

MY PROJECT SCOPE & REPORT

1 Installed an IDE for coding!

Title: Intelliget Customer Help Desk with
Smart Document Understanding

in

Aritificial Intelligence

by

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1. Introduction

1.1 Overview:

We will build a chatbot that uses various IBM 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 Watsonhooks.

- Project Requirements: Node-Red, IBM Cloud, IBM Watson, Node Js
- Functional Requirement: IBM Cloud
- Technical Requirement: AI, ML, Watson AI, Node Js
- Software Requirement: Watson Discovery, Watson Assistant, Watson Cloud Functions and Node-Red
- Project Deliverables: Intelligent chatbot with smart Understanding
- Project Team: Heli Vachhani
- 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 out of the scope of the pre-determined question set, the opinion is to typically 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 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 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 customer's problem(s).

To take it a step further, the project shall use smart document understanding feature of Watson Discovery to train it. Using webhooks, Watson Discovery is connected to the Watson Assistant. Finally using Node-Red, Watson Assistant can be integrated with a web UI. This UI can be used to connect with Watson Assistant and chat with it.

1.2.1 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 out of the scope of the pre-determined question set, the opinion is to typically tell the customer the question isn't valid or offer to speak to a real person.

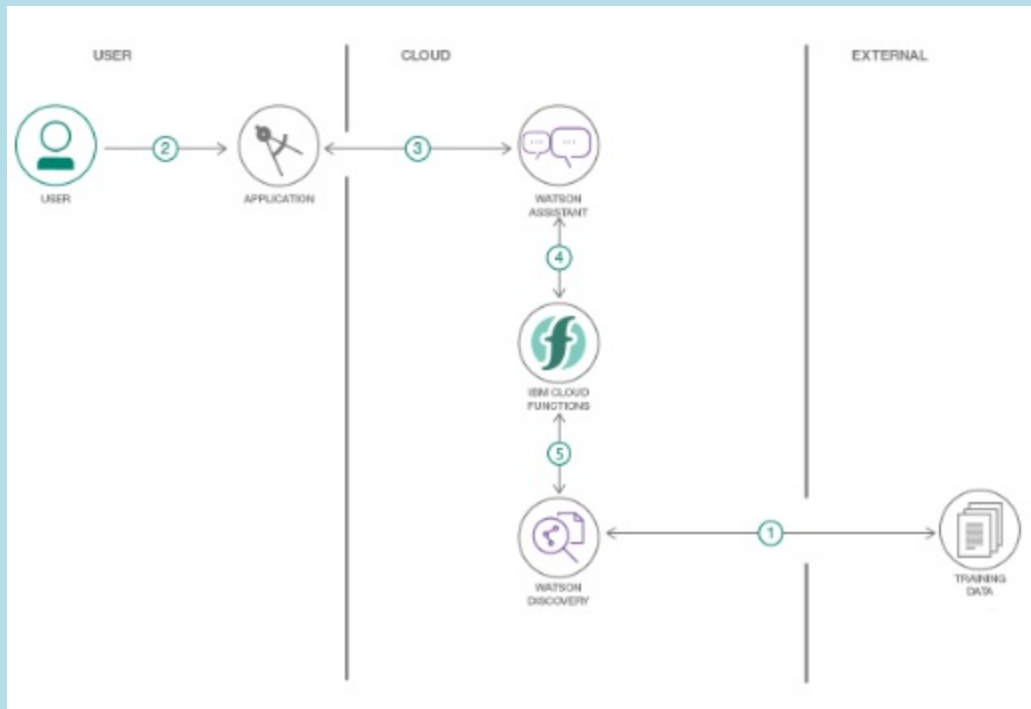
2.2 Proposed Solution:

If 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 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 customer's problem(s).

To take it a step further, the project shall use smart document understanding feature of Watson Discovery to train it. Using webhooks, Watson Discovery is connected to the Watson Assistant. Finally using Node-Red, Watson Assistant can be integrated with a web UI. This UI can be used to connect with Watson Assistant and chat with it.

3. Theoretical Analysis

Block/ Flow diagram:



Hardware/ Software Designing:

1. Create necessary Watson services
2. Config them
3. Creat Watson Cloud function Action
4. Config Watosn Assistant
5. Integrate Watson Assistant with Watson Discovery using Webhook
6. Build Node-Red flow to integrate Watson Assistant and Web dashboard

4. Experimental Investigation

Intelligent Customer Help Desk

You

Greetings, may i know your name? *

Heli

SUBMIT CANCEL

Post your enquiry here:

hello

SUBMIT CANCEL

Bot

Hi Heli

Your enquiry output:

Kon'nichiwa! That's hello in Japanese! This is a CustomerCareBot! How may i help you?

