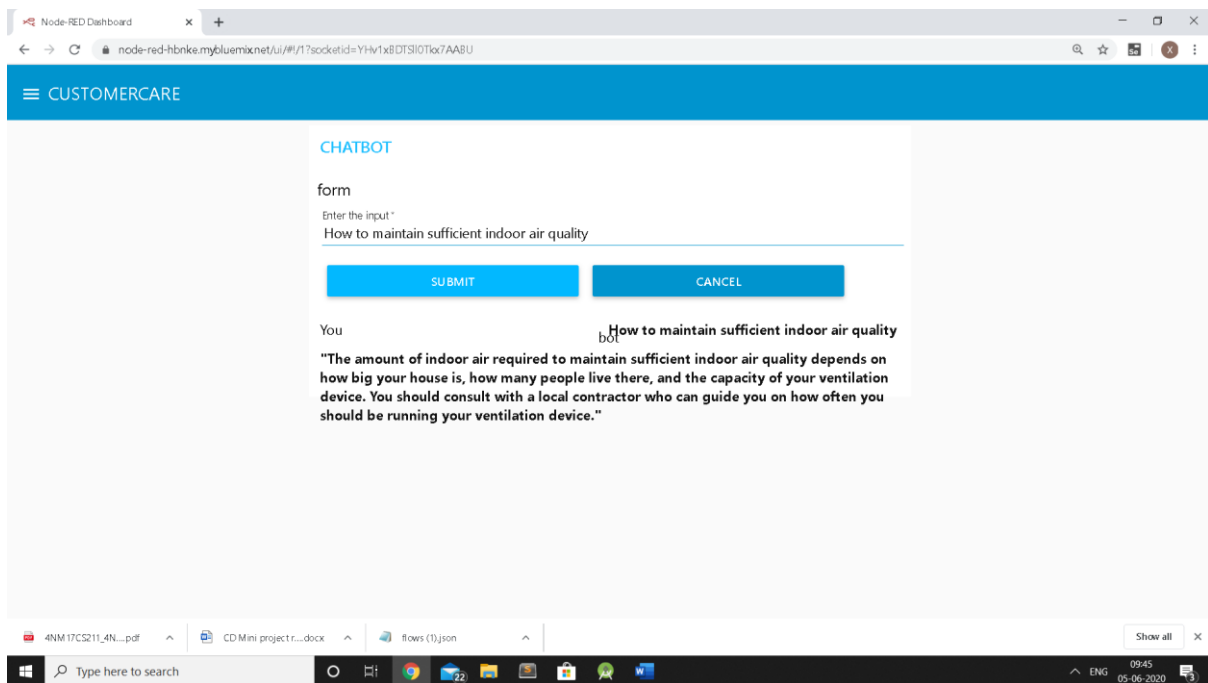
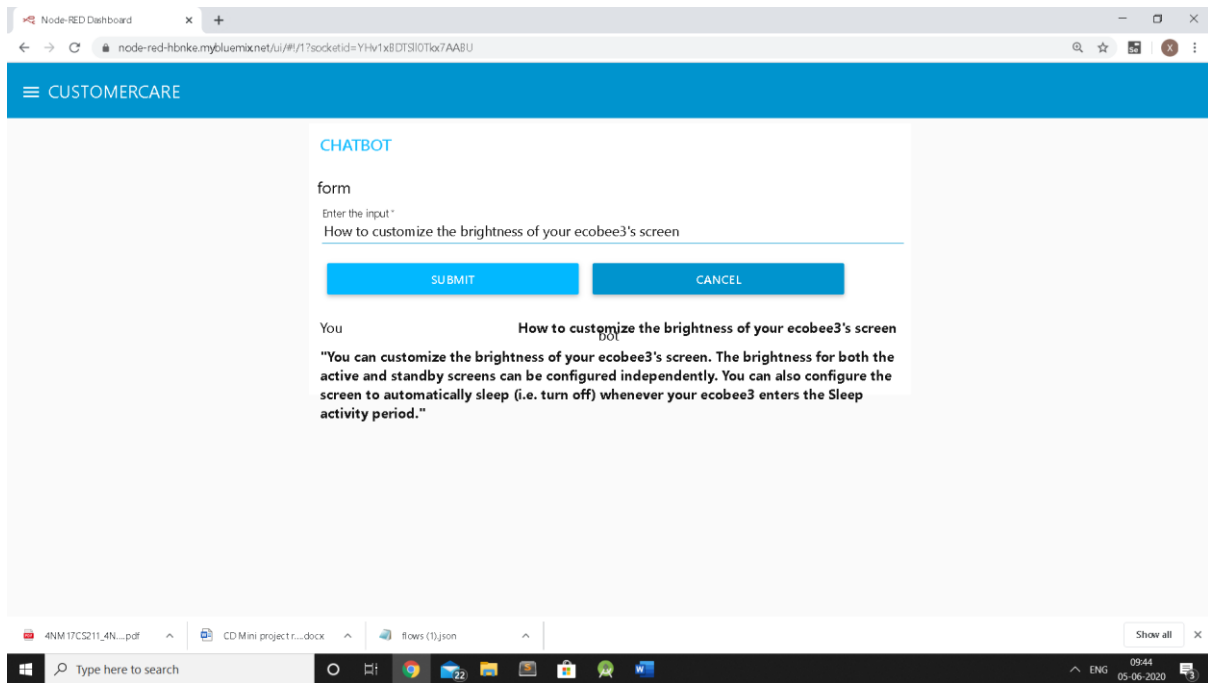
## 6. Result

