

TASK P – 5.1 C

LUIS and QnA Maker

Evolution and hereditary
QnA app

Target - C

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Introduction:

We are required to build bot question and answering chat bot and link it to Facebook messenger. The domain on which we are working is organic evolution. Custom built bot is built using Azure Cognitive Services Language Studio, it will be deployed to Azure and attached to Facebook Messenger.

This bot will be able to answer questions related to evolution and how hereditary traits are transferred from one generation to other. It is a simple bot with limited data base on evolution and much complicated bots can be built using the same tools. This is to demonstrate how these QnA bots are built. Building process is explained step by step and attached to other applications for public use.

Step 1: Creating a language resource group

The screenshot shows the Microsoft Azure portal interface. A search bar at the top contains the text 'language'. Below the search bar, a navigation menu includes sections for 'Azure services', 'Resources', 'Navigate', 'Tools', and 'Useful links'. The 'Azure services' section is expanded, showing various services like 'Language', 'Language understanding', 'Cognitive Services', etc. The 'Language' service is specifically highlighted with a blue box. To the right of the search results, there are sections for 'Marketplace', 'Documentation', and 'Azure Active Directory'. At the bottom of the page, there are links for 'Technical Documentation', 'Azure Migration Tools', and 'Recent Azure Updates'. There are also download links for the 'App Store' and 'Google Play'.

Open Azure portal and log in to your account then search language and select it.

The screenshot shows the Microsoft Azure portal with the URL 'https://portal.azure.com/#view/Microsoft_Azure_ProjectOxford/CognitiveServicesHub/~/TextAnalytics'. The left sidebar is titled 'Cognitive Services' and lists several services: 'All Cognitive Services', 'Azure OpenAI', 'Speech', 'Language', 'Vision', 'Decision', and 'Multimodal'. The 'Language' service is currently selected and highlighted with a blue box. The main content area is titled 'Cognitive Services | Language service'. It displays a message 'No language to display' with a small icon of a computer monitor and speech bubbles. Below this message is a prominent blue button labeled 'Create language', which is also highlighted with a blue box. The top of the page has a search bar and various navigation and status icons.

Click on create language in language service resource provided by Azure.

Default features

- Sentiment analysis
- Key phrase extraction
- Pre-built question answering
- Conversational language understanding
- Named entity recognition
- Text Summarization
- Text analytics for Health

Custom features

Custom question answering

Use this feature to answer user's questions over your data corpus. Requires Azure Cognitive Search. [Learn more.](#)

Select

Custom text classification & Custom named entity recognition

Use this feature for custom text classification or custom named entity extraction. Requires Azure Storage. [Learn more.](#)

Select

Continue to create your resource

We select *Custom question answering* settings for our bot but if required we can select other custom features as well. We continue to create our resource.

Project Details

Subscription: Azure for Students

Resource group: (New) EvolutionChatResource

Instance Details

Region: East US

Name: EvolutionChatbot1

Pricing tier: Free F (3 Indexes)

Custom question answering

Azure for Students

Azure search region: East US

Azure search pricing tier: Free F (3 Indexes)

Responsible AI Notice

By checking this box I certify that I have reviewed and acknowledge the terms in the Responsible AI Notice.

Review + create **< Previous** **Next : Network >** **Give feedback**

We fill in all the required details selecting region as East US and pricing tier Free and click on next.

We created new resource group named EvolutionChatResource by clicking on create resource and named language resource as EvolutionChatbot1. Also check the box that you have reviewed and acknowledged the terms for responsible AI Notice.

Next and check all details, come to review + create. Once validation is passed, we are ready to create this resource group, click on *Create*.

This will complete the deployment and creation of language resource. When we click on *Go to resource group* it will take us to the language resource that is created from where we can go to Language Studio. Deployment for text analytics resource is complete now go to resource group.

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes the Microsoft Azure logo, a search bar, and various navigation icons. The main title is "EvolutionChatResource" under "Resource group". On the left, there's a sidebar with links for Overview, Activity log, Access control (IAM), Tags, Resource visualizer, Events, Settings (Deployments, Security, Policies, Properties, Locks), Cost Management (Cost analysis, Cost alerts (preview), Budgets, Advisor recommendations), and a "Create" button. The main content area is titled "Essentials" and "Resources". It displays two records: "EvolutionChatbot1" (Type: Language, Location: East US) and "evolutionchatbot1-agsum2fd3rofnb4" (Type: Search service, Location: East US). A filter bar at the top allows filtering by Type (all) and Location (all). Below the table are buttons for "Previous", "Page 1 of 1", and "Next >". On the right, there are "JSON View" and "Give feedback" buttons.

Name	Type	Location
EvolutionChatbot1	Language	East US
evolutionchatbot1-agsum2fd3rofnb4	Search service	East US

Under new resource EvolutionChatResource that we created we can find resources created for text analysis i.e., EvolutionChatbot1 and search service offered by Azure. All these resource location is East US.

This screenshot is identical to the one above, but the "EvolutionChatbot1" resource is highlighted with a blue selection box. A detailed view modal is open over the table, showing the resource name "EvolutionChatbot1", its type "Language", and its location "East US". The modal also includes a "View" button.

We can now select language resource EvolutionChatbot1 that we created

Microsoft Azure

Home > EvolutionChatResource >

EvolutionChatbot1

Language

Search

Delete

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Resource Management

Features

Keys and Endpoint

Encryption

Pricing tier

Networking

Identity

Cost analysis

Properties

Locks

Monitoring

Alerts

Metrics

Diagnostic settings

Resource group (move) : EvolutionChatResource

Status : Active

Location : East US

Subscription (move) : Azure for Students

Subscription ID : 351fd358-bda7-4287-bda4-efb3375f0ab6

Tags (edit) : Click here to add tags

API type : Language

Pricing tier : Free

Endpoint : https://evolutionchatbot1.cognitiveservices.azure.com/

Manage keys : Click here to manage keys

Get Started Discover Develop Deploy

Text Analytics has been rebranded and incorporated into Azure Cognitive Service for Language. Learn More

Get Started with Language service

Azure Cognitive Service for Language enables you to build apps with industry-leading natural language understanding capabilities without machine learning expertise. Learn More

Discover

Whether running our service in the cloud or on your own servers see what Language service can do in a variety of scenarios.

Develop

Learn the basics, check out our sample code and implement and customize your solution with Language Studio, no coding required.

Deploy

Decide on hosting options, monitor your usage and check out your support options.

Language Studio

Language Studio is a set of UI-based tools that let you explore, build, and integrate features from Azure Cognitive Service for Language into your applications.

Get started with Language Studio

<https://go.microsoft.com/fwlink/?linkid=2194422>

We can check the details for the resource created and go to Language Studio. Click on *Get started with Language Studio*.

Step 2: Log into Language Studio

Click on *Get started with Language Studio* to launch Language Studio.

Cognitive Services | Language Studio

Sign in

Language Studio

Get started with Azure Cognitive Services for Language

Use our Natural Language Processing (NLP) features to analyze your textual data using state-of-the-art pre-configured AI models or customize your own models to fit your scenario.

Featured

Post call transcription and analytics (Preview)

Summarize information (Preview)

Document translation (Preview)

Extract information

Classify text

Understand questions and conversational language

Summarize text

Translate text

Try it out

Try it out

Try it out

Sign in with Azure to get full access to Language Studio

You can explore and try out language services without signing in. To get full access to Language Studio, please sign in with your Azure account. Learn more about Azure account

Don't have Azure account? Create one here or Learn how to create Azure account

Sign up and get free \$200 Azure Credit

Log into Language Studio by clicking on *Sign in*.

Select an Azure resource

To access Language studio, you need an Azure resource. You can use an existing resource or create a new one. You can change the resource you use at any time. [Learn more about resources in Azure.](#)

Azure directory *

Azure subscription *

Resource type *

Resource name *

Select an existing resource or create a new one

Select your resource

Search

EvolutionChatbot1 (eastus, F0)

Done Cancel

From drop down box in Resource name select the resource we created earlier that is EvolutionChatbot1. While logging in, Language studio will ask to select language resource to work on, Select the one created earlier that is EvolutionChatbot1 and check other details that are already filled and click on done once all info is filled.

You don't have any recent projects yet. Start with one of the custom capabilities to create a new project. The list of recent projects you've worked on will then appear here.

Create new

Featured Extract information Classify text Understand questions and conversational language Summarize text Translate text

Answer questions

Custom question answering

Conversational language understanding

Orchestration workflow

Read the documentation

Explore our code samples

Watch a video (coming soon)

Microsoft Learn (coming soon)

Go to *Understand questions and Conversational language*, Under it find *Open Custom question answering*.

