Conversational AI- Chatbot

A chatbot for Hotel Booking

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Part- A

Project Details

A conversational AI based chatbot that provides Hotel Booking advice and tour planning suggestions to promote a better Human Facility.

Introduction:

Caesars hotel, Windsor is a luxurious hotel located in Windsor, Canada, offering an exceptional stay to its guests. With its world class amenities, exquisite dining options, and top-notch entertainment, Caesars hotel is a popular choice for travellers seeking an unforgettable experience. The hotel website is designed to provide complete information to its visitors, but sometimes they may require more personalized assistance to find the information they need. The website is extensive and contains information about hotel, casino, rooms, and other services.

Problem Statement:

While the Caesars hotel website provides comprehensive information, some guests may find it challenging to navigate through the vast amount of data to find the information they need. It is challenging for the hotel to take care of the increasing number of guests and maintain good customer experience while maintaining their costs.

The wait time for phone calls might also restrict the hotel's business as they must respond to customer queries as well the guest's queries at the same time. This is not an easy task and needs a lot of resources to handle the queue. Hotel might also face issues due to human error while interacting with the customers and this can lead to an unpleasant customer experience.

Apart from that, some guests may not be comfortable calling or emailing the hotel's customer service team for assistance, which makes it challenging for them to get the help they need. This might lead to frustration and may negatively impact the customer's overall experience with the hotel and may also discourage them from returning in the future.

Proposal:

- **Objective**: To design a chatbot using conversational AI to act as a customer service representative.
- **Functionality**: To handle multiple customer queries and provide accurate information, reducing human error.

- **Flexibility**: Responses can be customized and tweaked based on the business requirements.
- **Integration**: The chatbot can be linked with multiple online communication channels such as Microsoft Teams, WhatsApp, LinkedIn, Skype, etc.

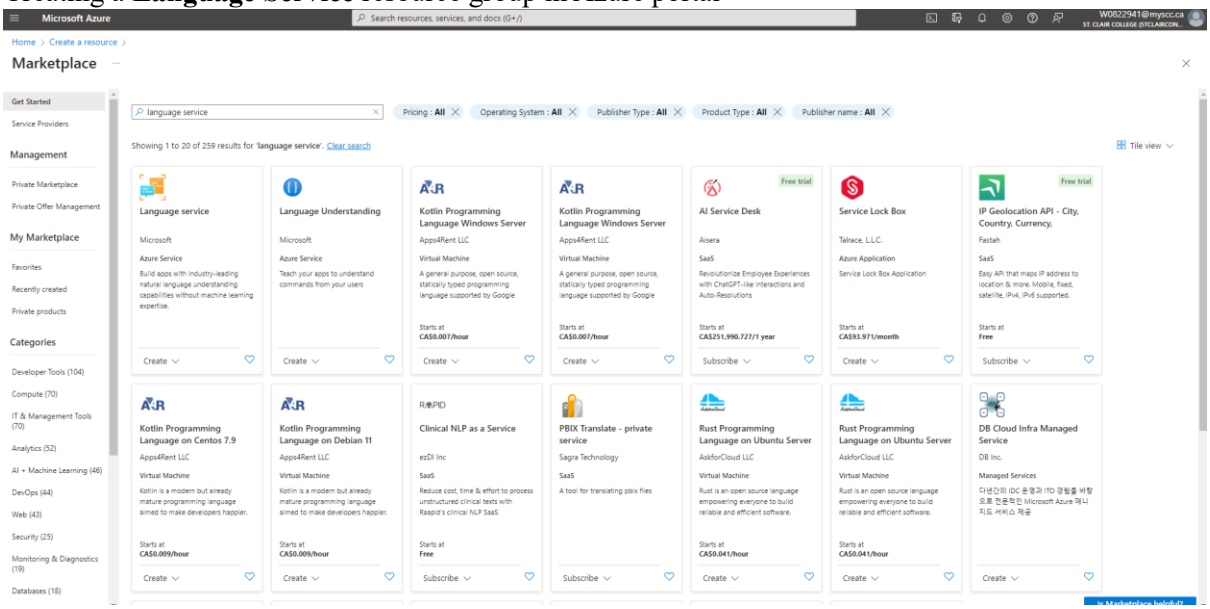
To make it easier for guests to find the information they need on the Caesars website, we suggest using a chatbot. A chatbot is a tool that can answer guests' questions and help in real-time. This means that guests can ask about anything related to the hotel, such as room availability, pricing, amenities, and other services, and get immediate responses.