flows.json skill-Customer...json Removed flows.json Removed Show All X

Intelligent Customer Help Desk

You

Greetings, may i know your name? *

Heli

SUBMIT CANCEL

Post your enquiry here:

gm

SUBMIT CANCEL

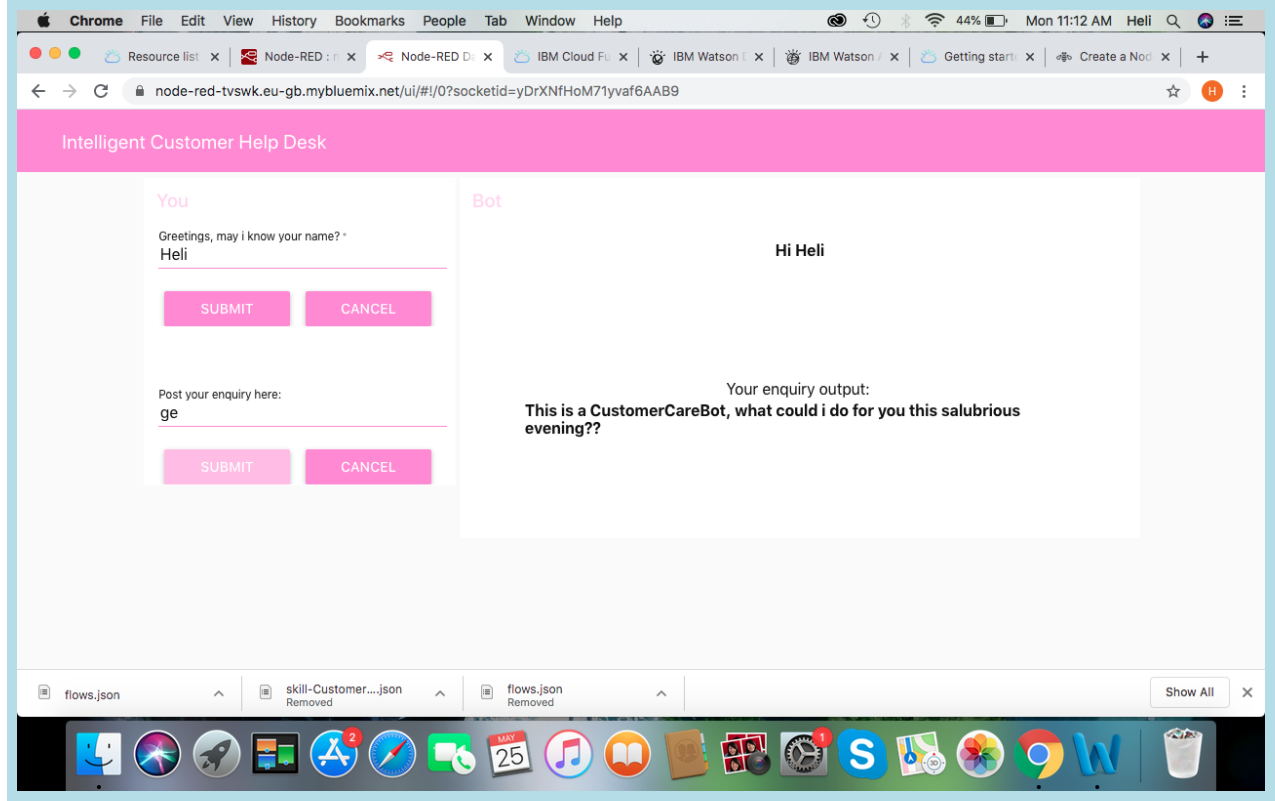
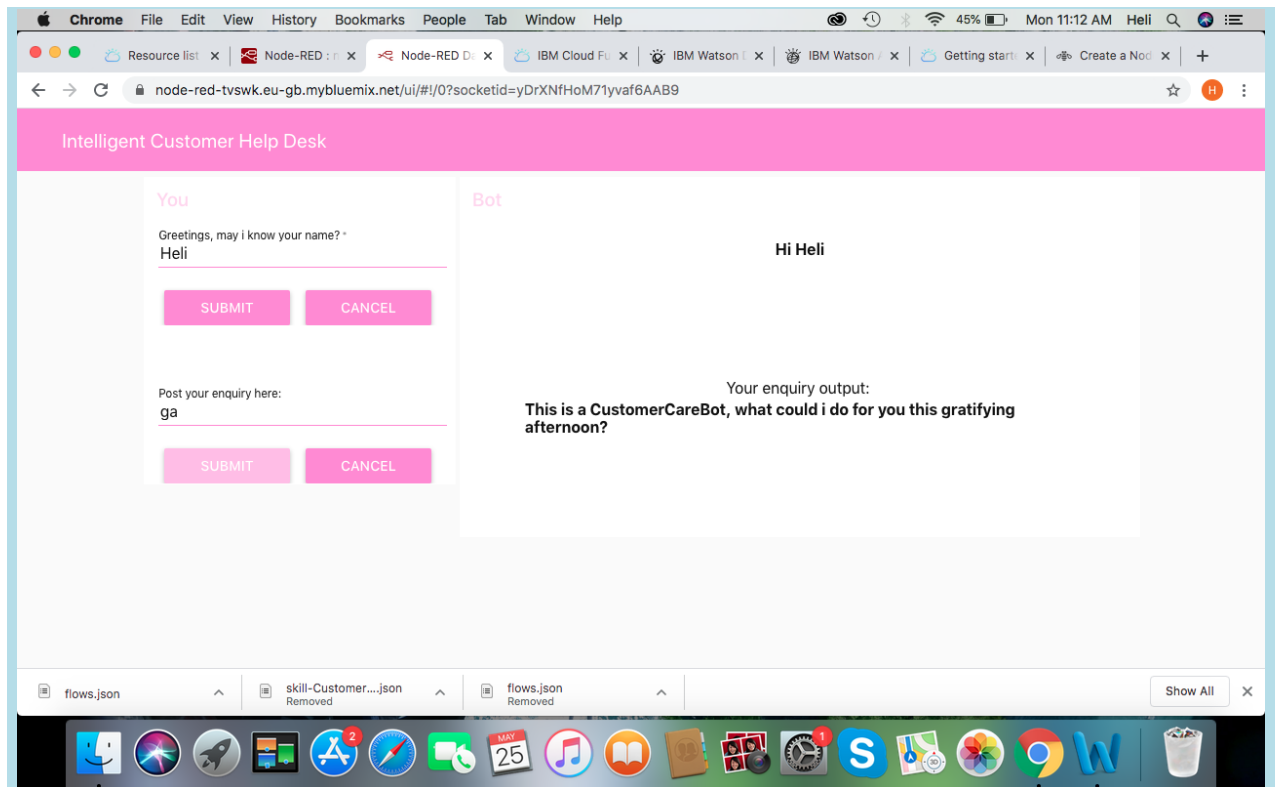
Bot