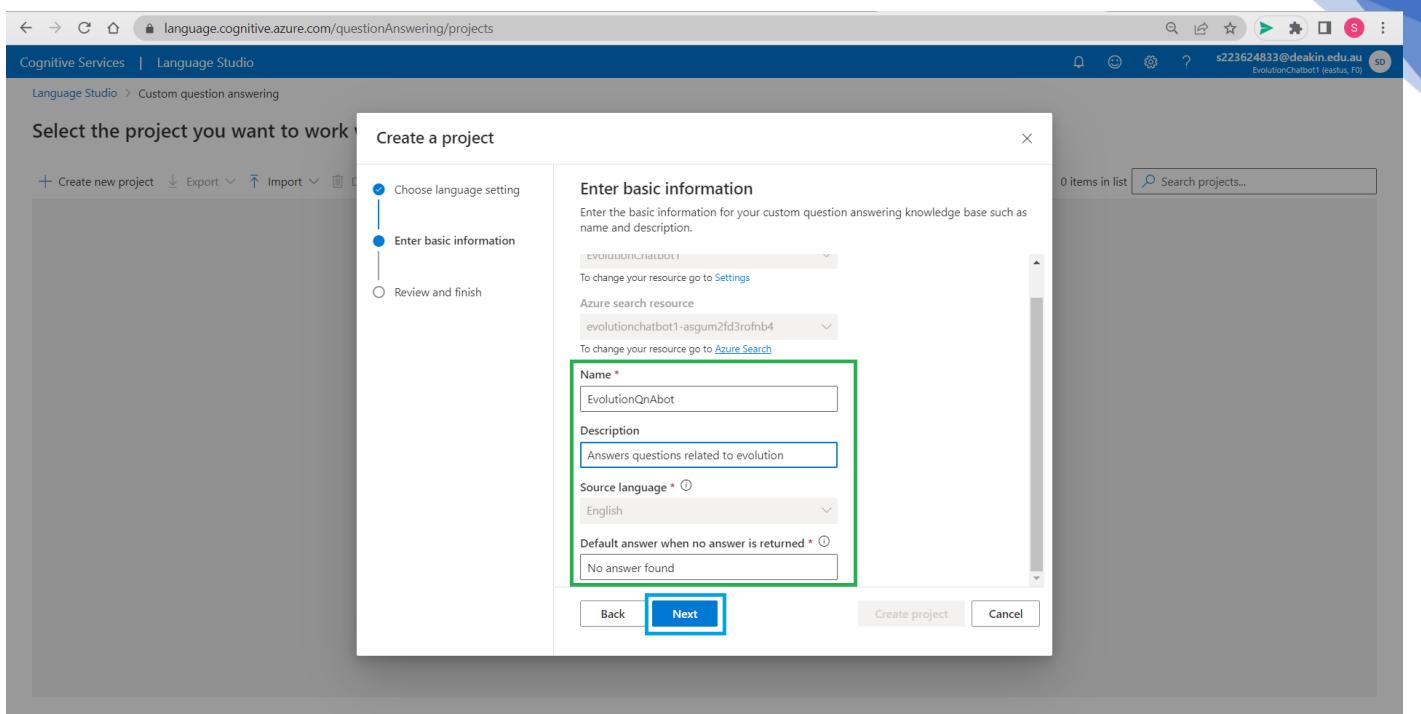
Step 3: Creating a new project

The screenshot shows the Azure Language Studio interface. At the top, there's a navigation bar with links for 'Cognitive Services' and 'Language Studio'. Below the navigation bar, a breadcrumb trail shows 'Language Studio > Custom question answering'. A search bar at the top right contains the text 's223624833@deakin.edu.au EvolutionChatbot1 (eastus, P9)'. In the main content area, there's a heading 'Select the project you want to work with' followed by a toolbar with buttons for '+ Create new project', 'Export', 'Import', and 'Delete'. To the right of the toolbar is a search bar with the placeholder 'Search projects...'. Below the toolbar, there's a large orange icon of an open box with three blue spheres inside, and the text 'Create a new project to get started'. At the bottom of the page, there's a footer with links for 'Help', 'Feedback', 'Privacy', 'Terms of use', and 'Azure services'.

As we already have a Azure search resource we can *Create new project*.

The screenshot shows the 'Create a project' dialog box. On the left, there's a sidebar with three options: 'Choose language setting' (selected), 'Enter basic information', and 'Review and finish'. The main content area is titled 'Choose language setting for resource EvolutionChatbot1.' It explains that users can permanently set whether or not they can create projects in multiple languages. It then asks how users want to select the language for projects in this resource. There are two options: 'I want to select the language when I create a project in this resource' (unchecked) and 'I want to set the language for all projects created in this resource' (checked). A note states that all projects created in this resource will always use the same language for the data. A dropdown menu shows 'English' selected. At the bottom of the dialog box are buttons for 'Back', 'Next' (highlighted with a blue border), 'Create project', and 'Cancel'.

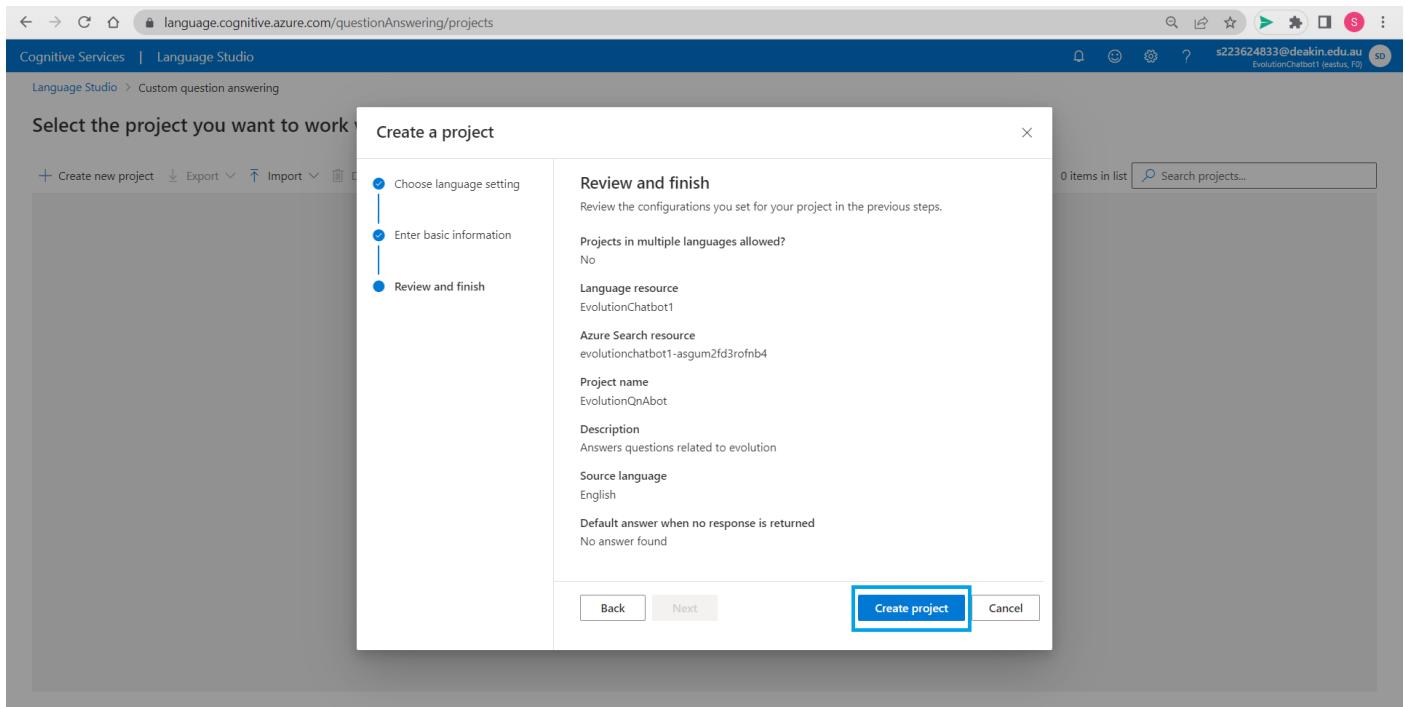
Choose language settings for your resource. There are many options for language but we have selected English and we want to set English for all the projects created in this resource. Press next.



When we click on next, we will have to fill in some basic information about the project we are creating like its name and description and we are setting default answer as *No answer found*.

Project name: EvolutionQnAbot

Click on next.



Review the information again and *Create project*.

Cognitive Services | Language Studio

language.cognitive.azure.com/questionAnswering/projects/EvolutionQnAbot/manageSources

Language Studio > Custom question answering > EvolutionQnAbot - Manage sources

Manage sources

+ Add source ▾ Edit name Refresh URL Delete

Notifications

Dismiss All

1:31 AM

Project loaded successfully

Loading project completed

Add sources to your knowledge base

Extract question-and-answer pairs from an online FAQ, product manuals, or add unstructured content to enable search over text. Supported formats are .tsv, .pdf, .doc, .docx, .xlsx. [Learn more about knowledge base sources.](#)

Project is successfully created and loaded and we have more options on the left-hand side of the screen.

Step 4: Adding source to our project, testing and deployment

Cognitive Services | Language Studio

language.cognitive.azure.com/questionAnswering/projects/EvolutionQnAbot/manageSources

Language Studio > Custom question answering > EvolutionQnAbot - Manage sources

Manage sources

+ Add source ▾ Edit name Refresh URL Delete

0 items in list Filter

Add sources to your knowledge base

Extract question-and-answer pairs from an online FAQ, product manuals, or add unstructured content to enable search over text. Supported formats are .tsv, .pdf, .doc, .docx, .xlsx. [Learn more about knowledge base sources.](#)

Go to *Add source*.

<language.cognitive.azure.com/questionAnswering/projects/EvolutionQnAbot/manageSources>

Cognitive Services | Language Studio

Language Studio > Custom question answering > EvolutionQnAbot - Manage sources

Manage sources

+ Add source | Edit name | Refresh URL | Delete

URLs

Files (selected)

Chitchat

0 items in list | Filter

Add sources to your knowledge base

Extract question-and-answer pairs from an online FAQ, product manuals, or add unstructured content to enable search over text. Supported formats are .tsv, .pdf, .doc, .docx, .xlsx. [Learn more about knowledge base sources.](#)

You can select different knowledge sources for your project, we first select *Files*.