The chatbot is designed to understand natural language and respond to guest's inquiries promptly. Moreover, the chatbot can be available 24/7, which ensures that guests can receive help at any time, making their stay more comfortable and enjoyable.

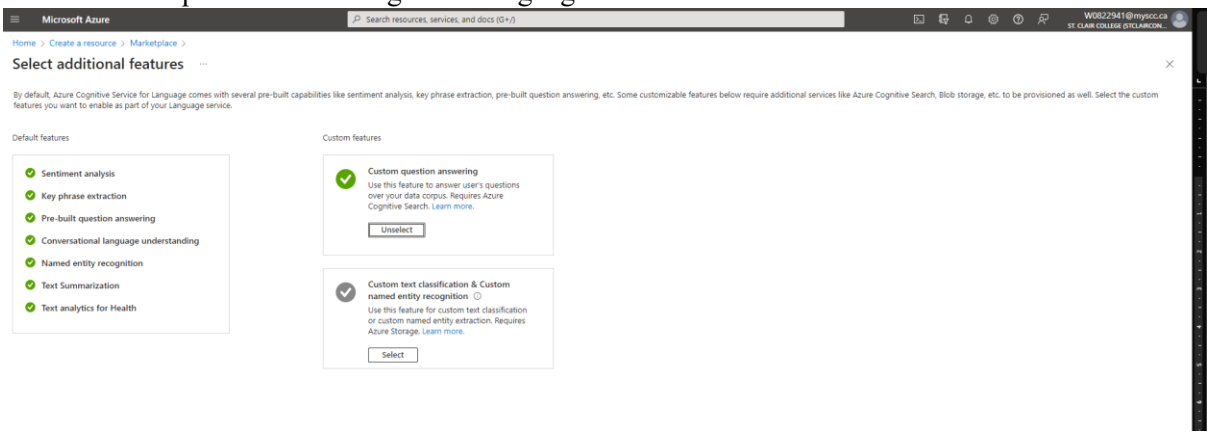
With the implementation of a chatbot, hotel can maintain a good customer experience while keeping their costs low and reduce human error, and guests can also easily find the information they need without any hassle, leading to a better overall experience with the hotel.

Steps involved in creating a bot:

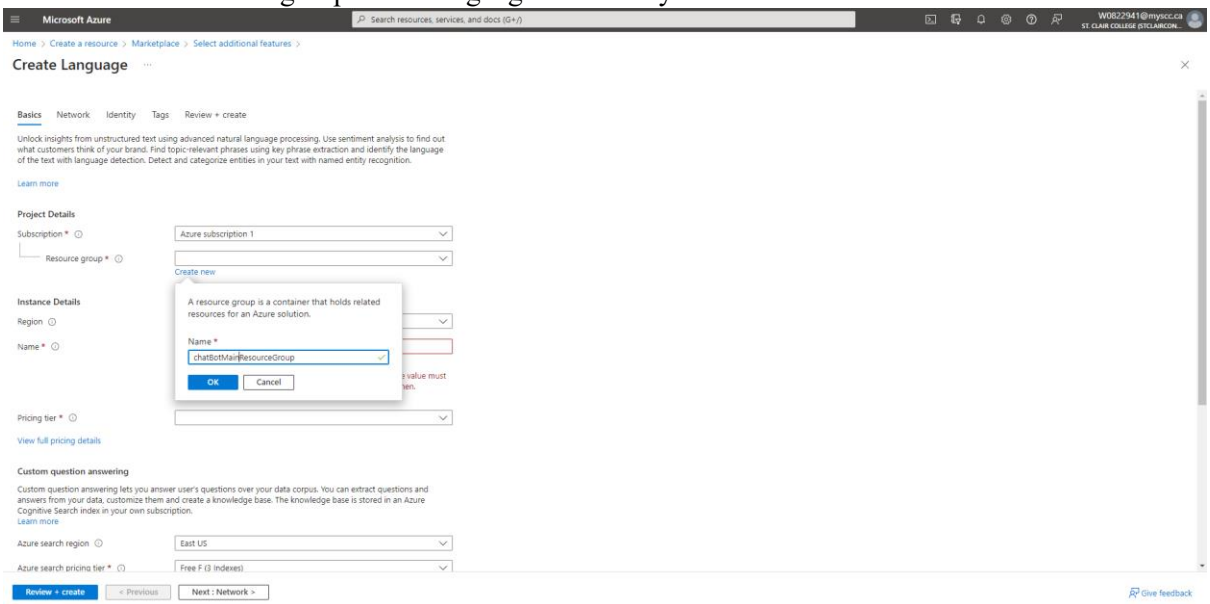
1. Creating a **Language Service** resource group in Azure portal