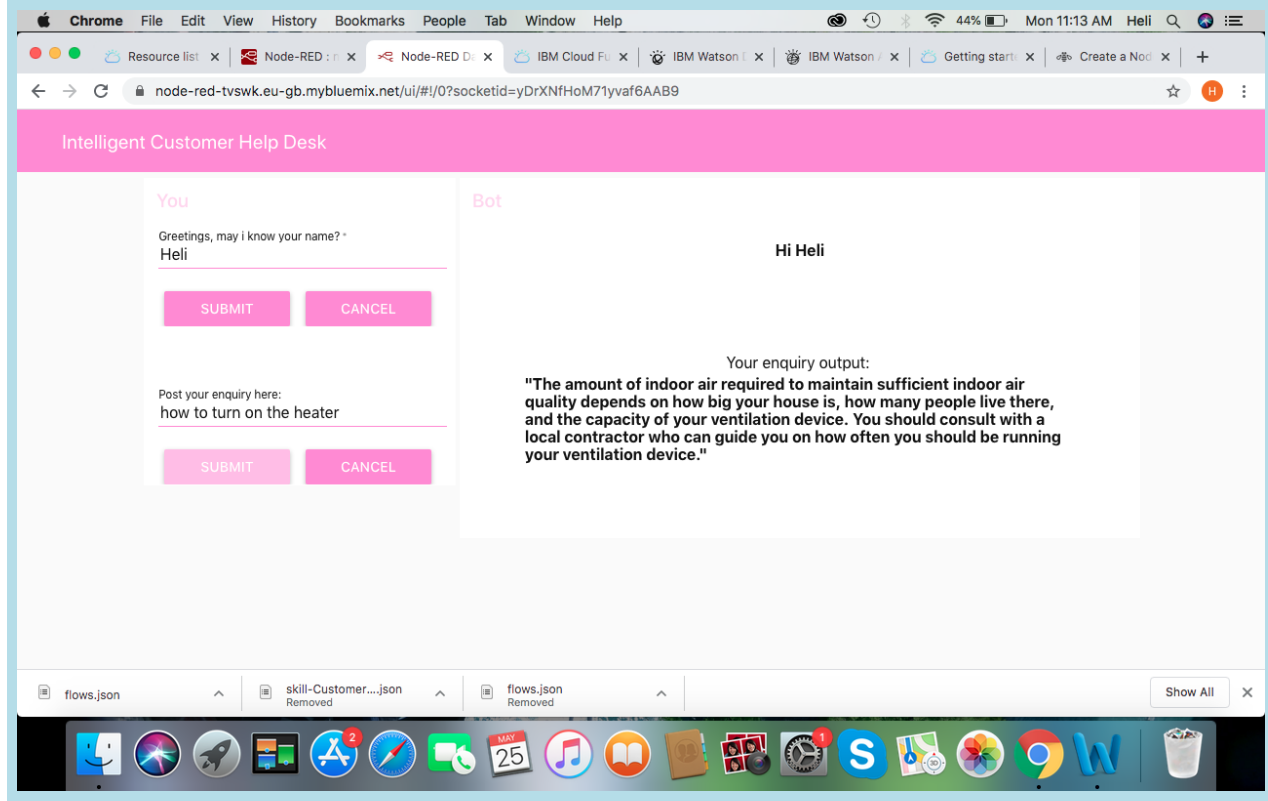
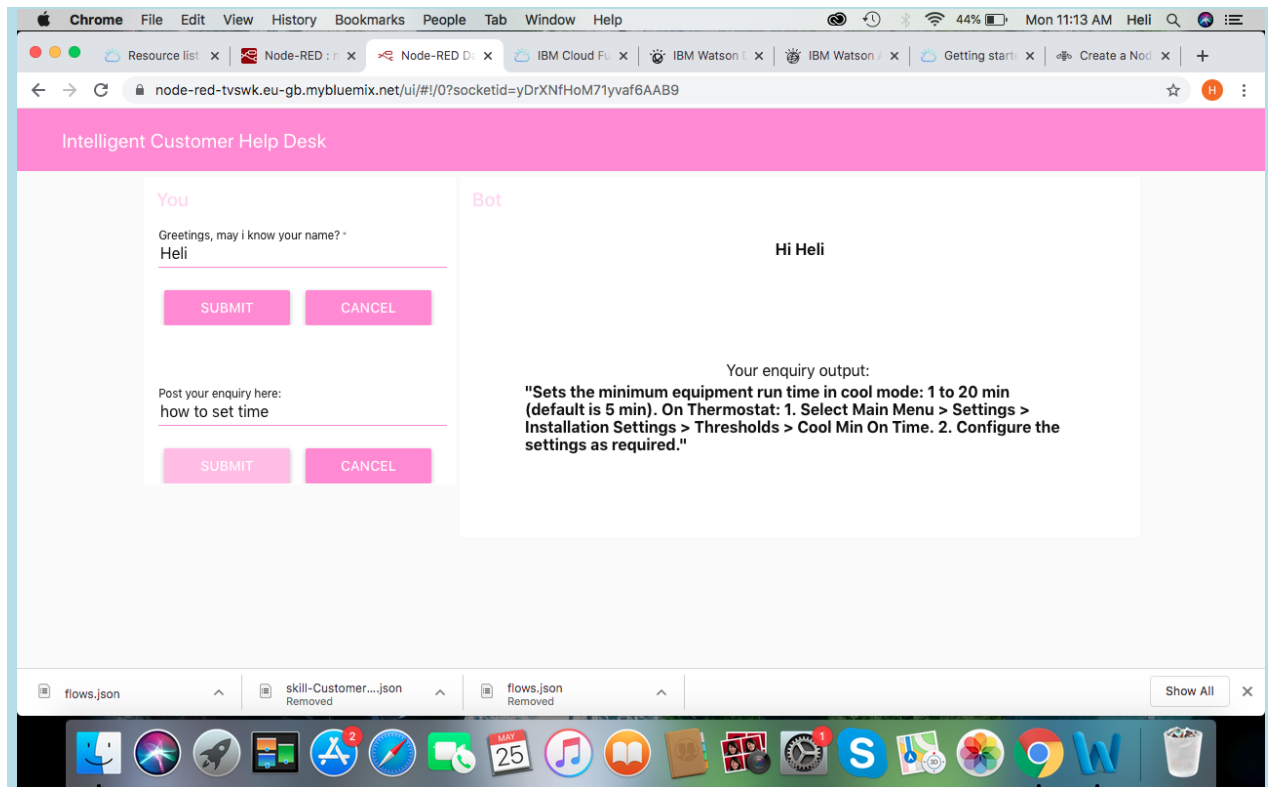
Hi Heli