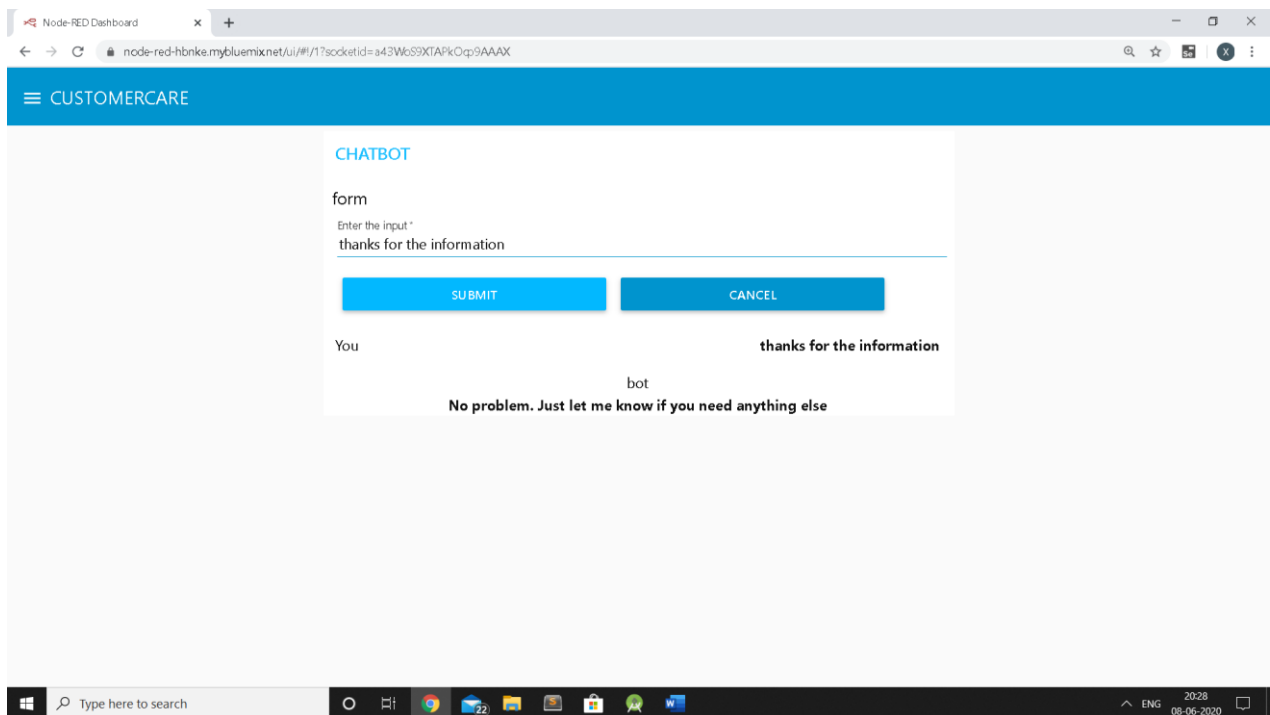
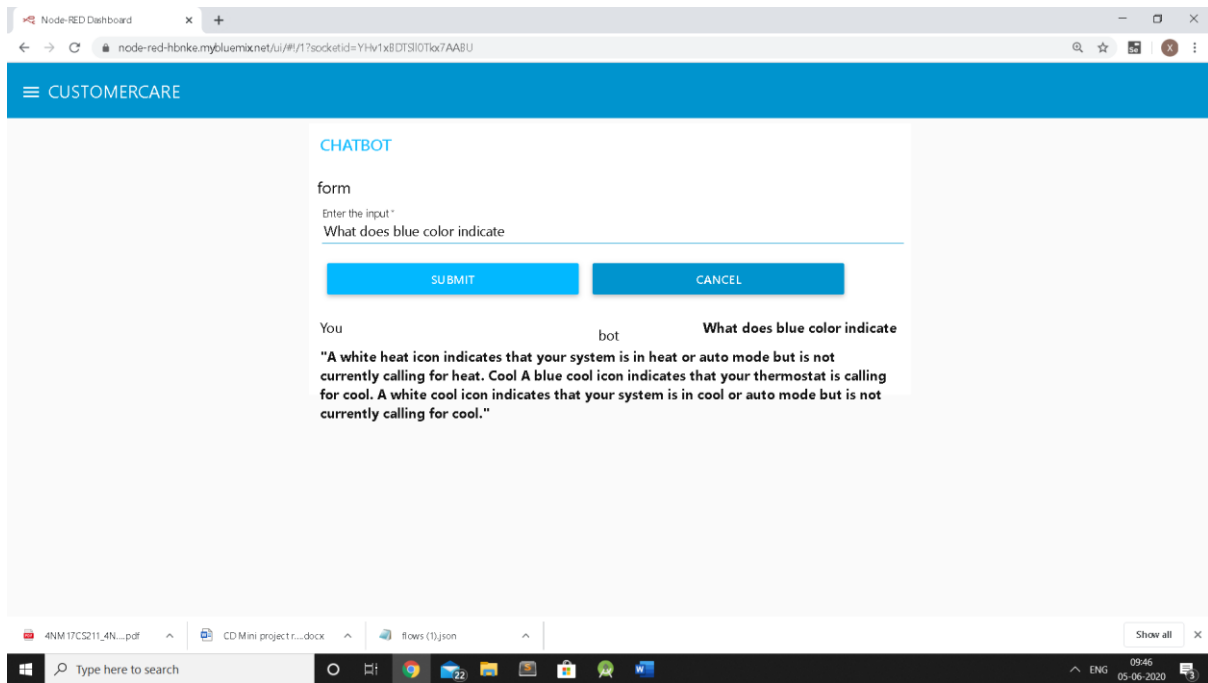
Web based UI was developed by integrating all the services using NODE-RED.

URL for UI Dashboard: <https://node-red-hbnke.mybluemix.net/ui/>









## **7. Advantages & Disadvantages**

### **Advantages**

1. Reduces Man Power
2. Cost Efficient
3. Less and less calls will be diverted to Customer Representatives.

### **Disadvantages**

1. Sometimes it can mislead customers as it tries to search irrelevant information in the manual.
2. It may also give same answers to different queries.



## **8. Applications**

1. This chatbot can be deployed to various websites as it can solve a lot of basic questions.
2. It can be used to deploy as Customer Helpdesk for small scale products as their manual usually has the solution for the user's problems.

## **9. Conclusion**

An Intelligent Customer Helpdesk Chatbot was created using various Watson services like Watson Discovery, Watson Assistant, Watson Cloud Functions and Node-RED.

## **10. Future Scope**

In the future, various other Watson services like Text-To-Speech and Speech-To-Text can be integrated in the chatbot. This can make the chatbot Hands-free.

## 11. Bibliography

1. Node-RED Starter Application :  
<https://developer.ibm.com/tutorials/how-to-create-a-node-red-starter-application/>
2. Build your own AI assistant : \_ \_  
<https://www.youtube.com/watch?v=hitUOFNne14>
3. How to use Watson Assistant with Webhooks: \_ \_  
<https://www.youtube.com/embed/5z3i5lsBVnk>
4. Watson Discovery : <https://developer.ibm.com/articles/introduction-watson-discovery/>