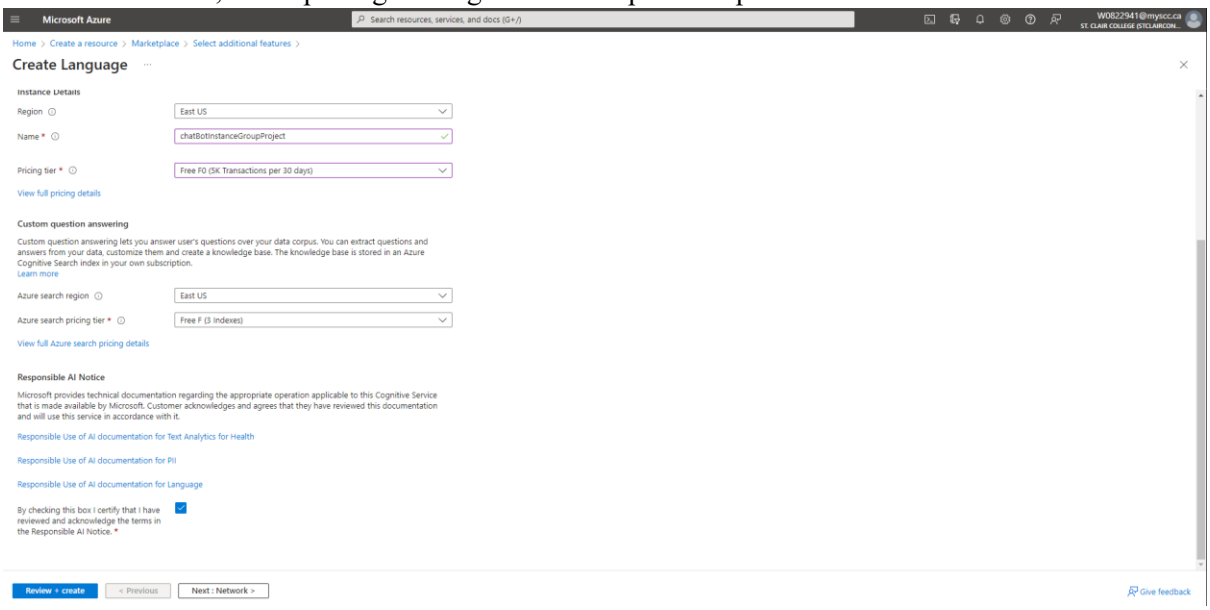
2. Select custom question answering in the language service