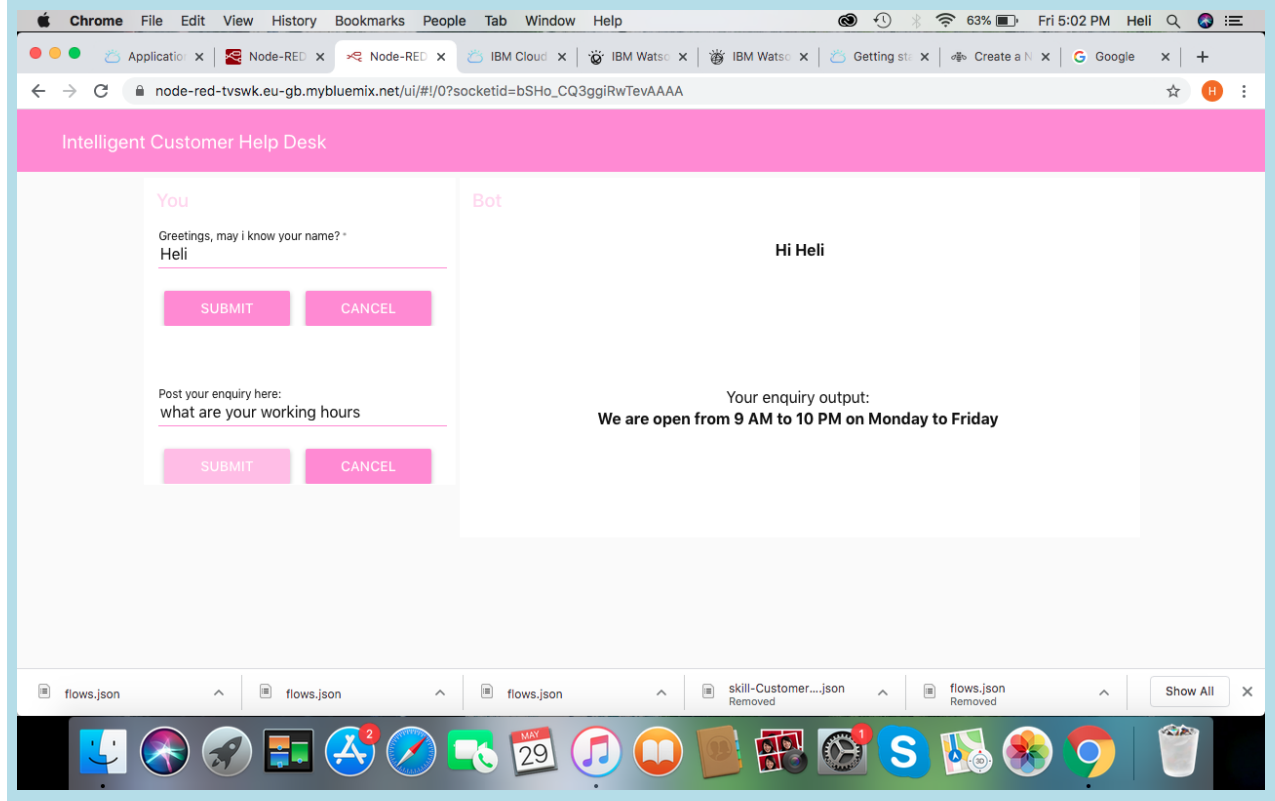
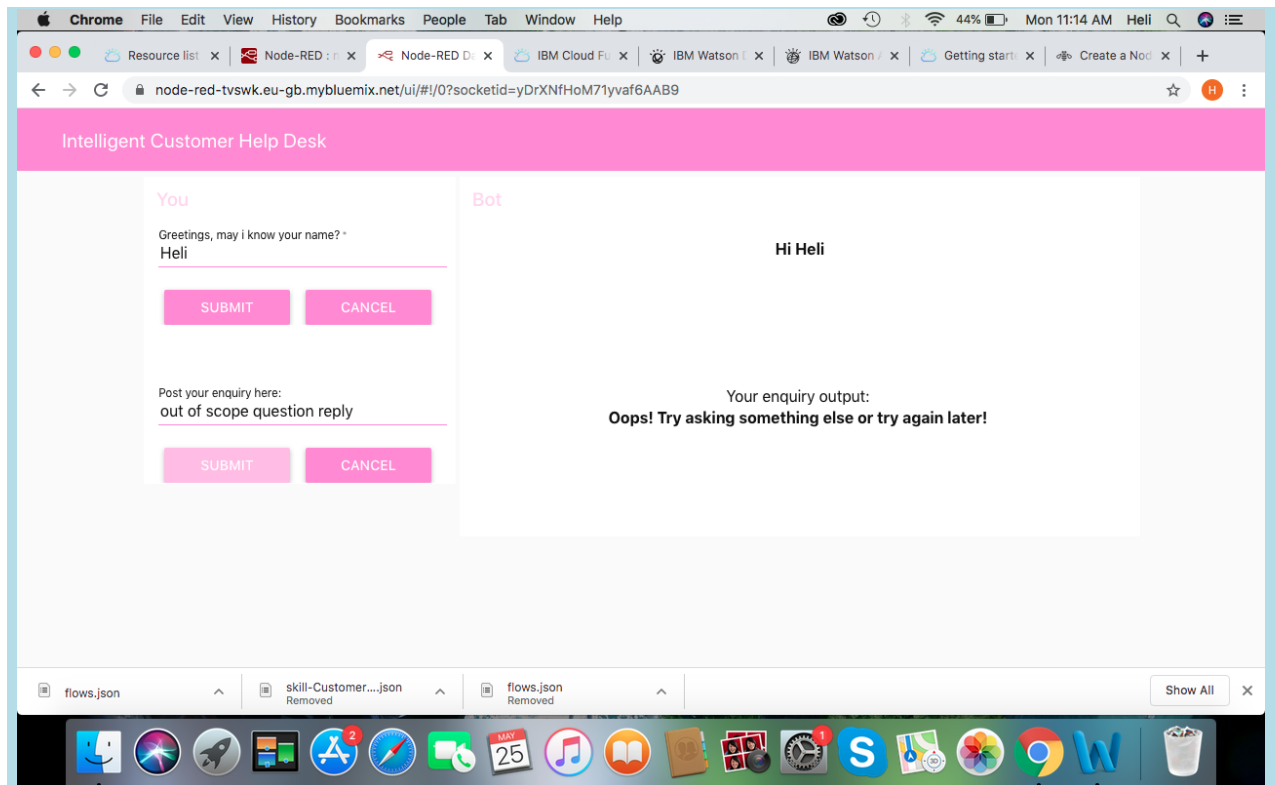
Your enquiry output:

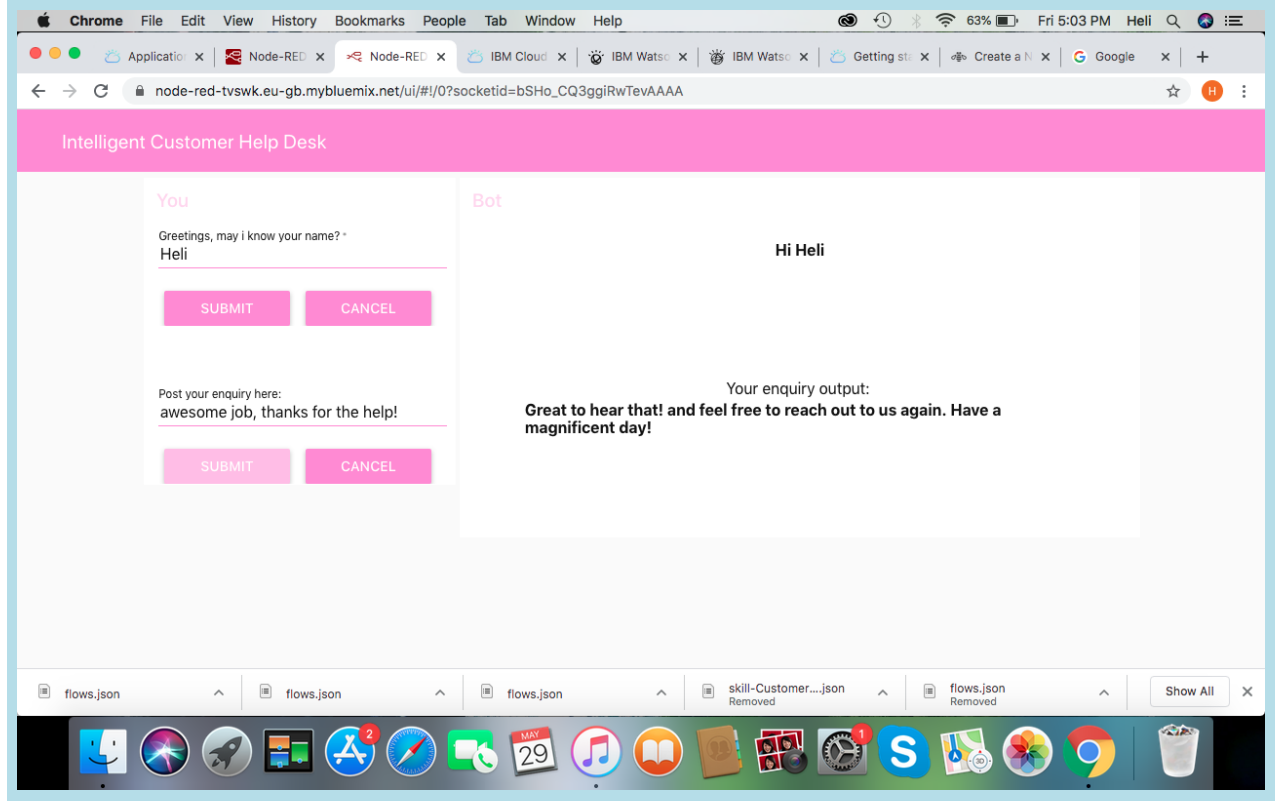
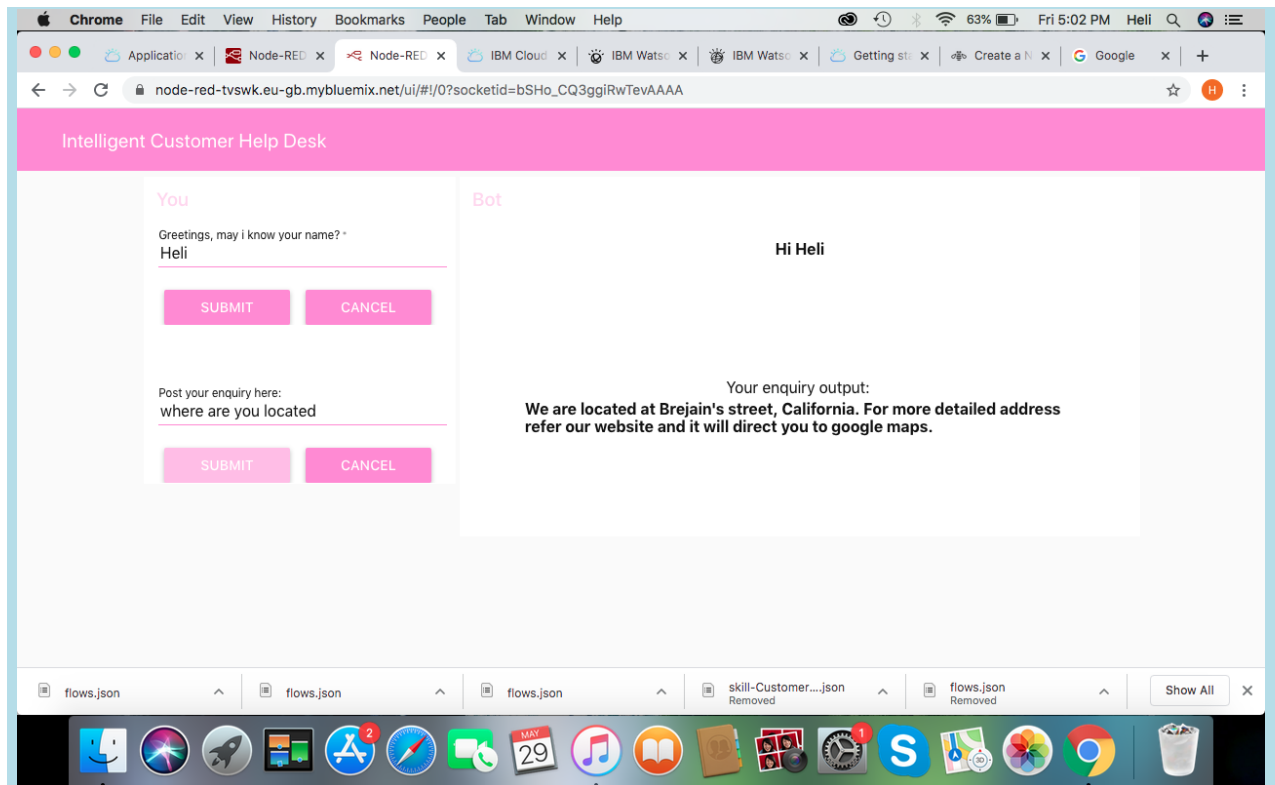
This is a CustomerCareBot, what could i do for you this pleasant morning?