<language.cognitive.azure.com/questionAnswering/projects/EvolutionQnAbot/manageSources>

Cognitive Services | Language Studio

Language Studio > Custom question answering > EvolutionQnAbot - Manage sources

Manage sources

+ Add source | Edit name | Refresh URL | Delete

0 items in list | Filter

Add files

You can add up to 10 files at a time. Classification of file structure is auto-detected by default, but you can set your own file structure classification if preferred.

+ Add file | Edit | Delete

Source name ↓ | File name ↓ | Classify file structure ↓

No items found.

Add all | Cancel

enable search over text. Supported formats are .tsv, .pdf, .doc, .docx, .xlsx. [Learn more about knowledge base sources.](#)

Click on *Add file*.

Cognitive Services | Language Studio

Language Studio > Custom question answering > EvolutionQnAbot - Manage sources

Manage sources

+ Add source | Edit name | Refresh URL | Delete

0 items in list | Filter

Add files

You can add up to 10 files at a time. Classification of file structure is auto-detected by default, but you can set your own file structure classification if preferred.

+ Add file | Edit | Delete

Source name	File name	Classify file structure
Evolution 10th class notes	Choose File No file chosen	Auto-detect

Add all | Cancel

enable search over text. Supported formats are .tsv, .pdf, .doc, .docx, .xlsx. [Learn more about knowledge base sources](#).

Name the source and click *Choose File* to upload from your computer browse in local drive to open it. We have christened our source as Evolution 10th class notes (Byju's CBSE study material), it is a pdf file. You may have multiple source file.

Cognitive Services | Language Studio

Language Studio > Custom question answering > EvolutionQnAbot - Manage sources

Manage sources

+ Add source | Edit name | Refresh URL | Delete

0 items in list | Filter

Add files

You can add up to 10 files at a time. Classification of file structure is auto-detected by default, but you can set your own file structure classification if preferred.

+ Add file | Edit | Delete

Source name	File name	Classify file structure
Evolution and heredity	Heredity and evolution_compre:	Auto-detect
Evolution 10th class notes	Heredity-and-Evolution-Class-10-	Auto-detect

Add all | Cancel

enable search over text. Supported formats are .tsv, .pdf, .doc, .docx, .xlsx. [Learn more about knowledge base sources](#).

We again chose to add another file (kvs.ac.in) and uploaded from local machine.

The screenshot shows the 'Manage sources' page in the Azure Language Studio. On the left, a sidebar lists various project components: Language Studio, Custom question answering, Azure Search, EvolutionQnAbot, Manage sources (which is selected and highlighted in grey), Edit knowledge base, Deploy knowledge base, Review suggestions, and Project settings. The main content area is titled 'Manage sources' and shows a table of existing sources. Two PDF files are listed: 'Heredity-and-Evolution-Class-10-Notes.pdf' and 'Heredity and evolution_compressed.pdf'. A yellow box highlights these two entries. At the top right, a green status bar says 'Adding sources...' with a checkmark icon. The URL in the browser is 'language.cognitive.azure.com/questionAnswering/projects/EvolutionQnAbot/manageSources'.

Both our knowledge sources are add here.

The screenshot shows the 'Manage sources' page in the Azure Language Studio. The sidebar is identical to the previous screenshot. The main content area shows the 'Manage sources' table with the same two PDF files listed. However, the 'Add source' dropdown menu is now open, revealing three options: 'URLs' (which is selected and highlighted in blue), 'Files', and 'Chitchat'. The URL in the browser is 'language.cognitive.azure.com/questionAnswering/projects/EvolutionQnAbot/manageSources'.

We now adding URLs that will expand our knowledge base and info, webpage will also be analysed before answering.

Cognitive Services | Language Studio

Language Studio > Custom question answering > EvolutionQnAbot - Manage sources

Manage sources

+ Add source ▾ Edit name Refresh URL Delete

Add URLs

You can add up to 10 URLs at a time. Question and answer pairs are extracted from each URL by default.

+ Add url Edit Delete

URL name	URL	Classify file structure
<input type="text"/>	<input type="text"/>	Auto-detect

Add all Cancel

Click on *Add url*.

Cognitive Services | Language Studio

Language Studio > Custom question answering > EvolutionQnAbot - Manage sources

Manage sources

+ Add source ▾ Edit name Refresh URL Delete

Add URLs

You can add up to 10 URLs at a time. Question and answer pairs are extracted from each URL by default.

+ Add url Edit Delete

URL name	URL	Classify file structure
<input checked="" type="checkbox"/> Evolution intro	<input type="text" value="1.wikipedia.org/wiki/Introduction_to_evolution"/>	Auto-detect

Add all Cancel

Name URL source(Wikipedia.com) and paste web address to add source. Click on *Add all*.

The screenshot shows the Azure Language Studio interface for managing sources. On the left, a sidebar lists options like Language Studio, Custom question answering, Azure Search, EvolutionQnAbot, Manage sources (which is selected and highlighted in grey), Edit knowledge base, Deploy knowledge base, Review suggestions, and Project settings. The main content area is titled 'Manage sources' and shows a table of three items. The first item is a URL: 'https://en.wikipedia.org/wiki/Introduction_to_evolution' with source name 'Evolution intro', unstructured status 'No', and source type 'url'. The second item is a file: 'Heredity-and-Evolution-Class-10-Notes.pdf' with source name 'Evolution 10th class notes', unstructured status 'No', and source type 'file'. The third item is another file: 'Heredity and evolution_compressed.pdf' with source name 'Evolution and heredity', unstructured status 'No', and source type 'file'. A yellow box highlights the first row (the URL). At the top of the table, there are buttons for '+ Add source', 'Edit name', 'Refresh URL', and 'Delete', along with a filter icon.

We have successfully added 3 sources including 1 url and 2 file.

This screenshot shows the same 'Manage sources' page as the previous one, but with a new entry being added. In the top-left of the table area, there is a button labeled '+ Add source' with a dropdown arrow, which is highlighted with a blue box. Below the table, there are sections for 'URLs' and 'Files'. Under 'URLs', there is a row for 'Chitchat' with the URL 'https://en.wikipedia.org/wiki/Introduction_to_evolution'. This row is also highlighted with a blue box. The rest of the table structure and other rows remain the same as in the previous screenshot.

We are also adding a chit chat source available in Language Studio to make small talk to give it a better experience to the user.

The screenshot shows the 'Manage sources' interface in Azure Language Studio. At the top, there's a navigation bar with 'language.cognitive.azure.com/questionAnswering/projects/EvolutionBot/manageSources'. Below it, a blue header bar says 'Cognitive Services | Language Studio'. The main area is titled 'Manage sources' and has a sub-header '1 items in list'. There are buttons for '+ Add source', 'Edit name', 'Refresh URL', and 'Delete'. A table lists one item: 'Chitchat' (Source name: Evolution and heredity, Unstructured: No, Source type: file). On the left, there's a sidebar with various icons and a list of project components.

We are also adding a chit chat source available in Language Studio to make small talk to give it a better experience to the user.

The screenshot shows the 'Manage sources' interface in Azure Language Studio. A modal dialog box is open, titled 'Add chit chat'. It contains a list of personality options: 'Professional', 'Friendly' (which is selected and highlighted with a green border), 'Witty', 'Caring', and 'Enthusiastic'. At the bottom of the dialog are 'Add chit chat' and 'Cancel' buttons. The background shows a list of other sources: 'Source ↓', 'https://en.wikipedia.org...', 'Heredity-and-Evo...', and 'Heredity and evo...'. The sidebar on the left shows the 'Manage sources' option is currently selected.

There are multiple options to choose from. We have selected *Friendly* and then click on *Add chit chat*.

language.cognitive.azure.com/questionAnswering/projects/EvolutionQnAbot/manageSources

Cognitive Services | Language Studio

Manage sources

+ Add source ▾ Edit name Refresh URL Delete

Source ↓	Source name	Unstructured
https://en.wikipedia.org/wiki/Introduction_to_evolution	Evolution intro	No
Heredity-and-Evolution-Class-10-Notes.pdf	Evolution 10th class notes	No
Heredity_and_evolution_compressed.pdf	Evolution and heredity	No

Notifications

Dismiss All

BadArgument 2:33 AM

Invalid input. See details.
- ValidationFailure: Knowledgebase cannot have more than 3 sources (urls, files) in Free SKU.

We find that there is an error because we are using Free SKU and it does not allow more than 3 sources.

language.cognitive.azure.com/questionAnswering/projects/EvolutionQnAbot/manageSources

Cognitive Services | Language Studio

Manage sources

+ Add source ▾ Edit name Refresh URL Delete

3 items in list Filter

Source ↓	Source name	Unstructured	Source type
https://en.wikipedia.org/wiki/Introduction_to_evolution	Evolution intro	No	url
<input checked="" type="checkbox"/> Heredity-and-Evolution-Class-10-Notes.pdf	Evolution 10th class notes	No	file
Heredity_and_evolution_compressed.pdf	Evolution and heredity	No	file

We will select Heredity-and-Evolution-Class-10Notes.pdf and click on delete to remove this source from our knowledge base.

The screenshot shows the 'Manage sources' section of the Azure Language Studio. On the left, there's a sidebar with navigation links like 'Language Studio', 'Custom question answering', 'Azure Search', 'EvolutionQnAbot', and 'Manage sources' (which is selected and highlighted). The main area has a table with columns for 'Source', 'Source name', 'Unstructured', and 'Source type'. One row, 'qna_chitchat_Friendly', is highlighted with a yellow box. A green toast notification at the top right says 'Adding sources...'.