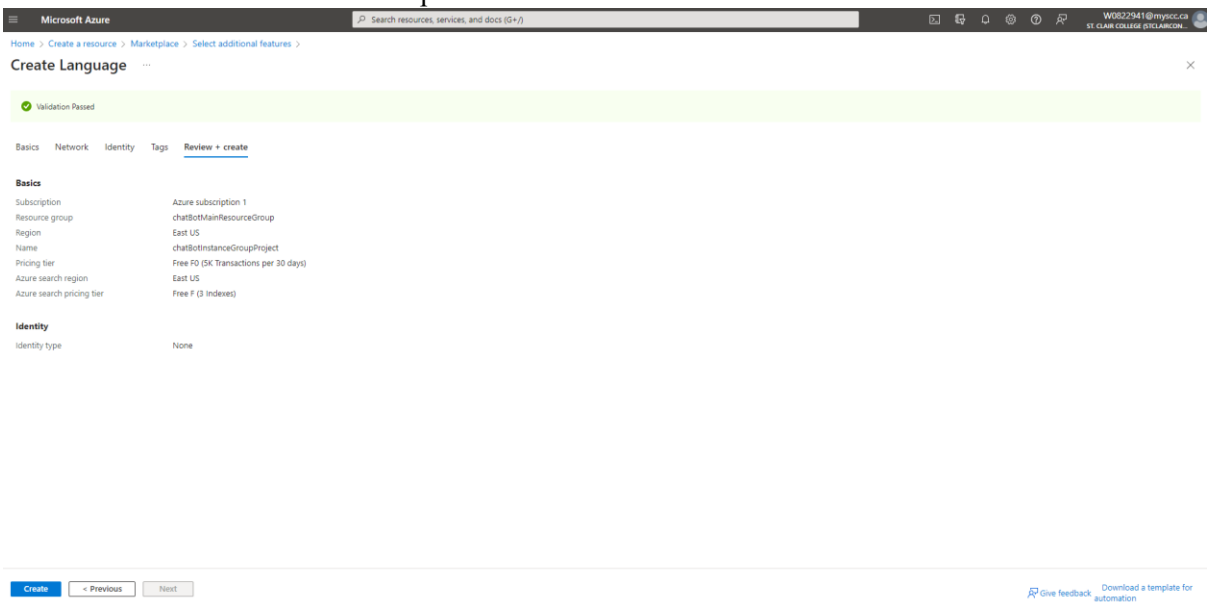
3. Create a main resource group under language service if you don't have one



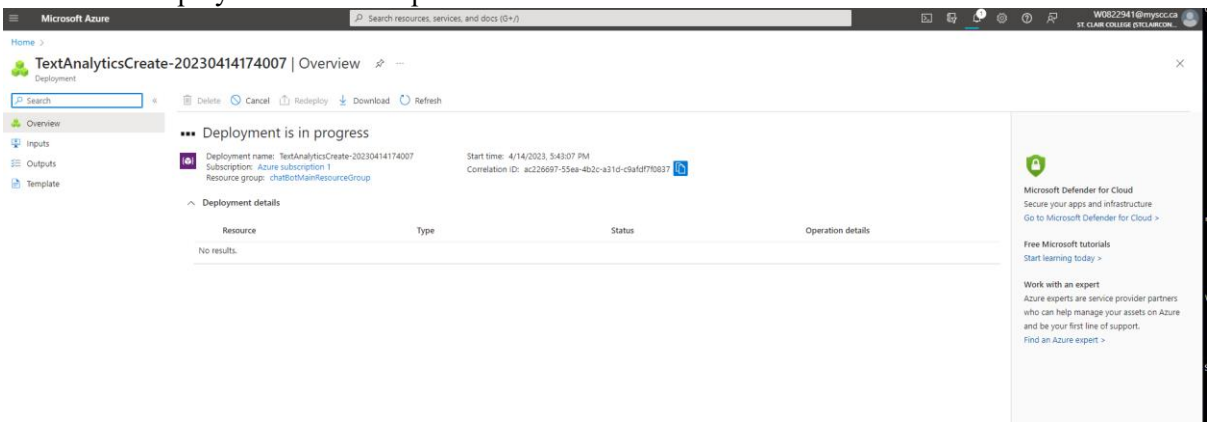
4. Set instance name, select pricing and region and accept the responsible AI notice