flows.json skill-Customer...json Removed flows.json Removed Show All X





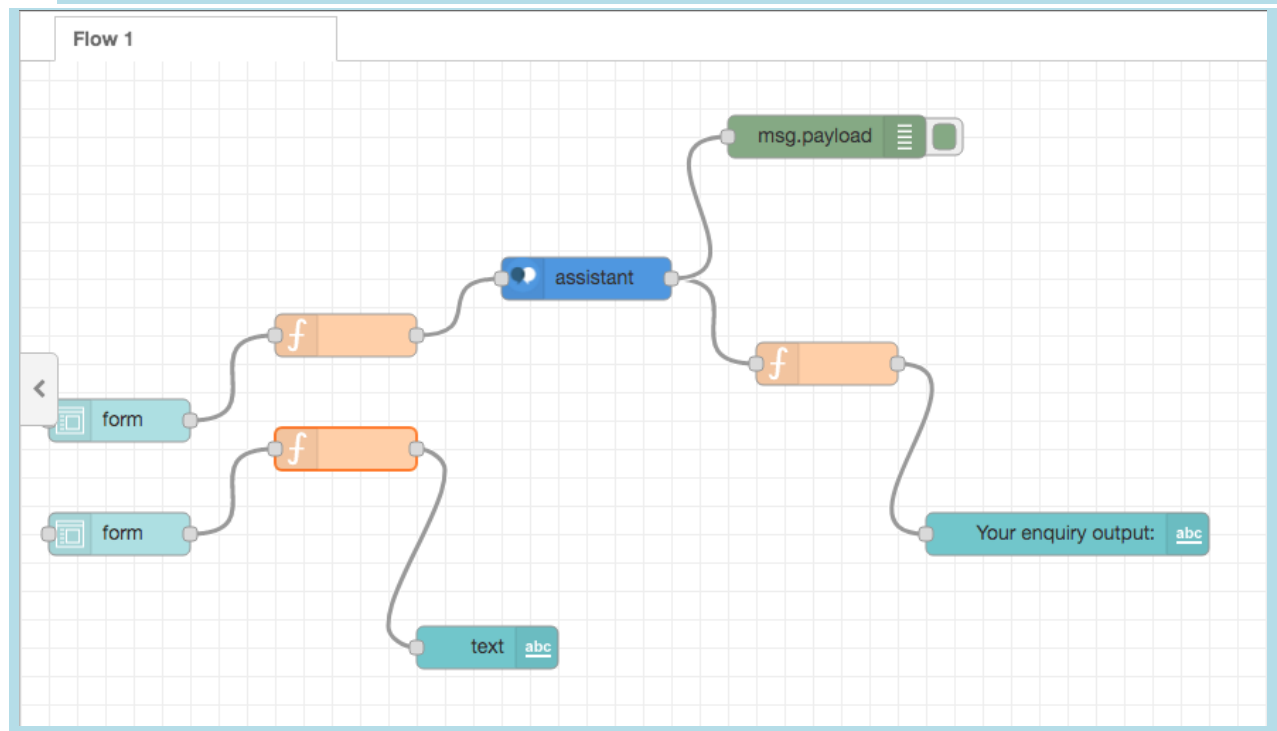




5. Flowchart

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

- Inject
- Debug
- ui_Form
- ui_Text
- ui_Button
- Function
- Switch
- Assistant



6. Results

Web based UI was developed by Integrating all the services using Node-Red.

URL for UI dashboard: <https://node-red-tvswk.eu-gb.mybluemix.net/ui/>
(clicking above will direct you to pink and white themed page which is your chatbot)

7. Advantages & Disadvantages

Advantages:

1. Reduces man power
2. Cost efficient
3. Less and less calls will be delivered to Customer Representatives.

Disadvantages:

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

8. Applications

1. The chatbot can be deployed to various websites it can solve a lot of basic questions.
2. It can be used to deploy as Customer Help Desk 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 Watson services like Text-to-Speech and Speech-to-Text can be integrated in the chatbot. This can make 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 AI Assistant:
<https://www.youtube.com/watch?v=hitUOFNne14>
3. Watson Discover:
<https://developer.ibm.com/articles/introduction-watson-discovery/>
4. How to use Watson Assistant with AI webhooks:
<https://www.youtube.com/embed/5z3i5lsbBVk>