We again try to add friendly chitchat resource feature and this time it is added to our knowledge base.

Step 5: Editing and testing project created

The screenshot shows the 'Edit knowledge base' section of the Azure Language Studio. The left sidebar has 'Edit knowledge base' selected. The main area displays a list of question-answer pairs. A yellow box highlights the 'Test' button. On the right, there's a preview pane showing a conversation transcript:

```
I'm so bored of you
Swing and a miss.

Are you a woman?
That doesn't really apply to me.

Who's older?
I don't really have an age.

Will you ask me anything about myself
I'm a much better answerer than asker.

Do you have fingers?
I don't have the hardware for that.

Do you have a boss?
I'm here for you.
```

The preview pane also shows statistics: 112 unstructured sources and 3 structured sources. It includes links to 'Edit answer', 'Answer', 'Alternate questions', and 'Follow up prompts'.

Go to *Edit knowledge base* and check the question answer pairs created by custom Azure, here we can edit questions to add questions. We now click *Test* to check project that is created.

We test by asking questions. We find that it is able to answer to us when question is asked as *Evolution* but when we ask as *What is evolution*, then it is not able to answer the questions. That means we need to give in more utterances to our bot so it can learn from them.

Click **Add** on top left corner of the work space.

Fill in Source details. Enter the question and its answer. You may also choose to add metadata and follow up prompts. Click **Done** once details are filled.

We can find our entry of question and answer in *Question answer pair*.

language.cognitive.azure.com/questionAnswering/projects/EvolutionQnAbot/edit?assets=qnas

Cognitive Services | Language Studio

Language Studio > Custom question answering > EvolutionQnAbot - Edit knowledge base

Question answer pairs (160) Synonyms (0)

+ Add Test Delete Save Import/Export Discard

Search pairs

Talk to you later!

What a boring Thursday

That's a drag.

I'm positively overjoyed

I'm happy you're happy!

I have returned

Hey there!

I require sustenance

Sounds like it's time for a snack.

I'm a Socialist

Okay.

Test

Response options

Include short answer response ?

Use deployed knowledge base ?

Show advanced options

Clear

I'm afraid I didn't follow that.

What is evolution

The gradual changes taking place in living organisms giving rise to new organisms due to changes in their genetic composition is called evolution.

Type your message and press enter

We test again and we are now getting desired results. This way we can add as many utterances as we like.

language.cognitive.azure.com/questionAnswering/projects/EvolutionQnAbot/edit?assets=qnas

Cognitive Services | Language Studio

Language Studio > Custom question answering > EvolutionQnAbot - Edit knowledge base

Question answer pairs (160) Synonyms (0)

+ Add Test Delete Save Import/Export Discard

Search pairs

Talk to you later!

What a boring Thursday

That's a drag.

I'm positively overjoyed

I'm happy you're happy!

I have returned

Hey there!

I require sustenance

Sounds like it's time for a snack.

I'm a Socialist

Okay.

Test

Response options

Include short answer response ?

Use deployed knowledge base ?

Show advanced options

Clear

organisms due to changes in their genetic composition is called evolution.

what is universe

If I knew, I'd definitely tell you.

Type your message and press enter

We ask questions that are out of our knowledge base. We see that the response is friendly created by chit chat resource.

Cognitive Services | Language Studio

Language Studio > Custom question answering > EvolutionQnAbot - Edit knowledge base

Question answer pairs (160) **Synonyms (0)**

+ Add Test Delete Save Import/Export Discard

Search pairs

Talk to you later!

What a boring Thursday
That's a drag.

I'm positively overjoyed
I'm happy you're happy!

I have returned
Hey there!

I require sustenance
Sounds like it's time for a snack.

I'm a Socialist
Okay.

Test

Response options

Include short answer response

Use deployed knowledge base

Show advanced options

Clear

Hi, how are you? Inspect

Long answer

I'm doing great, thanks for asking!

Type your message and press enter

We now test chit chat source and it is giving a good response as expected of it.

Cognitive Services | Language Studio

Language Studio > Custom question answering > EvolutionQnAbot - Edit knowledge base

Question answer pairs (160) **Synonyms (0)**

+ Add Test Delete Save Import/Export Discard

Search pairs

Talk to you later!

What a boring Thursday
That's a drag.

I'm positively overjoyed
I'm happy you're happy!

I have returned
Hey there!

I require sustenance
Sounds like it's time for a snack.

I'm a Socialist
Okay.

Test

Response options

Include short answer response

Use deployed knowledge base

Show advanced options

Clear

overview of evolution Inspect

Long answer

From Wikipedia, the free encyclopedia

Non-technical overview of the subject of biological evolution. This article is a non-technical introduction to the subject. For the main encyclopedia article, see [Evolution](#).

The Evolution of Man V.2.0

Type your message and press enter

We test knowledge source from url. It has given us a desired result.

We test more and find that it is providing images for better explanation and also the links provided on web page selected as source.

Step 6: Deployment of the project

Now we go to *Deploy knowledge base* and click on *Deploy*.

language.cognitive.azure.com/questionAnswering/projects/EvolutionQnAbot/deploy

Cognitive Services | Language Studio

Language Studio > Custom question answering > EvolutionQnAbot - Deploy knowledge base

Deploy knowledge base

Deploy knowledge base and create a bot in a few clicks.

Deploy Get prediction URL

Deploy knowledge base

Manage sources

Edit knowledge base

Review suggestions

Project settings

Deploy this project?

Deploy EvolutionQnAbot? Once deployed you can integrate it within a bot.

Deploy Cancel

Deploying your knowledge base will copy the knowledge base from the test index to the production index.

Click *Deploy* to complete the process

language.cognitive.azure.com/questionAnswering/projects/EvolutionQnAbot/deploy

Cognitive Services | Language Studio

Language Studio > Custom question answering > EvolutionQnAbot - Deploy knowledge base

Deploy knowledge base

Deploy knowledge base and create a bot in a few clicks.

Deploy Get prediction URL

Your knowledge base is now deployed. You can get your prediction URL or create a bot.

Knowledge base status

State:	Deployed	Resource:	EvolutionChatbot1
Deployment Date:	5/7/2023	Location:	eastus
Deployment Time:	3:11:25 AM	Tier:	Free (F0)

Next steps: Create a bot

Step 1: [Read the documentation](#) to learn more about creating bots.

Step 2: Go to Azure to create a bot.

Create a bot

EvolutionQnAbot - Successfully deployed... 3:12 AM

We will be able to see the knowledge base status details after successful deployment and we can go ahead to *Create a bot*.

Step 7: Create a bot

After clicking on *Create a bot*.

Choose resource group we created earlier (EvolutionChatResource), name azure bot handle we named it EvolutionChatbot1-bot and select *Create new User-assigned managed identity*. Click on *Change plan*, select F0 Free plan and click *Select*. The details required are filled now click *Next:Web App >*.

Open resource EvolutionChatbot1 in another tab and copy the KEY 1 as shown in the image above.

Custom deployment

Deploy from a custom template

App name * azurewebsites.net

SDK language selection *

App Service Plan

App Service plan pricing tier determines the location, features, cost and compute resources associated with your app.

[Learn more](#)

Creation type Create new app service plan Use existing app service plan

The pricing tier currently defaults to 'S1 Standard'. It can be modified by visiting the app service plan resource page once the resource has been created, or you can choose an existing plan in your subscription.

App Settings

In App Service, these app settings are variables passed as environment variables to the bot code.

Language Resource Key *

Language project name

Language service endpoint hostname

Language service details

Subscription Id

Resource Group Name

Account Name

[Review + create](#) [< Previous](#) [Next : Review + create >](#)

Name the App, we have selected Node.js as SDK language selection, one can select other languages here. Select *Create new app service plan*. Paste Language Resource Key where it is asked. Now click on *Next: Review + create*.

Custom deployment

Deploy from a custom template

Validation Passed

Basics

Subscription	Azure for Students
Resource group	EvolutionChatResource
Resource group location	East US
Bot handle	EvolutionChatbot1-bot
Pricing tier	Free
Creation type	Create new User-assigned managed identity

Web App

App name	EvolutionChatbot1-bot-ab0e
SDK language selection	Node.js
Creation type	Create new app service plan
Language Resource Key	*****
Language project name	EvolutionQnAbot
Language service endpoint hostname	https://EvolutionChatbot1.cognitiveservices.azure.com
Subscription Id	/subscriptions/8d5ceb22-44c7-4367-bfc6-07378096e055
Resource Group Name	EvolutionChatResource
Account Name	EvolutionChatbot1

[Create](#) [< Previous](#) [Next](#)

Once validation is passed go on to *Create* to finish deployment.

Microsoft.TEMPLATE-20230507032217 | Overview

Your deployment is complete

Deployment name: Microsoft.Template-20230507032217
Subscription: Azure for Students
Resource group: EvolutionChatResource

Start time: 5/7/2023, 3:21:13 AM
Correlation ID: 8d0df515-29e3-4acd-a242-19108d316e0f

Deployment details
Next steps
Go to resource group

Give feedback
Tell us about your experience with deployment

Cost Management
Get notified to stay within your budget and prevent unexpected charges on your bill.
Set up cost alerts >

Microsoft Defender for Cloud
Secure your apps and infrastructure
Go to Microsoft Defender for Cloud >

Free Microsoft tutorials
Start learning today >

Work with an expert
Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support.
Find an Azure expert >

Deployment is complete for azure bot, go to resource group.