## Appendix

### A. Source Code

#### Node-RED Flow code

```
[{"id":"33d877ba.fcf358","type":"tab","label":"Watson Assistant","disabled":false,"info":""},{ "id":"e74ef010.635ec","type":"watson-conversation-v1","z":"33d877ba.fcf358","name":"Assistant","workspaceid":"c512aff3-f008-4341-a460-719f8c78dd47","multiuser":false,"context":true,"empty-payload":false,"service-endpoint":"https://api.us-south.assistant.watson.cloud.ibm.com/instances/b8fd31b0-6d10-4f8b-b99c-ee660b836851","timeout":"","optout-learning":false,"x":375,"y":180,"wires":[["797bb0a3.0aa99","7fb9a160.32087"]],{"id":"6febb993.1936e8","type":"function","z":"33d877ba.fcf358","name":"F1","func":"msg.payload = msg.payload.text; \nreturn msg;","outputs":1,"noerr":0,"x":255,"y":260,"wires":[["e74ef010.635ec","a826db2d.76cfd8"]],{"id":"47d20f9f.a6329","type":"ui_form","z":"33d877ba.fcf358","name":"","label":"form","group":"ae8a5ad1.d5eef8","order":1,"width":0,"height":0,"options":[{"label":"Enter the input","value":"text","type":"text","required":true,"rows":null},"formValue":{"text":"","payload":"","submit":"submit","cancel":"cancel","topic":"","x":95,"y":280,"wires":[["6febb993.1936e8"]],{"id":"797bb0a3.0aa99","type":"function","z":"33d877ba.fcf358","name":"F2","func":"if(msg.payload.output.error){\nmsg.payload = \"please rephrase\";\nreturn msg;\n}\nmsg.payload = msg.payload.output.text[0];\nreturn msg;","outputs":1,"noerr":0,"x":515,"y":240,"wires":[["7847f352.bd98bc"]],{"id":"a826db2d.76cfd8","type":"ui_text","z":"33d877ba.fcf358","group":"ae8a5ad1.d5eef8","order":3,"width":0,"height":0,"name":"","label":"You","format":"{{msg.payload}}","layout":"row-spread","x":395,"y":360,"wires":[],{"id":"7847f352.bd98bc","type":"ui_text","z":"33d877ba.fcf358","group":"ae8a5ad1.d5eef8","order":6,"width":0,"height":0,"name":"","label":"bot","format":"{{msg.payload}}","layout":"col-center","x":670,"y":360,"wires":[],{"id":"7fb9a160.32087","type":"debug","z":"33d877ba.fcf358","name":"","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":"payload","targetType":"msg","x":540,"y":80,"wires":[],{"id":"ae8a5ad1.d5eef8","type":"ui_group","z":"","name":"CHATBOT","tab":"41e18bba.25ef14","order":1,"disp":true,"width":13,"collapse":false}, {"id":"41e18bba.25ef14","type":"ui_tab","z":"","name":"CUSTOMERCARE","icon":"","disabled":false,"hidden":false}]}
```

## Watson Cloud Function Action Code

```
/**
 *
 * @param {object} params
 * @param {string} params.iam_apikey
 * @param {string} params.url
 * @param {string} params.username
 * @param {string} params.password
 * @param {string} params.environment_id
 * @param {string} params.collection_id
 * @param {string} params.configuration_id
 * @param {string} params.input
 *
 * @return {object}
 */

const assert = require('assert');
const DiscoveryV1 = require('watson-developer-cloud/discovery/v1');

/**
 *
 * main() will be run when you invoke this action
 *
 * @param Cloud Functions actions accept a single parameter, which must be a
JSON object.
 *
 * @return The output of this action, which must be a JSON object.
 */
function main(params) {
  return new Promise(function (resolve, reject) {

    let discovery;

    if (params.iam_apikey){
      discovery = new DiscoveryV1({
        'iam_apikey': params.iam_apikey,
        'url': params.url,
        'version': '2019-03-25'
      });
    }
  });
}
```

```

    }
    else {
      discovery = new DiscoveryV1({
        'username': params.username,
        'password': params.password,
        'url': params.url,
        'version': '2019-03-25'
      });
    }

    discovery.query({
      'environment_id': params.environment_id,
      'collection_id': params.collection_id,
      'natural_language_query': params.input,
      'passages': true,
      'count': 3,
      'passages_count': 3
    }, function(err, data) {
      if (err) {
        return reject(err);
      }
      return resolve(data);
    });
  });
}

```

### Customer Care Sample Skill Assistant Code

```

{
  "intents": [
    {
      "intent": "General_Greetings",
      "examples": [
        {
          "text": "Who is this?"
        },
        {
          "text": "You there"
        },
        {

```

```
"text": "How is it going?"
},
{
  "text": "Hey you"
},
{
  "text": "Looking good eve"
},
{
  "text": "How r u?"
},
{
  "text": "hi"
},
{
  "text": "How have you been?"
},
{
  "text": "How are you today?"
},
{
  "text": "How are things going?"
},
{
  "text": "yo"
},
{
  "text": "hiya"
},
{
  "text": "Good day"
},
{
  "text": "Good evening"
},
{
  "text": "Good morning"
},
{
  "text": "Good to see you"
},
{
```

```
"text": "Greetings"
},
{
  "text": "What's up?"
},
{
  "text": "Have you been well?"
},
{
  "text": "Hello Agent"
},
{
  "text": "Hello"
},
{
  "text": "Hello I am looking for some help here"
},
{
  "text": "Hey how are you doing"
},
{
  "text": "Hey there all"
},
{
  "text": "Hey there"
},
{
  "text": "Ok take me back"
},
{
  "text": "Hi advisor"
},
{
  "text": "Hey twin"
},
{
  "text": "Hi there"
},
{
  "text": "What's new?"
}
],
```

```
"description": "Greetings"
},
{
  "intent": "Customer_Care_Store_Location",
  "examples": [
    {
      "text": "what is the address"
    },
    {
      "text": "What is the store near my zip code?"
    },
    {
      "text": "What is the nearest branch?"
    },
    {
      "text": "What is the closest store to my address?"
    },
    {
      "text": "Looking for a location"
    },
    {
      "text": "I want to know about a store"
    },
    {
      "text": "I need help with find a store"
    },
    {
      "text": "I'd like to go to a store"
    },
    {
      "text": "Go to your company"
    },
    {
      "text": "how do i get to your business"
    },
    {
      "text": "Where are you located?"
    },
    {
      "text": "Where is?"
    },
    {
```



```

    "text": "Find store"
  },
  {
    "text": "how do i get to your place"
  },
  {
    "text": "where are you located"
  },
  {
    "text": "can you give me directions"
  },
  {
    "text": "location please"
  },
  {
    "text": "how do i find you"
  },
  {
    "text": "where are you"
  },
  {
    "text": "what's your location"
  },
  {
    "text": "give me directions"
  },
  {
    "text": "which cross streets are you on"
  },
  {
    "text": "how can i get to you from grand central"
  },
  {
    "text": "please suggest route from times square"
  },
  {
    "text": "Where is your office?"
  }
],
"description": "Locate a physical store location or an address."
},
{

```

```
"intent": "Thanks",
"examples": [
  {
    "text": "that's nice of you"
  },
  {
    "text": "thank you very much"
  },
  {
    "text": "thx"
  },
  {
    "text": "i appreciate it"
  },
  {
    "text": "thank you"
  },
  {
    "text": "thanks"
  },
  {
    "text": "much appreciated"
  },
  {
    "text": "many thanks"
  }
],
"description": "Thanks"
},
{
  "intent": "Goodbye",
  "examples": [
    {
      "text": "bye"
    },
    {
      "text": "ciao"
    },
    {
      "text": "arrivederci"
    },
    {
```

```

    "text": "see ya"
  },
  {
    "text": "good bye"
  },
  {
    "text": "so long"
  }
],
"description": "Good byes"
},
{
  "intent": "Cancel",
  "examples": [
    {
      "text": "never mind"
    },
    {
      "text": "cancel that"
    },
    {
      "text": "i changed my mind"
    },
    {
      "text": "cancel the request"
    },
    {
      "text": "i don't want a table anymore anymore"
    },
    {
      "text": "nevermind"
    },
    {
      "text": "forget it"
    }
  ],
  "description": "Cancel the current request"
},
{
  "intent": "General_Connect_to_Agent",
  "examples": [
    {