Appendix

Source code

Node-Red Flow code

```
1  [  
2    {  
3      "id": "b52c2ffb.19a88",  
4      "type": "tab",  
5      "label": "Flow 1",  
6      "disabled": false,  
7      "info": ""  
8    },  
9    {  
10     "id": "7b79a485.ff7c6c",  
11     "type": "function",  
12     "z": "b52c2ffb.19a88",  
13     "name": "",  
14     "func": "msg.payload=\"Hi \" +  
15     msg.payload.name;\nreturn msg;",  
16     "outputs": 1,  
17     "noerr": 0,
```

```
17         "x": 230,
18         "y": 300,
19         "wires": [
20             [
21                 "2fc8071c.da2be8"
22             ]
23         ]
24     },
25     {
26         "id": "93ead6b3.f58628",
27         "type": "function",
28         "z": "b52c2ffb.19a88",
29         "name": "",
30         "func": "msg.payload =
msg.payload.output.text[0];\nreturn msg;",
31         "outputs": 1,
32         "noerr": 0,
33         "x": 570,
34         "y": 240,
35         "wires": [
36             [
37                 "86c5cc67.ef8a9"
38             ]
39         ]
40     },
41     {
42         "id": "ec1fcea.c0b953",
```

```
43         "type": "debug",
44         "z": "b52c2ffb.19a88",
45         "name": "",
46         "active": true,
47         "tosidebar": true,
48         "console": false,
49         "tostatus": false,
50         "complete": "payload",
51         "targetType": "msg",
52         "x": 570,
53         "y": 80,
54         "wires": []
55     },
56     {
57         "id": "c6dac7e6.6b82d8",
58         "type": "function",
59         "z": "b52c2ffb.19a88",
60         "name": "",
61         "func":
62             "msg.payload=msg.payload.text;\nreturn msg;",
63         "outputs": 1,
64         "noerr": 0,
65         "x": 230,
66         "y": 220,
67         "wires": [
68             [
69                 "89ea37f3.059d28"
```

```
69         ]
70     ]
71 },
72 {
73     "id": "2fc8071c.da2be8",
74     "type": "ui_text",
75     "z": "b52c2ffb.19a88",
76     "group": "834247f6.a44c08",
77     "order": 1,
78     "width": "13",
79     "height": "1",
80     "name": "",
81     "label": "",
82     "format": "{{msg.payload}}",
83     "layout": "row-center",
84     "x": 330,
85     "y": 440,
86     "wires": []
87 },
88 {
89     "id": "86c5cc67.ef8a9",
90     "type": "ui_text",
91     "z": "b52c2ffb.19a88",
92     "group": "834247f6.a44c08",
93     "order": 2,
94     "width": "11",
95     "height": "5",
```

```
96         "name": "",
97         "label": "Your enquiry output:
    ",
98         "format": "{{msg.payload}}",
99         "layout": "col-center",
100         "x": 740,
101         "y": 360,
102         "wires": []
103     },
104     {
105         "id": "858d38a.18dbbc8",
106         "type": "ui_form",
107         "z": "b52c2ffb.19a88",
108         "name": "",
109         "label": "",
110         "group": "911f2ead.9b0ac",
111         "order": 2,
112         "width": 0,
113         "height": 0,
114         "options": [
115             {
116                 "label": "Greetings, may i
    know your name?",
117                 "value": "name",
118                 "type": "text",
119                 "required": true,
120                 "rows": null
```

```
121         }
122     ],
123     "formValue": {
124         "name": ""
125     },
126     "payload": "",
127     "submit": "submit",
128     "cancel": "cancel",
129     "topic": "",
130     "x": 70,
131     "y": 360,
132     "wires": [
133         [
134             "7b79a485.ff7c6c"
135         ]
136     ]
137 },
138 {
139     "id": "ca55e6ed.fa8d88",
140     "type": "ui_form",
141     "z": "b52c2ffb.19a88",
142     "name": "",
143     "label": "",
144     "group": "911f2ead.9b0ac",
145     "order": 5,
146     "width": 0,
147     "height": 0,
```

```
148         "options": [  
149             {  
150                 "label": "Post your enquiry  
here:",  
151                 "value": "text",  
152                 "type": "text",  
153                 "required": false,  
154                 "rows": null  
155             }  
156         ],  
157         "formValue": {  
158             "text": ""  
159         },  
160         "payload": "",  
161         "submit": "submit",  
162         "cancel": "cancel",  
163         "topic": "",  
164         "x": 70,  
165         "y": 280,  
166         "wires": [  
167             [  
168                 "c6dac7e6.6b82d8"  
169             ]  
170         ]  
171     },  
172     {  
173         "id": "89ea37f3.059d28",
```

```
174         "type": "watson-conversation-v1",
175         "z": "b52c2ffb.19a88",
176         "name": "",
177         "workspaceid":
178             "2e9422c6-b0e1-4d7b-b55a-75712062f002",
179         "multiuser": false,
180         "context": true,
181         "empty-payload": false,
182         "service-endpoint":
183             "https://api.eu-gb.assistant.watson.cloud.ibm
184             .com/instances/9a5361a7-6db4-4cd4-aa48-6782c2
185             a38306/v1/workspaces/2e9422c6-b0e1-4d7b-b55a-
186             75712062f002/message",
187         "timeout": "",
188         "optout-learning": false,
189         "x": 400,
190         "y": 180,
191         "wires": [
192             [
193                 "93ead6b3.f58628",
194                 "ec1fcea.c0b953"
195             ]
196         ]
197     },
198     {
199         "id": "834247f6.a44c08",
200         "type": "ui_group",
```



```
196         "z": 0,
197         "name": "Bot",
198         "tab": "5b0ec90d.7e6008",
199         "order": 2,
200         "disp": true,
201         "width": "13",
202         "collapse": false
203     },
204     {
205         "id": "911f2ead.9b0ac",
206         "type": "ui_group",
207         "z": 0,
208         "name": "You",
209         "tab": "5b0ec90d.7e6008",
210         "order": 1,
211         "disp": true,
212         "width": "6",
213         "collapse": false
214     },
215     {
216         "id": "5b0ec90d.7e6008",
217         "type": "ui_tab",
218         "z": 0,
219         "name": "Intelligent Customer Help
220         Desk",
221         "icon": "dashboard",
222         "disabled": false,
```

```
222         "hidden": false
223     }
224 ]
```