Step 8: Testing our bot in Azure resource

Microsoft.TEMPLATE-20230507032217 | Overview

EvolutionChatResource | Resource group

Overview

Essentials

Resources Recommendations

Name	Type	Location
EvolutionChatbot1	Language	East US
evolutionchatbot1-asqumfd3rofnb4	Search service	East US
EvolutionChatbot1-bot	Azure Bot	Global
EvolutionChatbot1-bot	Managed Identity	East US
EvolutionChatbot1-bot-ab0e	App Service	East US
EvolutionChatbot1-serverfarm-eafc07	App Service plan	East US

< Previous Page 1 of 1 Next >

Give feedback

We find Azure bot is created and location shows as Global. Select the bot we have created in the resource group.

EvolutionChatbot1-bot

Essentials

- Resource group (move) : EvolutionChatResource
- Subscription (move) : Azure for Students
- Subscription ID : 351fd358-bda7-4287-bda4-efb3375f0ab6
- Tags (edit) : WebAppLinked : true

Bot Service pricing tier : F0
Messaging endpoint : https://EvolutionChatbot1-bot-ab0e.azurewebsites.net/api/messages
Location : Global

Build enterprise-grade conversational AI

Develop enterprise-grade, conversational AI experiences, while maintaining control of your data. Edit your bot in SDK, host your bot in any environment and enable customers from a variety of channels, such as your app or website, Direct Line Speech, Microsoft Teams and more. [Learn more](#)

Get started with the Bot Framework

Build, test, deploy, and manage intelligent bots, all in one place. The Bot Framework includes a modular and extensible SDK for building bots, as well as tools, templates, and related AI services. Note: For User-Assigned Managed Identity and Single Tenant app, BotFramework SDK (C# or Javascript) version 4.15.0 or higher is needed for these app types. [Learn the Bot Framework](#)

Test and refine your bot

Refined and debug locally with [Emulator](#), and test your bot online in [Web Chat](#). Learn more about [testing and debugging](#).

Publish to Azure

When you are ready, publish your bot to Azure and connect to channels. Learn about publishing directly to Azure and continuous deployment.

Connect to channels

Test in Web Chat

Download bot source code

Select *Test in Web Chat* to open testing space to test our bot.

EvolutionChatbot1-bot | Test in Web Chat

Test

Hi
2 minutes ago

Welcome to the QnA Maker sample! Ask me a question and I will try to answer it.

Hi!
2 minutes ago

What is Evolution?
2 minutes ago

The gradual changes taking place in living organisms giving rise to new organisms due to changes in their genetic composition is called evolution.
A minute ago

tell me about evolution.
A minute ago

Did you mean:

- Evolution
- What is evolution
- None of the above.

A minute ago

Type your message

We can test our bot here and when it is confused it asks for help from the user as it learns.

Microsoft Azure | portal.azure.com/#@deakin365.onmicrosoft.com/resource/subscriptions/351fd358-bda7-4287-bda4-efb3375f0ab6/resourceGroups/EvolutionChatResource/providers/Mi... | s223624833@deakin.edu.au | DEAKIN UNIVERSITY (DEAKIN36...

EvolutionChatbot1-bot | Test in Web Chat

Did you mean:

- Evolution
- What is evolution
- None of the above.

4 minutes ago

Start over

The gradual changes taking place in living organisms giving rise to new organisms due to changes in their genetic composition is called evolution.

2 minutes ago

What is evolution

2 minutes ago

If I knew, I'd definitely tell you.

2 minutes ago

Type your message

We ask questions outside our knowledge base and test.

Microsoft Azure | portal.azure.com/#@deakin365.onmicrosoft.com/resource/subscriptions/351fd358-bda7-4287-bda4-efb3375f0ab6/resourceGroups/EvolutionChatResource/providers/Mi... | s223624833@deakin.edu.au | DEAKIN UNIVERSITY (DEAKIN36...

EvolutionChatbot1-bot | Test in Web Chat

What is natural selection

A minute ago

Charles Darwin proposed the theory of evolution by natural selection



Charles Darwin proposed the theory of evolution by natural selection. Main article: [Natural selection](#)

In the 19th century, [natural history](#) collections and museums were popular. The European expansion and naval expeditions employed [naturalists](#), while [curators](#) of grand museums showcased preserved and live specimens of the

Type your message

Bot is able to find answers in webpage url provided to knowledge base. It is giving satisfactory results.

Step 9: Creating an app on Meta for Developers

The screenshot shows a browser window with the URL developers.facebook.com. The page title is "Creating the Atelier of Dreams". The top navigation bar includes links for "Developer Products", "Docs", "Blog", "Developer Programs", "More", and "My Apps" (which is highlighted with a blue border). Below the title, there's a video thumbnail with a play button and the text "Watch now". To the right of the video, there's a screenshot of a 3D modeling software interface showing a complex scene with a central circular structure. The bottom section of the page is titled "META FOR DEVELOPERS" and features a "Connect with customers and improve efficiency with our featured platforms." section.

Open Meta for developers in another tab. Click on *My Apps*.

The screenshot shows a browser window with the URL developers.facebook.com/apps/. The page title is "Meta for Developers". The top navigation bar includes links for "Docs", "Tools", "Support", "My Apps" (which is highlighted with a blue border), and a search bar. A user profile for "Saurabh Dhar..." is visible. The main content area is titled "Apps" and features a sidebar with a "Filter by" section containing "All Apps" (selected) and "Archived". The main panel displays a large "No apps yet" message with the subtext "To get started, create your first app." and a prominent green "Create App" button. At the bottom of the page, there are sections for "Products", "Programs", "Support", and "News".

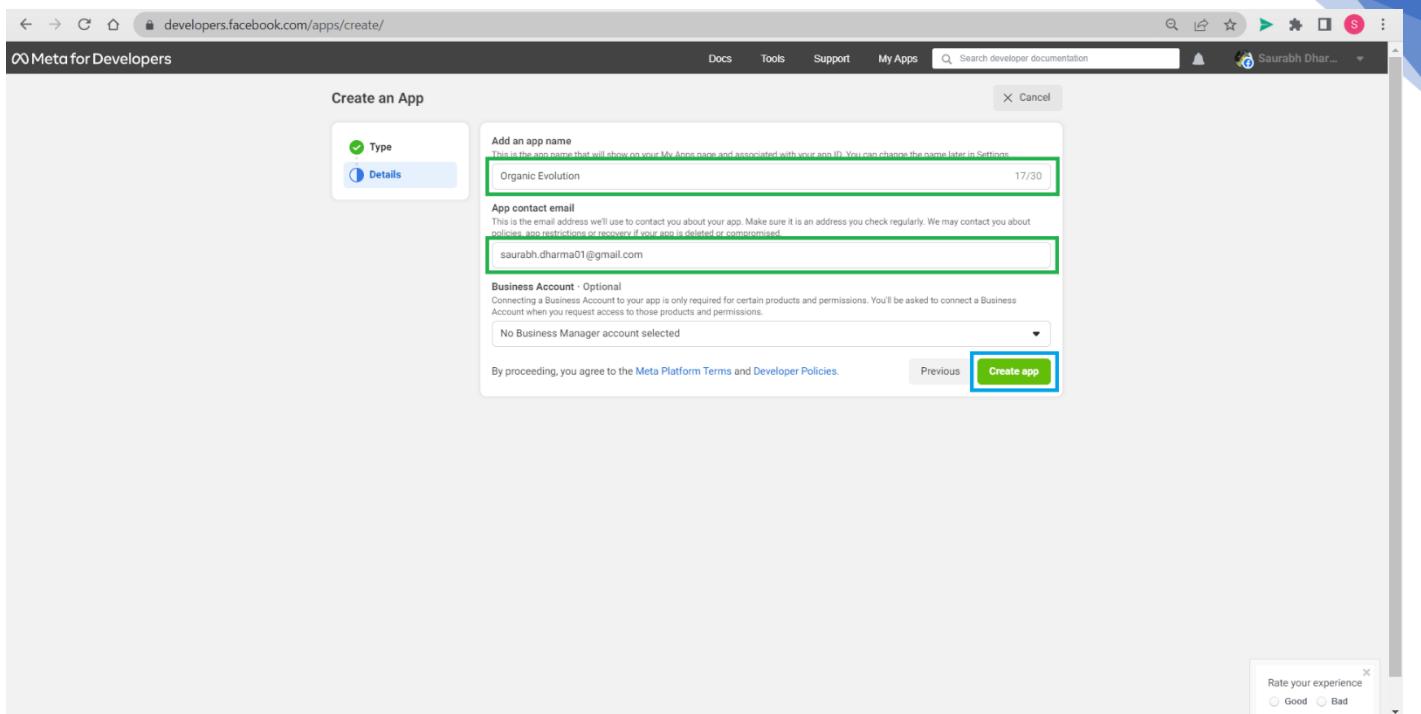
In Meta for Developers and press *Create App*.

The screenshot shows the 'Create an app' wizard on the Facebook Developers website. The current step is 'Which use case do you want to add to your app?'. It lists two options: 'Set up Facebook Login' and 'Other'. The 'Other' option is selected, indicated by a blue dot next to its icon. A 'Next' button is visible at the bottom right of the dialog.

Select other and then *Next*.