```

```

    "text": "I want to talk to a person"
  },
  {
    "text": "I want to speak to a person"
  },
  {
    "text": "representative"
  },
  {
    "text": "Put me through to someone"
  },
  {
    "text": "Pls connect"
  },
  {
    "text": "Please let me talk to a human being."
  },
  {
    "text": "Please connect me to a live agent"
  },
  {
    "text": "Operator please"
  },
  {
    "text": "Please assist me to get to an agent"
  },
  {
    "text": "Need help from human"
  },
  {
    "text": "I would like to speak to someone"
  },
  {
    "text": "I would like to speak to a human"
  },
  {
    "text": "I want an agent to help me"
  },
  {
    "text": "I want a manager"
  },
  {

```

```

    "text": "I want agent"
  },
  {
    "text": "I need to speak to a representative. How would I go about doing
so?"
  },
  {
    "text": "Is there anyone there I can actually talk to for real?"
  },
  {
    "text": "I don't want to talk to you"
  },
  {
    "text": "I don't want to talk to a bot."
  },
  {
    "text": "How can I skip the recorded menu and go straight to a live
person?"
  },
  {
    "text": "Hi can you transfer me"
  },
  {
    "text": "Do not want a robot?"
  },
  {
    "text": "Customer service representative please."
  },
  {
    "text": "Could you please transfer me to your master?"
  },
  {
    "text": "Contact person"
  },
  {
    "text": "Connect me to a live operator please."
  },
  {
    "text": "Can you connect me with a real person?"
  },
  {
    "text": "Can you assist me to connect to an agent?"
  }

```

```
},
{
  "text": "Can I talk to someone?"
},
{
  "text": "Can I speak with somebody?"
},
{
  "text": "Can I speak to an advisor?"
},
{
  "text": "Can I speak to a live person?"
},
{
  "text": "Can I speak to a human please?"
},
{
  "text": "Can I connect to an agent?"
},
{
  "text": "get me a person"
},
{
  "text": "I don't want to speak with a robot"
},
{
  "text": "Send me to an agent"
},
{
  "text": "Where is the closest agent?"
},
{
  "text": "Yes, take me to a real person"
},
{
  "text": "Agent help"
},
{
  "text": "talk to a human"
},
{
  "text": "Call agent"
```

```

    },
    {
      "text": "A real agent, please."
    },
    {
      "text": "I want to talk to the manager"
    },
    {
      "text": "I want to speak to a human"
    },
    {
      "text": "call the manager"
    },
    {
      "text": "I dont want to talk to a computer"
    }
  ],
  "description": "Request a human agent."
},
{
  "intent": "Customer_Care_Store_Hours",
  "examples": [
    {
      "text": "What time does the central manchester store shut on a saturday?"
    },
    {
      "text": "What time do stores close?"
    },
    {
      "text": "What time is your store open on saturday?"
    },
    {
      "text": "what are your hours"
    },
    {
      "text": "will you open for christmas"
    },
    {
      "text": "will you be open Memorial day"
    },
    {
      "text": "when do you close"
    }
  ]
}

```

```

},
{
  "text": "What time do you close"
},
{
  "text": "What time do you open on Saturdays"
},
{
  "text": "what time do you close on Sunday"
},
{
  "text": "What time do you close today"
},
{
  "text": "Hours of operation"
},
{
  "text": "Are you open on Sunday"
},
{
  "text": "how late are you open"
},
{
  "text": "how late are you open tonight"
},
{
  "text": "are stores open on sunday"
},
{
  "text": "store open now"
},
{
  "text": "open hours store"
},
{
  "text": "when do your stores open"
},
{
  "text": "when does the store close"
},
{
  "text": "when can i visit your store"

```



```

},
{
  "text": "store hrs"
},
{
  "text": "store hours"
},
{
  "text": "store open"
},
{
  "text": "store open hours?"
},
{
  "text": "What is the opening time for the washington store?"
},
{
  "text": "Are you closing early today"
},
{
  "text": "Are you closed new Year's eve"
},
{
  "text": "how early do you open on Saturdays"
},
{
  "text": "how late are you there"
},
{
  "text": "how late y'all stay up till"
},
{
  "text": "will you open on christmas"
},
{
  "text": "Are the stores open early?"
},
{
  "text": "Are you open during thanksgiving?"
},
{
  "text": "Are you open on bank holidays?"

```

```

    },
    {
      "text": "Are you open on sundays, and if so what are the hours?"
    },
    {
      "text": "At what hour can I swing by?"
    },
    {
      "text": "Can you tell me how late the stores are open till?"
    },
    {
      "text": "Does the store in the city center opens till 8pm on weekends?"
    },
    {
      "text": "How early do you open?"
    },
    {
      "text": "How long are you open?"
    },
    {
      "text": "Is the branch open now?"
    },
    {
      "text": "What are the business hours of the store nearest to me?"
    },
    {
      "text": "What are the hours of operation?"
    },
    {
      "text": "What are the saturday opening times for the local store?"
    },
    {
      "text": "What are ur opening hours?"
    },
    {
      "text": "What are your hous?"
    },
    {
      "text": "What time are you closing today?"
    }
  ],
  "description": "Find business hours."

```

```

},
{
  "intent": "Help",
  "examples": [
    {
      "text": "what can i say"
    },
    {
      "text": "what can i do"
    },
    {
      "text": "i need assistance"
    },
    {
      "text": "help me"
    },
    {
      "text": "help me decide"
    },
    {
      "text": "help"
    },
    {
      "text": "can you assist me"
    },
    {
      "text": "can you help"
    }
  ],
  "description": "Ask for help"
},
{
  "intent": "Customer_Care_Appointments",
  "examples": [
    {
      "text": "Could I speak to someone in the store next tuesday?"
    },
    {
      "text": "I would like to make an appointment to visit the nearest store to my location."
    },
    {

```

```

    "text": "I would like to discuss my situation face to face"
  },
  {
    "text": "I want to talk in person with someone about my case"
  },
  {
    "text": "meet in store"
  },
  {
    "text": "What time can I meet the staff?"
  },
  {
    "text": "i'd like to make an appointment"
  },
  {
    "text": "can you make an appointment for me"
  },
  {
    "text": "can i make an appointment"
  },
  {
    "text": "do you have availability next week"
  },
  {
    "text": "can i book for tonight"
  },
  {
    "text": "are you available on tuesday"
  },
  {
    "text": "Can I book an in person session"
  },
  {
    "text": "Want to change my visit"
  },
  {
    "text": "Store appointment"
  },
  {
    "text": "Set up an appt"
  },
  {

