

## NLP Masterclass: Dialogflow Student Query Bot

In this exercise, you will make a simple chatbot which will respond to typed user input and will be capable of a simple dialogue. The aim is to build a chatbot that would have a dialogue that will answer questions about Queen Mary. Desirable behaviour might be like the below:

**John:** Hi.

**QueryBot:** Hello, what can I help you with?

**John:** How do I connect to Wi-Fi at Queen Mary?

**QueryBot:** You can connect to the Eduroam Wi-Fi service. You can follow the steps as I tell you about them below...

Select eduroam from the list of Wi-Fi networks

Enter your QMUL username in the format username@qmul.ac.uk (eg ab16543@qmul.ac.uk)

Enter your password

Check with IT if you're not sure of your username.

More information on eduroam Wi-Fi is available on the IT Services website.

This information in the long response was taken from a link on the FAQs page for QM students <https://www.qmul.ac.uk/newstudents/faqs/>. You can use this information (and other sources you can find) as the basis for the chatbot's knowledge.

### Steps:

1. Go to <https://dialogflow.com/> and click 'Sign Up' to get a free account. You need a Google account to access this (e.g. a gmail account)- if you don't have one, you will have to create one for this exercise. You will have to sign in using your Google username and password. You should then enter the Dialogflow
2. In the top of the left-hand menu, press the 'Create Agent' button, and enter a name such as 'QueryBot' for the agent. Press 'Create' and wait a few seconds for the agent to be created.
3. The basis for understanding the user's meaning in Dialogflow are called 'intents'. An intent here is roughly an equivalent set of user inputs such that a consistent response can be given by the bot when one of those inputs is recognized. Read <https://dialogflow.com/docs/intents> for details.
4. Create your first intent. Think of a common thing that a student might ask, e.g. 'What is the address of the Mile End campus?'. Call the intent an appropriate name (e.g. 'AskForMileEndAddress') and add an example form of the question by clicking on 'add training phrases' under the 'Training Phrases' sub-section. You can add several paraphrases (variations) of the first phrase you think of (e.g. 'Give me the address of the Mile End campus.', 'Where is Queen Mary's Mile End campus?' etc.). Once you've added at least 2 training phrases, add a text response in the 'Responses' subsection of the intent menu (e.g. 'The Mile End campus address is: Mile End Rd, London E1 4NS.'). Don't worry about the

'Contexts', 'Events' and 'Actions and Parameters' tabs for now. Once you've added a response, click the 'Save' button to save the intent.

5. Test the current state of your chatbot using the 'Try it now' text-field in the top-right corner. Type in one of the training phrases you entered and see if the response is what you expect. You can also test the chatbot as it would be experienced by users by clicking on the 'Integrations' button in the left-hand menu and clicking 'Web Demo'. A URL will be generated which will consist of 'https://bot.dialogflow.com/' followed by a number. This is where the bot will be deployed to. Navigate to that URL and interact with your bot.
6. Repeat steps 4 and 5 several times to create a number of sensible input(s)->output mappings that make sense for this application.

**EXTRA (if you have time):**

7. While the approach of manually entering input-output mappings as you have just done can be useful, it's easier to use existing resources for a known domain (in our case the domain being Student FAQs). Have a look at the links at <https://www.qmul.ac.uk/newstudents/faqs/> for the type of information the bot should be able to communicate.
8. You can add one of these FAQ pages (e.g. the one arrived at through the 'Enrolment' link) to populate what Dialogflow calls a 'Knowledge Base'. You can create one of these by clicking on 'Knowledge' in the left-hand menu. You have to enable this feature (currently in Beta mode) by going to the settings page (the cog wheel at the top of the left-hand menu) and clicking 'Enable beta features and APIs'. Name the knowledge base appropriately e.g. 'QMStudentQuestions', then click 'Create New Document' to create a new document. Enter an appropriate 'Document name' such as 'QM\_Accommodation\_Support' and, for 'Document Type' select 'FAQ'. For 'mime type' select 'text/html', and choose the 'url' option for the source, adding the QM FAQ for accommodation page <https://www.qmul.ac.uk/newstudents/faqs/accommodation/>. Finally click 'Create'.
9. Inspect the knowledge base and document you have just created by clicking on it as it appears in the Knowledge page and then 'View Detail'. You can turn each of the question/response pairs which you would like to be added to your chatbot's response capability by selecting them on the left and clicking 'Convert to Intents'. If the conversion is successful (sometimes it doesn't work if you select too many, in which case, select 2 or 3 at a time and try converting them in groups), then you can click on the 'Intents' tab through the left-hand menu and you will see those FAQs appear as intents, which you can then continue to add to in the way you've already done (by adding more training phrases). Try the current state of your chatbot (as in step 5 above), and try entering questions from the FAQ page you added through your knowledge base, e.g. 'Where can I drop off my stuff?' if you added the accommodation webpage.
10. Try adding other FAQ pages such as those for 'Enrolment'. Note how not all the FAQ pages will be crawlable by Dialogflow- if that happens you may need to enter them manually as intents without using the Knowledge function.
11. As you develop the agent, write down what is difficult to deal with. What kind of variation can your chatbot deal with in its input? How many training phrases do you need to add for a given intent to be recognized by phrases other than those you explicitly added?