The screenshot shows the 'Create an App' wizard on the Facebook Developers website. The current step is 'Select an app type'. It lists several app types: Business, Consumer, Instant Games, Gaming, Workplace, Academic research, and None. The 'Business' option is selected, indicated by a blue dot next to its icon. A 'Next' button is visible at the bottom right of the dialog.

Select type of app, we selected business from the various options available. Press *Next*.



Enter the name of the app that you may wish and a contact email address and then *Create app*.

This app is now using Facebook Login for Business.

Required actions

You don't have any required action items to display. If any of your apps need immediate attention in the future, an item will show here.

Application Rate Limit

Organic Evolution
App ID: 725185286025966

0% of limit used 100% Remaining

User Rate Limit

0 Users throttled

Add products to your app

We've streamlined the app creation process by surfacing the products and permissions needed to build the app type you selected.

- App Events**
Understand how people engage with your business across apps, devices, platforms and websites.
[Read Docs](#) [Set up](#)
- Audience Network**
Monetize your app and grow revenue with ads from Meta advertisers.
[Read Docs](#) [Set up](#)
- Fundraisers**
Create and manage fundraisers for charities.
[Read Docs](#) [Set up](#)

Now we can check app created in our Dashboard.

This screenshot shows the 'Advanced' settings section of a Facebook app. The 'Allow API Access to app settings' checkbox is highlighted with a green box. Other sections visible include 'Domain manager' (no domains set), 'App Page' (name not specified), and 'Advertising Accounts' (with a 'Save changes' button highlighted with a blue box).

Select advanced settings and enable *Allow API Access to app settings* and save changes.

This screenshot shows the 'Basic' settings section of a Facebook app. The 'App ID' and 'App secret' fields are highlighted with yellow boxes. Other settings shown include 'Display name' (Organic Evolution), 'App domains' (empty), 'Privacy Policy URL' (empty), 'App icon' (empty), 'Namespace' (empty), 'Contact email' (saurabh.dharma01@gmail.com), 'Category' (empty), and 'Terms of Service URL' (empty). A 'Save changes' button is highlighted with a blue box at the bottom right.

Under basic settings we can find App ID and App secret. Do not share App secret with anyone, copy it and keep it safe.

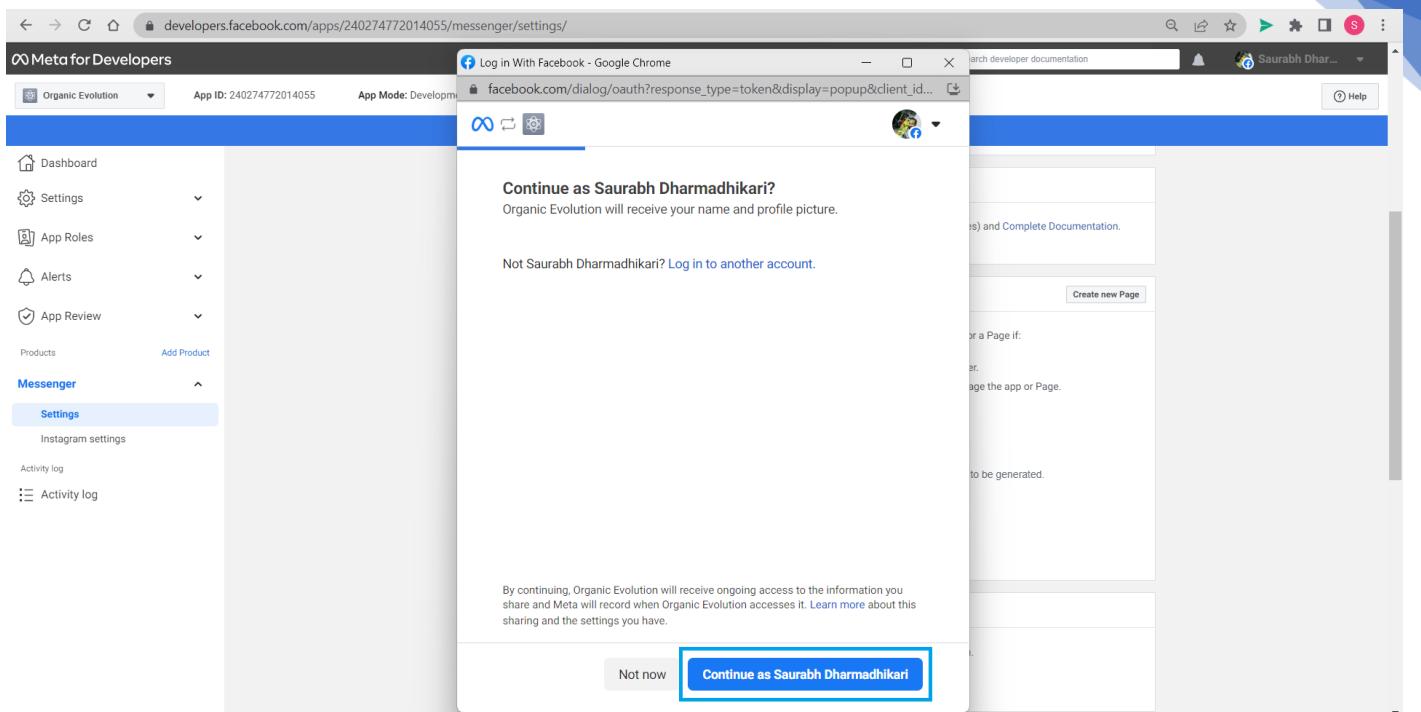
Step 10: Messenger setup

The screenshot shows the Facebook Developer Dashboard at <https://developers.facebook.com/apps/240274772014055/dashboard/#addProduct>. The left sidebar has 'Messenger' selected under 'Products'. The main area displays various API products with 'Messenger' highlighted and its 'Set up' button selected.

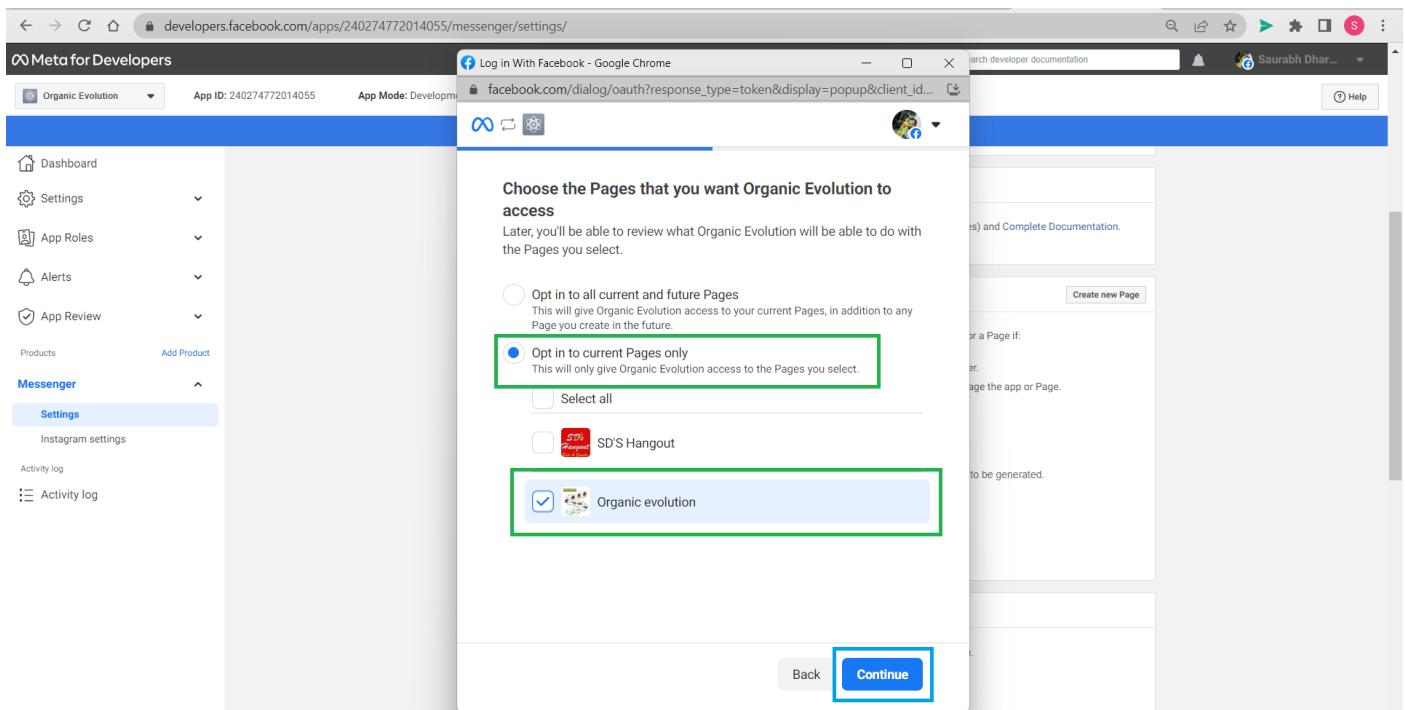
Go to add product on the left-hand side bar and find Messenger. Click on *Set up*.

The screenshot shows the 'Messenger' settings page at <https://developers.facebook.com/apps/240274772014055/messenger/settings/>. The 'Settings' tab is selected in the left sidebar. The main area includes sections for 'Get started', 'Access Tokens', 'No page permissions granted', and 'Webhooks'.