```

```

    "text": "Make an appointment"
  },
  {
    "text": "i'd like to come in for an appointment"
  },
  {
    "text": "I prefer a face to face visit"
  },
  {
    "text": "When can I meet with one of your employees at your store?"
  }
],
"description": "Schedule or manage an in-store appointment."
},
{
  "intent": "Product_Information",
  "examples": [
    {
      "text": "How do I set time"
    },
    {
      "text": "What does blue color indicate"
    },
    {
      "text": "How to configure the reminders and alerts"
    },
    {
      "text": "How to customize the brightness of your ecobee3's screen"
    },
    {
      "text": "how do i turn on heater"
    },
    {
      "text": "how do i configure the ventilator/HRV/ERV/menu"
    },
    {
      "text": "how do i configure wifi"
    },
    {
      "text": "how do i configure thermostat"
    },
    {

```

```

      "text": "How do I access security code and change the settings"
    },
    {
      "text": "how do i configure standby screen"
    },
    {
      "text": "How to maintain sufficient indoor air quality"
    }
  ],
  "description": ""
},
"entities": [
  {
    "entity": "sys-number",
    "values": []
  },
  {
    "entity": "sys-date",
    "values": []
  },
  {
    "entity": "zip_code",
    "values": [
      {
        "type": "patterns",
        "value": "US Zip",
        "patterns": [
          "(\\b|\\s)\\d{5}(\\b|\\s)"
        ]
      }
    ]
  },
  {
    "entity": "holiday",
    "values": [
      {
        "type": "synonyms",
        "value": "thanksgiving",
        "synonyms": [
          "turkey day"
        ]
      }
    ]
  }
]

```

```

    },
    {
      "type": "synonyms",
      "value": "memorial day",
      "synonyms": []
    },
    {
      "type": "synonyms",
      "value": "new years",
      "synonyms": [
        "1/1",
        "jan 1",
        "jan 1st",
        "jan first",
        "january 1",
        "january 1st",
        "january first",
        "new year",
        "new year day",
        "new years day"
      ]
    },
    {
      "type": "synonyms",
      "value": "new years eve",
      "synonyms": [
        "12-31",
        "12/31",
        "dec 31",
        "dec 31st",
        "new year's eve"
      ]
    },
    {
      "type": "synonyms",
      "value": "christmas eve",
      "synonyms": [
        "x mas eve",
        "x-mas eve",
        "xmas eve"
      ]
    },
  ],

```

```

{
  "type": "synonyms",
  "value": "labor day",
  "synonyms": []
},
{
  "type": "synonyms",
  "value": "independence day",
  "synonyms": [
    "7/4",
    "fourth of july",
    "july 4",
    "july 4th",
    "july fourth"
  ]
},
{
  "type": "synonyms",
  "value": "valentine's day",
  "synonyms": [
    "valentine day",
    "valentines day"
  ]
},
{
  "type": "synonyms",
  "value": "christmas",
  "synonyms": [
    "christmas day",
    "x man day",
    "xmas",
    "x mas",
    "x-mas",
    "x-mas day",
    "xmas day"
  ]
},
{
  "type": "synonyms",
  "value": "halloween",
  "synonyms": []
}

```



```

    ]
  },
  {
    "entity": "sys-time",
    "values": []
  },
  {
    "entity": "landmark",
    "values": [
      {
        "type": "synonyms",
        "value": "empire state building",
        "synonyms": [
          "empire state",
          "emprire state"
        ]
      }
    ],
    {
      "type": "synonyms",
      "value": "times square",
      "synonyms": [
        "time sqaure",
        "time square",
        "times sqaure"
      ]
    }
  ],
  "fuzzy_match": true
},
{
  "entity": "phone",
  "values": [
    {
      "type": "patterns",
      "value": "US Phone pattern",
      "patterns": [
        "(\\d{3})-(\\d{3})-(\\d{4})"
      ]
    }
  ]
}

```

```

    ]
  }
]
},
{
  "entity": "reply",
  "values": [
    {
      "type": "synonyms",
      "value": "no",
      "synonyms": [
        "definitely not",
        "don't think so",
        "dont think so",
        "i think not",
        "nope",
        "not at this time",
        "not now"
      ]
    },
    {
      "type": "synonyms",
      "value": "yes",
      "synonyms": [
        "definitely",
        "go for it",
        "let's do it",
        "ok",
        "please",
        "sure",
        "why not",
        "yeah",
        "yes",
        "you bet",
        "you betcha",
        "yep"
      ]
    }
  ]
},
{
  "entity": "specialist",

```

```
"values": [  
  {  
    "type": "synonyms",  
    "value": "Derrik",  
    "synonyms": [  
      "derek",  
      "derik",  
      "derrik",  
      "derrick"  
    ]  
  },  
  {  
    "type": "synonyms",  
    "value": "Nicholas",  
    "synonyms": [  
      "nick"  
    ]  
  },  
  {  
    "type": "synonyms",  
    "value": "Robert",  
    "synonyms": [  
      "bob"  
    ]  
  },  
  {  
    "type": "synonyms",  
    "value": "Barbara",  
    "synonyms": [  
      "barbra"  
    ]  
  },  
  {  
    "type": "synonyms",  
    "value": "Brenda",  
    "synonyms": []  
  },  
  {  
    "type": "synonyms",  
    "value": "Maria",  
    "synonyms": []  
  }  
]
```

```

    ]
  }
],
"metadata": {
  "api_version": {
    "major_version": "v2",
    "minor_version": "2018-11-08"
  }
},
"webhooks": [
  {
    "url": "https://us-
south.functions.cloud.ibm.com/api/v1/web/si05202000166%40smartinternz.co
m_dev/default/assistantenhanced.json",
    "name": "main_webhook",
    "headers": []
  }
],
"dialog_nodes": [
  {
    "type": "response_condition",
    "output": {
      "text": {
        "values": [
          "Hello. Good evening",
          "Hi. Good evening",
          "Hello. How can I help this evening?"
        ]
      },
      "selection_policy": "sequential"
    }
  },
  {
    "parent": "node_13_1502484041694",
    "metadata": {},
    "conditions": "now().after('17:00:00')",
    "dialog_node": "node_15_1488295465298",
    "previous_sibling": "node_1_1495022305143"
  },
  {
    "type": "response_condition",
    "output": {
      "text": {
        "values": [

```



```

    "parent": "node_13_1502484041694",
    "metadata": {},
    "conditions": "now().after('04:00:00') && now().before('11:59:59')",
    "dialog_node": "node_16_1488295517679"
  },
  {
    "type": "response_condition",
    "output": {
      "text": {
        "values": [
          "To get to our business from Grand Central, take the 4,5 or 6 train
downtown to Union Square."
        ],
        "selection_policy": "sequential"
      }
    },
    "parent": "Directions",
    "metadata": {},
    "conditions": "@landmark:(grand central)",
    "dialog_node": "node_4_1522439442155",
    "previous_sibling": "node_8_1482459217052"
  },
  {
    "type": "response_condition",
    "output": {
      "text": {
        "values": [
          "To get to our business from the Empire State Building, walk to Herald
Square and take the N train to Union Square"
        ],
        "selection_policy": "sequential"
      }
    },
    "parent": "Directions",
    "metadata": {},
    "conditions": "@landmark:(empire state building)",
    "dialog_node": "node_7_1482459200886",
    "previous_sibling": "node_3_1522439390442"
  },
  {
    "type": "response_condition",
    "output": {