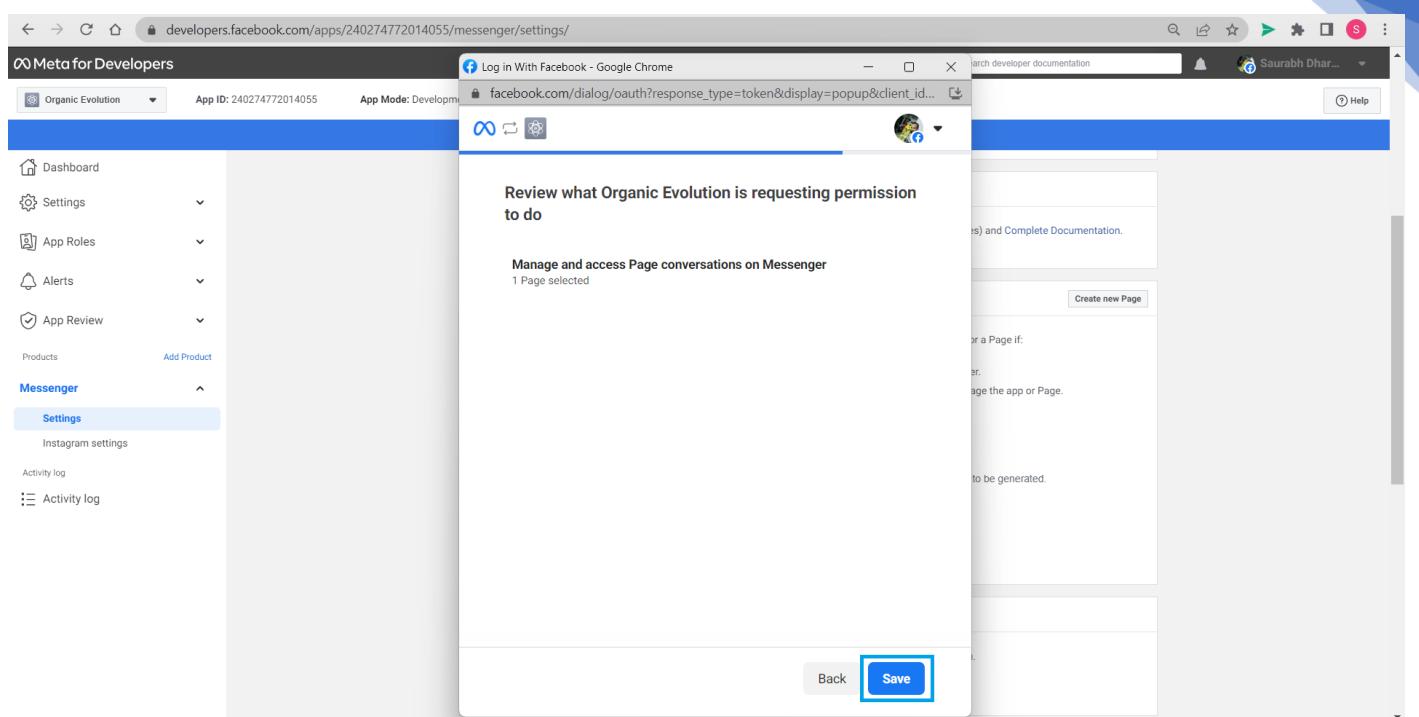
Once Messenger is set up, we can check the settings and *Add or remove Pages* for the app developed.



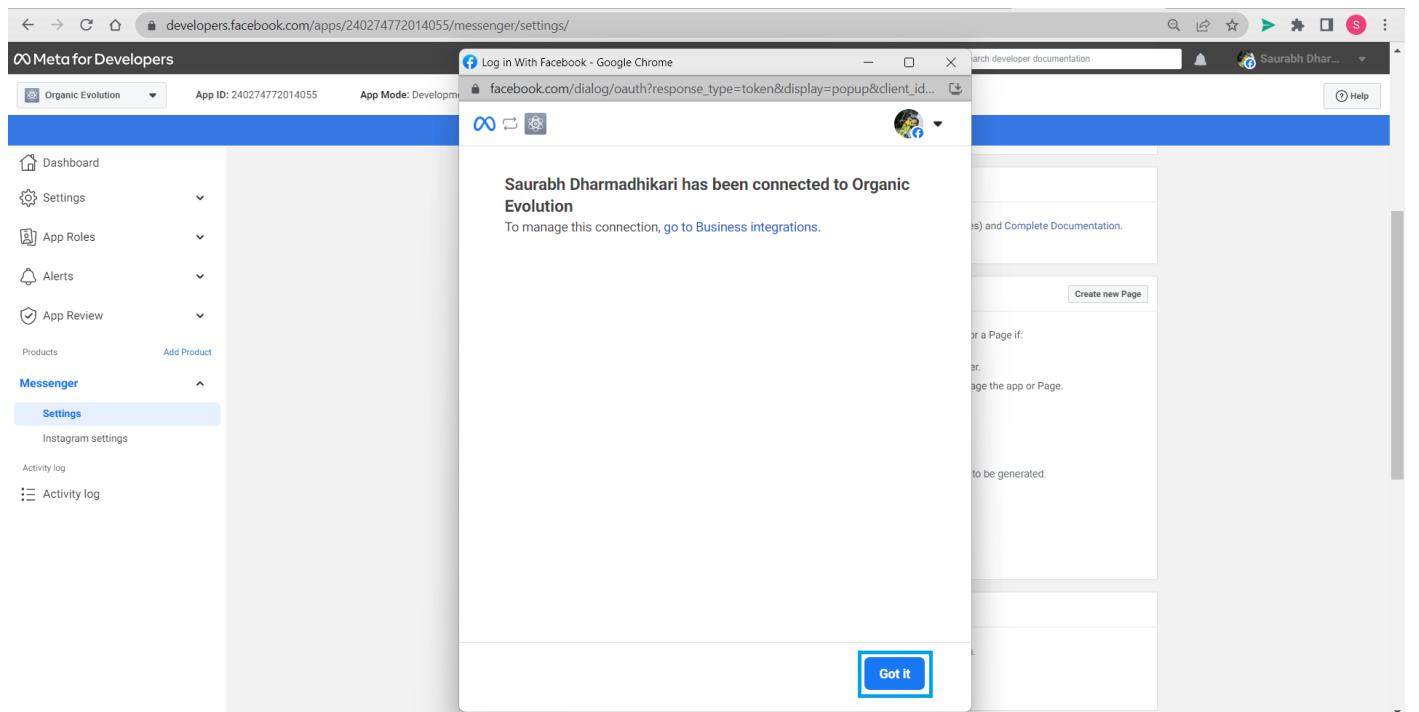
Continue with your account ID.



Give permission to app to access pages. We have opted for current page only and *Continue*.



Review and Save.



Account is now connected to Account id. Click *Got it*.

This screenshot shows the Facebook Developers Messenger settings page. On the left, there's a sidebar with options like Dashboard, Settings, App Roles, Alerts, App Review, Products, Add Product, Messenger (with Settings selected), Instagram settings, Activity log, and Activity log. The main area has tabs for Get started, Access Tokens, Webhooks, and Will your Page be affected by updates due to new privacy rules in Europe?.

The Access Tokens tab shows a table with one row for 'Organic evolution'. The table has two columns: 'Pages' and 'Tokens'. The 'Pages' column shows the page icon and name 'Organic evolution' with the ID '102336336191938'. The 'Tokens' column is empty. To the right of the table is a 'Generate token' button, which is highlighted with a yellow box.

Page is added click generate token.

This screenshot shows the same Facebook Developers Messenger settings page as the previous one, but with a modal window open over it. The modal is titled 'Token generated' and contains the text 'To protect your security, ONLY share this token with app developers you trust.' Below this, it says 'This token will only be shown once, so keep it safe. If it gets lost, you'll need to create a new one. Anyone could potentially use this token to impersonate this page, depending on the privacy settings of your app. If you wish to revoke all previously generated tokens for this app, you can go to Business Integrations settings. Learn More'. There is a checkbox labeled 'I Understand' and a 'Copy' button next to the token text 'EAADah1RvMZBcBAp...'. Below the modal, the 'Generate token' button is also highlighted with a blue box.

Tick, I understand and copy the token, click done, keep token safe. Continue by clicking Done.

Step 11: Attaching Facebook app to azure

The screenshot shows the Microsoft Azure portal interface. On the left, there's a sidebar with various settings like Overview, Activity log, Access control (IAM), Tags, and Channels (which is currently selected and highlighted with a blue border). The main content area is titled 'EvolutionChatbot1-bot | Channels'. It shows a list of available channels under 'Available Channels', including Alexa, Communication Services - Chat, Direct Line Speech, Email, Facebook (which is selected and highlighted with a blue border), GroupMe, LINE, Microsoft 365, and Microsoft Teams.

Go back to azure tab, open Azure bot resource, go to channels and select Facebook.

The screenshot shows the Microsoft Azure portal interface, specifically the 'Facebook' configuration page for the 'EvolutionChatbot1-bot' Azure Bot. The left sidebar shows the 'Channels' option is selected. The main page has sections for 'Facebook credentials' (with fields for App ID, Secret, Callback URL, and Verify Token) and 'Pages credentials' (with a 'New page' button). At the bottom, there's a 'Facebook Workplace' section and a row of buttons for 'Apply', 'Discard changes', and a toggle switch labeled 'Enabled'.

Paste app id and app secret, click on *New page*.

Configure the page

Page ID * 102336336191938

Access Token *

App ID * 240274772014055

Secret * *****

Callback URL https://facebook.botframework.com/api/v1/bots/EvolutionChatbot1-bot

Verify Token Your verify token will be generated when you click "Apply"

Page ID ggeerr

Facebook Workplace Facebook Workplace is a business-oriented version of Facebook which allows employees to easily connect.

Apply **Discard changes** **Enabled** **Apply** **Cancel**

Enter page_id and paste access token and press *Apply*.

Your bot can be connected to Facebook Messenger or Facebook Workplace so that it can communicate with users on either platform. The following instructions will help with how to connect a bot to this Facebook channel. [Learn more](#)

Facebook credentials

The Facebook App ID and Secret can be found in your Facebook account settings. The Callback URL and Verify Token are used to provide Facebook with the correct endpoint for your application so that your bot will receive messages. [Learn more](#)

App ID * 240274772014055

Secret * *****

Callback URL https://facebook.botframework.com/api/v1/bots/EvolutionChatbot1-bot

Verify Token CVZ7LmD2M9vh5QRc4AllBXpB1QNJ2br7hRDKo89EfMx4kl

Pages credentials

The Page ID and Access Token can be found in your Facebook account settings.

Page ID 102336336191938

Delete **Edit**

Facebook Workplace Facebook Workplace is a business-oriented version of Facebook which allows employees to easily connect and collaborate. It contains live videos, news feeds, groups, messenger, reactions, search, and trending posts. To use Facebook Workplace with your bot, you must create a Workplace account and a custom integration to connect the bot. [Learn more](#)

Apply **Discard changes** **Enabled**

Copy call-back URL and verify token generated in Azure and keep it safe.

Generate a Page access token to start using the platform APIs. You will be able to generate an access token for a Page if:

1. You are one of the Page admins, and
2. The app has been granted the Page's permission to manage and access Page conversations in Messenger.

Note: If your app is in dev mode, you can still generate a token but will only be able to access people who manage the app or Page.

Pages	Tokens
Organic evolution 102336336191938	—

[Add or remove Pages](#)

Webhooks

To receive messages and other events sent by Messenger users, the app should enable webhooks integration.

[Add Callback URL](#)

Will your Page be affected by updates due to new privacy rules in Europe?

Check if your Page is affected by updates we're making due to new privacy rules in Europe. See developer documentation for more info on the criteria.

Enter Page IDs separated by ',', comma, ';' semicolon, or ' ' space.

[Cancel](#) [Submit](#)

Chat Plugin

Go back to Meta tab, Add call back URL in messenger settings.

Generate a Page access token to start using the platform APIs. You will be able to generate an access token for a Page if:

1. You are one of the Page admins, and

Manage the app or Page.

Edit Callback URL

Callback URL

https://facebook.botframework.com/api/v1/bots/EvolutionChatbot1-bot

Verify token

CVZ7LmD2M9vh5QRC4AIIbXpB1QU2b7hRDKo89EFmX4k

[Learn more](#) [Cancel](#) [Verify and save](#)

Webhooks

To receive messages and other events sent by Messenger users, the app should enable webhooks integration.

[Add Callback URL](#)

Will your Page be affected by updates due to new privacy rules in Europe?

Check if your Page is affected by updates we're making due to new privacy rules in Europe. See developer documentation for more info on the criteria.

Enter Page IDs separated by ',', comma, ';' semicolon, or ' ' space.

[Cancel](#) [Submit](#)

Chat Plugin

Fill Call-back URL and verify token. Go ahead with Verify and save.

This app is now using Facebook Login for Business. X

Webhooks

To receive messages and other events sent by Messenger users, the app should enable webhooks integration.

Callback URL: <https://facebook.botframework.com/api/v1/bots/EvolutionChatbot1-bot> **Verify token:**

Validation requests and Webhook notifications for this object will be sent to this URL. Token that Meta will echo back to you as part of callback URL verification.

Pages ↑ **Webhooks**

Organic evolution 102336336191938	0 fields —
--------------------------------------	---------------

Add subscriptions

Add or remove Pages (1)

Webhook field version controls

Will your Page be affected by updates due to new privacy rules in Europe?

Check if your Page is affected by updates we're making due to new privacy rules in Europe. See developer documentation for more info on the criteria.

Enter Page IDs separated by ';' comma, ';' semicolon, or ' ' space.

We can see under Webhook now we see that Call-back URL and verify token are added, now click **Add subscription**.

Edit page subscriptions

Organic evolution 102336336191938

Subscription Fields

messages messaging_postbacks messaging_optins
 messaging_optouts messaging_deliveries
 messaging_payments messaging_pre_checkouts messaging_checkout_updates
 messaging_account_linking messaging_referrals message_reads
 messaging_game_plays standby messaging_echoes
 messaging_policy_enforcement message_reactions messaging_handovers
 messaging_feedback messaging_customer_information inbox_labels

Add subscriptions

Save

Will your Page be affected by updates due to new privacy rules in Europe?

Check if your Page is affected by updates we're making due to new privacy rules in Europe. See developer documentation for more info on the criteria.

Enter Page IDs separated by ';' comma, ';' semicolon, or ' ' space.

Select fields suitable and **Save**.

The screenshot shows the Facebook Developers settings page for the app 'Organic Evolution'. The left sidebar has sections like Dashboard, Settings, App Roles, Alerts, App Review, Products, and Messenger. Under Messenger, 'Settings' is selected. The main area shows the 'Webhooks' configuration. It includes fields for 'Callback URL' (set to <https://facebook.botframework.com/api/v1/bots/EvolutionChatbot1-bot>) and 'Verify token' (set to '.....'). Below these are sections for validation requests and webhook notifications. A table lists connected pages, with the 'Webhooks' row for 'Organic evolution' highlighted with a yellow box. This row shows '4 fields' (messages, messaging_postbacks, messaging_optins, message_deliveries) and an 'Edit' button. At the bottom, there's a section about European privacy rules and a field to enter page IDs.

Fields are also show up now and can be edited.

Step 12: Testing app created

Now that Azure bot and Facebook messenger app are attached, we can see that it is working.

The screenshot shows a Facebook Messenger chat window. The left side shows a conversation with the bot 'Organic evolution'. The messages are as follows:

- User: I'm a bot who was created by humans.
- Bot: Hi
- User: How are you
- Bot: hi
- User: Welcome to the QnA Maker sample! Ask me a question and I will try to answer it.
- Bot: how are you.
- User: I'm doing great, thanks for asking!
- Bot: are you a human
- User: I'm a bot who was created by humans.
- Bot: What is your name?
- User: Oh, I don't have a name.

The right side of the screen shows the bot's profile and options: Profile, Mute, Search, Customise chat, Media, files and links, and Privacy and support.

We can chat in Messenger page to test now.

Organic evolution

Oh, I don't have a name.

Tell me about evolution?

Did you mean:

- Evolution
- What is evolution
- None of the above.

Evolution
The gradual changes taking place in living organisms giving rise to new organisms due to changes in their genetic composition is called evolution.

fossil.

Did you mean:

- c) Fossils
- Age of fossils...
- Importance of...

It is answering well for knowledge base in pdf but could be improved by providing more utterances.

Organic evolution

genetic drift?

Genetic drift is a cause of allelic frequency change within populations of a species

Further information: [Genetic drift] (https://en.wikipedia.org/wiki/Genetic_drift)

Genetic drift is a cause of allelic frequency change within populations of a species. [Alleles] (<https://en.wikipedia.org/wiki/Allele>) "Allele" are different variations of specific genes. They determine things like [hair colour] (https://en.wikipedia.org/wiki/Human_hair_color), [skin tone] (https://en.wikipedia.org/wiki/Human_skin_color), [eye colour] (https://en.wikipedia.org/wiki/Eye_colour) and [blood type] (https://en.wikipedia.org/wiki/Blood_type) "Blood type"; in other words, all...

Hardy-Weinberg...

Population...

Founder effect

It is also able to answer from the web page source.

Further information: Convergent evolution
https://en.wikipedia.org/wiki/Convergent_evolution and Divergent evolution
https://en.wikipedia.org/wiki/Divergent_evolution

The comparison of similarities between organisms of their form or appearance of parts, called their morphology
[https://en.wikipedia.org/wiki/Morphology_\(biology\)](https://en.wikipedia.org/wiki/Morphology_(biology)), has long been a way to classify life into closely related groups. This can be done by comparing the structure of adult organisms in different species or by comparing the patterns of how cells grow, divide and even migrate during an organism's development.

Taxonomy
Embryology
Vestigial structures

We also observe that bot is suggesting info on more topics under the topic asked by user, for further information.

Meta for Developers

Organic Evolution App ID: 240274772014055

App Mode: Development Live **App type:** business

In Development mode, your app can only request data from users with an app role. To request end user data, your app must have Advanced Access permissions and be set to Live mode.

Basic

App ID: 240274772014055 App secret: ***** Show

Display name: Organic Evolution Namespace:

App domains:

Contact email: saurabh.dharma01@gmail.com

Privacy Policy URL: Privacy policy for Login dialog and app details Terms of Service URL: Terms of Service for Login dialog and App Details

App icon (1024 x 1024):

Category: Choose a category ▼

Find out more information about app categories here

Verifications

Business verification

Permissions and features require business verification to access certain types of data. An app admin can start the verification process at any time.
[Learn more about business verification](#)

We can make this App live but we require to publish a privacy policy URL for doing this.

Conclusion:

Making an QnA app on Facebook Messenger was successful and it is giving a satisfactory result as we chat. This bot can further be analysed and improved. Also, we can add more data sources to this machine so it is updated with knowledge source.

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