```

```

    "text": {
      "values": [
        "To get to our business from Times Square, take the N train downtown to Union Square"
      ],
      "selection_policy": "sequential"
    }
  },
  "parent": "Directions",
  "metadata": {},
  "conditions": "@landmark:(times square)",
  "dialog_node": "node_8_1482459217052",
  "previous_sibling": "node_7_1482459200886"
},
{
  "type": "standard",
  "title": "Provide location",
  "output": {
    "text": {
      "values": [
        "We're located by Union Square on the corner of 13th and Broadway"
      ],
      "selection_policy": "sequential"
    }
  },
  "parent": "Directions",
  "metadata": {},
  "conditions": "true",
  "dialog_node": "node_3_1522439390442"
},
{
  "type": "event_handler",
  "output": {
    "text": {
      "values": [
        "Sorry... let's try again"
      ]
    }
  },
  "parent": "slot_8_1509132875735",
  "context": {
    "date": null,

```

```

    "time": null,
    "confirm": null
  },
  "metadata": {},
  "conditions": "@reply:no",
  "event_name": "filled",
  "dialog_node": "handler_17_1509135162089",
  "previous_sibling": "handler_14_1509133469904"
},
{
  "type": "event_handler",
  "output": {},
  "parent": "slot_8_1509132875735",
  "context": {
    "confirm": "@reply && slot_in_focus"
  },
  "metadata": {},
  "conditions": "@reply && slot_in_focus",
  "event_name": "input",
  "dialog_node": "handler_9_1509132875735",
  "previous_sibling": "handler_10_1509132875735"
},
{
  "type": "event_handler",
  "output": {
    "text": {
      "values": [
        "Perfect!"
      ]
    }
  },
  "parent": "slot_8_1509132875735",
  "metadata": {},
  "conditions": "@reply:yes",
  "event_name": "filled",
  "dialog_node": "handler_14_1509133469904",
  "previous_sibling": "handler_9_1509132875735"
},
{
  "type": "event_handler",
  "output": {
    "text": "Let me confirm: You want an appointment for <?"
  }
}

```



`$date.reformatDateTime("\EEEE\") ?> at <? $time.reformatDateTime("\h a\")  
?>. Is this correct?"`

```
    },
    "parent": "slot_8_1509132875735",
    "metadata": {},
    "event_name": "focus",
    "dialog_node": "handler_10_1509132875735"
  },
  {
    "type": "event_handler",
    "output": {
      "text": {
        "values": [
          "OK. Canceling your request..."
        ]
      }
    },
    "parent": "Reservation using slots",
    "context": {
      "date": null,
      "time": null,
      "phone": null,
      "confirm": null,
      "specialist": null,
      "user_cancelled": true
    },
    "metadata": {},
    "next_step": {
      "behavior": "skip_all_slots"
    },
    "conditions": "#Cancel",
    "event_name": "generic",
    "dialog_node": "handler_16_1509133697261",
    "previous_sibling": "handler_3_1501275087289"
  },
  {
    "type": "response_condition",
    "output": {
      "text": {
        "values": [
          "Let me check availability... [Use IBM Cloud Functions to connect to  
backend systems]"
        ]
      }
    }
  }
}
```

```

    ]
  }
},
"parent": "Reservation using slots",
"context": {},
"metadata": {},
"conditions": "true",
"dialog_node": "node_3_1519173961259",
"previous_sibling": "node_10_1509697567474"
},
{
  "type": "slot",
  "output": {},
  "parent": "Reservation using slots",
  "metadata": {
    "_customization": {}
  },
  "variable": "$phone",
  "dialog_node": "slot_22_1522444583114",
  "previous_sibling": "slot_8_1509132875735"
},
{
  "type": "event_handler",
  "output": {
    "text": {
      "values": []
    }
  },
  "parent": "Reservation using slots",
  "disabled": true,
  "metadata": {},
  "event_name": "focus",
  "dialog_node": "handler_7_1509696539866",
  "previous_sibling": "handler_16_1509133697261"
},
{
  "type": "slot",
  "output": {},
  "parent": "Reservation using slots",
  "metadata": {},
  "variable": "$specialist",
  "dialog_node": "slot_12_1522596437268",

```

```

    "previous_sibling": "slot_105_1498132552870"
  },
  {
    "type": "response_condition",
    "output": {
      "text": {
        "values": [
          "Let me know how else I can help"
        ],
        "selection_policy": "sequential"
      }
    },
    "parent": "Reservation using slots",
    "context": {},
    "metadata": {},
    "conditions": "$user_cancelled",
    "dialog_node": "node_10_1509697567474",
    "previous_sibling": "node_25_1522598839584"
  },
  {
    "type": "slot",
    "output": {},
    "parent": "Reservation using slots",
    "metadata": {},
    "variable": "$confirm",
    "dialog_node": "slot_8_1509132875735",
    "previous_sibling": "slot_12_1522596437268"
  },
  {
    "type": "slot",
    "output": {},
    "parent": "Reservation using slots",
    "metadata": {
      "_customization": {
        "mcr": true
      }
    },
    "variable": "$date",
    "dialog_node": "slot_102_1498132501942",
    "previous_sibling": "node_3_1519173961259"
  },
  {

```

```

"type": "slot",
"output": {},
"parent": "Reservation using slots",
"metadata": {
  "_customization": {
    "mcr": true
  }
},
"variable": "$time",
"dialog_node": "slot_105_1498132552870",
"previous_sibling": "slot_102_1498132501942"
},
{
  "type": "response_condition",
  "output": {
    "text": {
      "values": [
        "[Use IBM Cloud Functions to connect to to backend systems]"
      ]
    }
  },
  "parent": "Reservation using slots",
  "metadata": {},
  "conditions": "$user_needs_help",
  "dialog_node": "node_25_1522598839584",
  "previous_sibling": "handler_7_1509696539866"
},
{
  "type": "event_handler",
  "output": {
    "text": {
      "values": [
        "I see you need help making an appointment. Let me transfer you to an agent..."
      ]
    },
    "selection_policy": "sequential"
  },
  "parent": "Reservation using slots",
  "context": {
    "date": null,
    "time": null,

```

```

    "phone": null,
    "confirm": null,
    "specialist": null,
    "user_needs_help": true
  },
  "metadata": {},
  "next_step": {
    "behavior": "skip_all_slots"
  },
  "conditions": "#Help",
  "event_name": "generic",
  "dialog_node": "handler_3_1501275087289"
},
{
  "type": "event_handler",
  "output": {},
  "parent": "slot_22_1522444583114",
  "context": {
    "phone": "@phone"
  },
  "metadata": {},
  "conditions": "@phone",
  "event_name": "input",
  "dialog_node": "handler_23_1522444583114",
  "previous_sibling": "handler_24_1522444583114"
},
{
  "type": "event_handler",
  "output": {
    "text": {
      "values": [
        "Thanks"
      ],
      "selection_policy": "sequential"
    }
  },
  "parent": "slot_22_1522444583114",
  "context": {},
  "metadata": {},
  "conditions": "true",
  "event_name": "filled",
  "dialog_node": "handler_22_1522598191131",

```

```

    "previous_sibling": "handler_23_1522444583114"
  },
  {
    "type": "event_handler",
    "output": {
      "text": "I'll just need a phone to hold your reservation"
    },
    "parent": "slot_22_1522444583114",
    "metadata": {},
    "event_name": "focus",
    "dialog_node": "handler_24_1522444583114"
  },
  {
    "type": "response_condition",
    "output": {
      "generic": [
        {
          "values": [
            {
              "text": "I didn't understand your query"
            }
          ],
          "response_type": "text",
          "selection_policy": "sequential"
        }
      ]
    },
    "parent": "node_5_1591243221968",
    "conditions": "anything_else",
    "dialog_node": "response_5_1591321763324",
    "previous_sibling": "response_10_1591244080662"
  },
  {
    "type": "response_condition",
    "output": {
      "generic": [
        {
          "values": [
            {
              "text": "\"<?$webhook_result_1.passages[0].passage_text?>\""
            }
          ]
        }
      ]
    },

```

```

        "response_type": "text",
        "selection_policy": "sequential"
    }
]
},
"parent": "node_5_1591243221968",
"conditions": "$webhook_result_1",
"dialog_node": "response_10_1591244080662"
},
{
    "type": "event_handler",
    "output": {},
    "parent": "slot_105_1498132552870",
    "context": {
        "time": "@sys-time"
    },
    "metadata": {},
    "conditions": "@sys-time",
    "event_name": "input",
    "dialog_node": "handler_106_1498132552870",
    "previous_sibling": "handler_107_1498132552870"
},
{
    "type": "event_handler",
    "output": {
        "text": {
            "values": [
                "We only accept appointments between 11am and 5pm"
            ]
        }
    },
    "parent": "slot_105_1498132552870",
    "metadata": {},
    "next_step": {
        "behavior": "reprompt"
    },
    "conditions": "$time.after('17:30:30') || $time.before('10:59:59')",
    "event_name": "filled",
    "dialog_node": "handler_1_1509694458589",
    "previous_sibling": "handler_106_1498132552870"
},
{

```

```

    "type": "event_handler",
    "output": {
      "text": "What time on <? $date.reformatDateTime(\"EEEE\") ?> do you
want to come in?"
    },
    "parent": "slot_105_1498132552870",
    "metadata": {},
    "event_name": "focus",
    "dialog_node": "handler_107_1498132552870"
  },
  {
    "type": "response_condition",
    "output": {
      "text": {
        "values": [
          "Our hours are Monday to Friday 10am to 8pm and Friday and Saturday
11am to 6pm."
        ],
        "selection_policy": "sequential"
      }
    },
    "parent": "Hours of Operation",
    "context": {},
    "metadata": {},
    "conditions": " true",
    "dialog_node": "node_6_1482426521282",
    "previous_sibling": "node_2_1482424204936"
  },
  {
    "type": "response_condition",
    "output": {
      "text": {
        "values": [
          "We are open on @holiday regular hours"
        ],
        "selection_policy": "sequential"
      }
    },
    "parent": "Hours of Operation",
    "context": {},
    "metadata": {},
    "conditions": "@holiday",

```



```

    "dialog_node": "node_5_1482426503106",
    "previous_sibling": "node_1_1522387330204"
  },
  {
    "type": "response_condition",
    "output": {
      "text": {
        "values": [
          "Our hours on <? @sys-date.reformatDateTime(\"EEEE\") ?> are 11am to
6pm."
        ],
        "selection_policy": "sequential"
      }
    },
    "parent": "Hours of Operation",
    "context": {},
    "metadata": {},
    "conditions": "@sys-date.reformatDateTime(\"EEEE\") == \"Saturday\" ||
@sys-date.reformatDateTime(\"EEEE\") == \"Sunday\"",
    "dialog_node": "node_2_1482424204936",
    "previous_sibling": "node_5_1482426503106"
  },
  {
    "type": "response_condition",
    "output": {
      "text": {
        "values": [
          "We are open on <? @sys-date.reformatDateTime(\"EEEE\") ?> from
10am until 8pm"
        ],
        "selection_policy": "sequential"
      }
    },
    "parent": "Hours of Operation",
    "context": {},
    "metadata": {},
    "conditions": "@sys-date.reformatDateTime(\"EEEE\") == \"Monday\" ||
@sys-date.reformatDateTime(\"EEEE\") == \"Tuesday\" || @sys-
date.reformatDateTime(\"EEEE\") == \"Wednesday\" || @sys-
date.reformatDateTime(\"EEEE\") == \"Thursday\" || @sys-
date.reformatDateTime(\"EEEE\") == \"Friday\"",
    "dialog_node": "node_1_1522387330204",

```

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    "previous_sibling": "node_4_1482425833988"
  },
  {
    "type": "response_condition",
    "output": {
      "text": {
        "values": [
          "We are closed on @holiday"
        ],
        "selection_policy": "sequential"
      }
    },
    "parent": "Hours of Operation",
    "context": {},
    "metadata": {},
    "conditions": "@holiday:christmas || @holiday:thanksgiving || @holiday:(new years)",
    "dialog_node": "node_4_1482425833988"
  },
  {
    "type": "event_handler",
    "output": {},
    "parent": "slot_12_1522596437268",
    "context": {
      "specialist": "@specialist"
    },
    "metadata": {},
    "conditions": "@specialist",
    "event_name": "input",
    "dialog_node": "handler_13_1522596437268",
    "previous_sibling": "handler_14_1522596437268"
  },
  {
    "type": "event_handler",
    "output": {
      "text": {
        "values": [
          "We'll do our best to book you with @specialist"
        ],
        "selection_policy": "sequential"
      }
    }
  },

```

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"parent": "slot_12_1522596437268",
"event_name": "filled",
"dialog_node": "handler_15_1522596463593",
"previous_sibling": "handler_13_1522596437268"
},
{
  "type": "event_handler",
  "output": {},
  "parent": "slot_12_1522596437268",
  "event_name": "focus",
  "dialog_node": "handler_14_1522596437268"
},
{
  "type": "event_handler",
  "output": {},
  "parent": "slot_102_1498132501942",
  "context": {
    "date": "@sys-date"
  },
  "metadata": {},
  "conditions": "@sys-date",
  "event_name": "input",
  "dialog_node": "handler_103_1498132501942",
  "previous_sibling": "handler_104_1498132501942"
},
{
  "type": "event_handler",
  "output": {
    "text": {
      "values": [
        "Looks like you're trying to make a reservation in the past. Try again."
      ]
    }
  },
  "parent": "slot_102_1498132501942",
  "metadata": {},
  "next_step": {
    "behavior": "reprompt"
  },
  "conditions": "$date.before(now())",
  "event_name": "filled",
  "dialog_node": "handler_6_1509695999145",

```

```

    "previous_sibling": "handler_103_1498132501942"
  },
  {
    "type": "event_handler",
    "output": {
      "text": "What day would you like to come in?"
    },
    "parent": "slot_102_1498132501942",
    "metadata": {},
    "event_name": "focus",
    "dialog_node": "handler_104_1498132501942"
  },
  {
    "type": "standard",
    "output": {
      "text": "OK. Let me know how I can help"
    },
    "parent": "node_22_1467833484410",
    "metadata": {},
    "conditions": "@reply:no",
    "dialog_node": "node_21_1468350173406",
    "previous_sibling": "node_19_1468350024009"
  },
  {
    "type": "standard",
    "output": {
      "text": {
        "values": [
          "OK. Transferring... [Use IBM Cloud Functions to connect to backend systems]"
        ]
      }
    },
    "parent": "node_22_1467833484410",
    "metadata": {},
    "conditions": "@reply:yes",
    "dialog_node": "node_19_1468350024009"
  },
  {
    "type": "standard",
    "output": {
      "text": {

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    "values": [
      "So long",
      "See ya",
      "Good bye"
    ],
    "selection_policy": "sequential"
  }
},
"metadata": {},
"conditions": "#Goodbye",
"digress_in": "does_not_return",
"dialog_node": "node_12_1468329566917",
"previous_sibling": "node_13_1502484041694"
},
{
  "type": "standard",
  "output": {
    "text": {
      "values": [
        "I didn't understand can you try again"
      ],
      "selection_policy": "sequential"
    }
  },
  "metadata": {},
  "conditions": "anything_else",
  "digress_in": "returns",
  "dialog_node": "node_2_1467831978407",
  "digress_out": "allow_all",
  "previous_sibling": "node_4_1570050459690",
  "disambiguation_opt_out": true
},
{
  "type": "standard",
  "title": "Please transfer me to an agent",
  "output": {
    "text": {
      "values": [
        "Would you like me to transfer you to a representative?"
      ],
      "selection_policy": "sequential"
    }
  }
}

```

```

    },
    "metadata": {},
    "conditions": "#General_Connect_to_Agent",
    "digress_in": "does_not_return",
    "dialog_node": "node_22_1467833484410",
    "digress_out": "allow_all_never_return",
    "previous_sibling": "node_2_1468243505617"
  },
  {
    "type": "standard",
    "title": "Ask about Product",
    "actions": [
      {
        "name": "main_webhook",
        "type": "webhook",
        "parameters": {
          "input": "<?input_text?>"
        },
        "result_variable": "webhook_result_1"
      }
    ],
    "metadata": {
      "_customization": {
        "mcr": true
      }
    },
    "conditions": "#Product_Information",
    "dialog_node": "node_5_1591243221968",
    "previous_sibling": "Opening"
  },
  {
    "type": "frame",
    "title": "I want to make an appointment",
    "output": {},
    "metadata": {
      "fallback": "leave",
      "_customization": {
        "mcr": true
      }
    },
    "conditions": "#Customer_Care_Appointments",
    "digress_in": "does_not_return",

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    "dialog_node": "Reservation using slots",
    "digress_out": "allow_all",
    "previous_sibling": "Directions",
    "digress_out_slots": "allow_all"
  },
  {
    "type": "standard",
    "output": {},
    "metadata": {},
    "conditions": "#General_Greetings",
    "digress_in": "does_not_return",
    "dialog_node": "node_13_1502484041694",
    "previous_sibling": "Reservation using slots"
  },
  {
    "type": "standard",
    "title": "What are your hours?",
    "output": {},
    "metadata": {},
    "next_step": {
      "behavior": "jump_to",
      "selector": "body",
      "dialog_node": "node_3_1522439390442"
    },
    "conditions": "#Customer_Care_Store_Hours",
    "digress_in": "does_not_return",
    "dialog_node": "Hours of Operation",
    "digress_out": "allow_all",
    "previous_sibling": "node_5_1591243221968"
  },
  {
    "type": "standard",
    "output": {
      "text": {
        "values": [
          "You're welcome. Just let me know if you need anything else",
          "No problem. Just let me know if you need anything else",
          "My pleasure. Just let me know if you need anything else"
        ]
      },
      "selection_policy": "sequential"
    }
  },

```

```

"metadata": {},
"conditions": "#Thanks",
"digress_in": "does_not_return",
"dialog_node": "node_2_1468243505617",
"previous_sibling": "node_12_1468329566917"
},
{
  "type": "standard",
  "title": "Where are you located?",
  "output": {},
  "metadata": {},
  "next_step": {
    "behavior": "skip_user_input"
  },
  "conditions": "#Customer_Care_Store_Location",
  "digress_in": "does_not_return",
  "dialog_node": "Directions",
  "digress_out": "allow_all",
  "previous_sibling": "Hours of Operation"
},
{
  "type": "standard",
  "title": "What can I do",
  "output": {
    "generic": [
      {
        "values": [
          {
            "text": "I can tell you about our store locations and opening hours, or
help you set up an appointment."
          },
          {
            "text": "You could also ask me to connect you to an agent."
          }
        ],
        "response_type": "text",
        "selection_policy": "sequential"
      }
    ]
  },
  "conditions": "#Help",
  "dialog_node": "node_4_1570050459690",

```



```

    "previous_sibling": "node_22_1467833484410"
  },
  {
    "type": "standard",
    "title": "Opening",
    "output": {
      "text": {
        "values": [
          "Hello, I'm a demo customer care virtual assistant to show you the basics.
I can help with directions to my store, hours of operation and booking an in-
store appointment"
        ],
        "selection_policy": "sequential"
      }
    },
    "context": {
      "no_reservation": true
    },
    "metadata": {},
    "conditions": "welcome",
    "dialog_node": "Opening"
  }
],
"counterexamples": [],
"system_settings": {
  "tooling": {
    "store_generic_responses": true
  },
  "off_topic": {
    "enabled": true
  },
  "disambiguation": {
    "prompt": "Did you mean:",
    "enabled": true,
    "randomize": true,
    "max_suggestions": 5,
    "suggestion_text_policy": "title",
    "none_of_the_above_prompt": "None of the above."
  },
  "system_entities": {
    "enabled": true
  }
},

```

```
    "spelling_auto_correct": true
  },
  "learning_opt_out": false,
  "name": "Customer Care Sample Skill",
  "language": "en",
  "description": "Sample simple customer service skill to get you started."
}
```