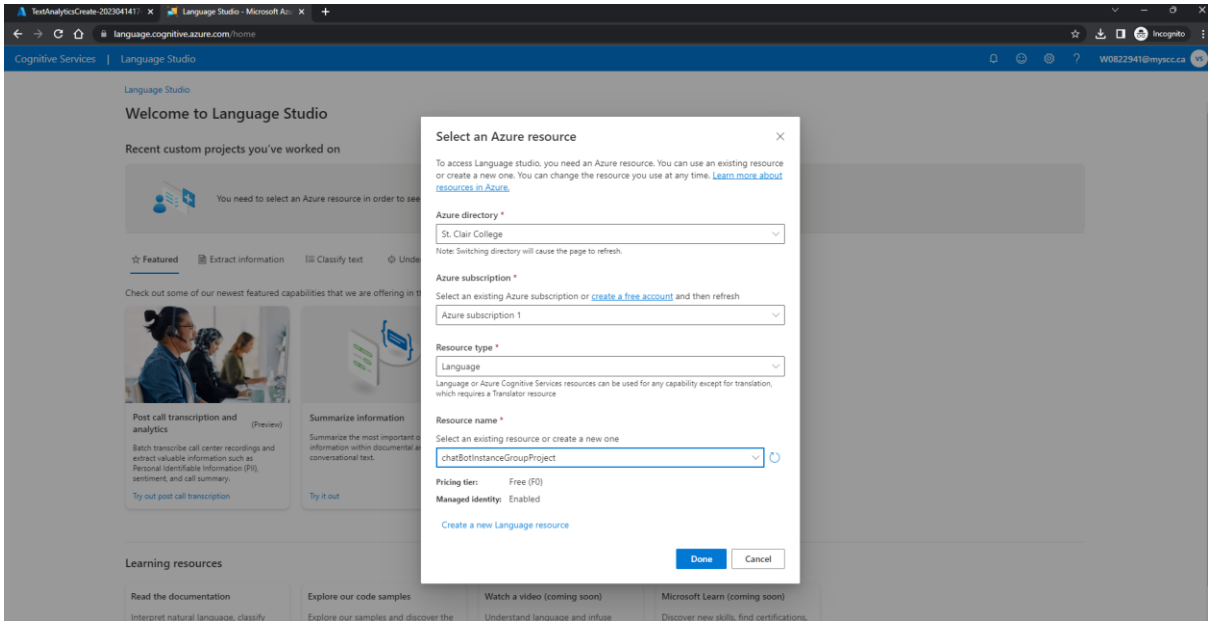
5. Click on create after validation has passed



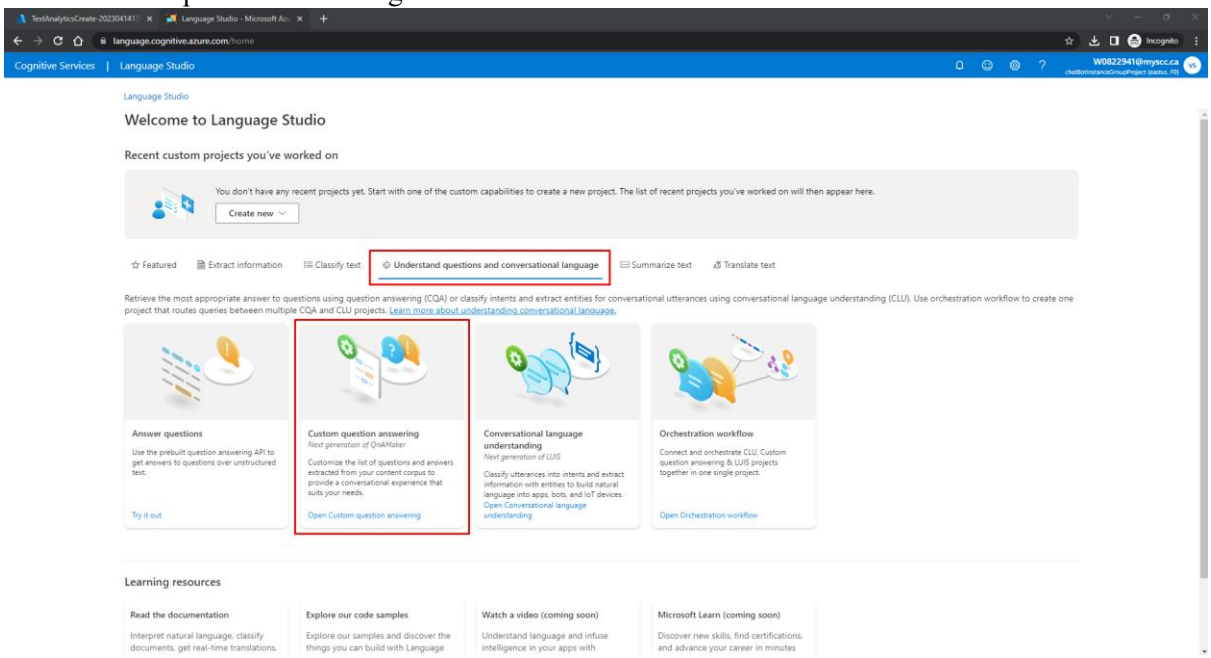
6. Wait for the deployment to be completed



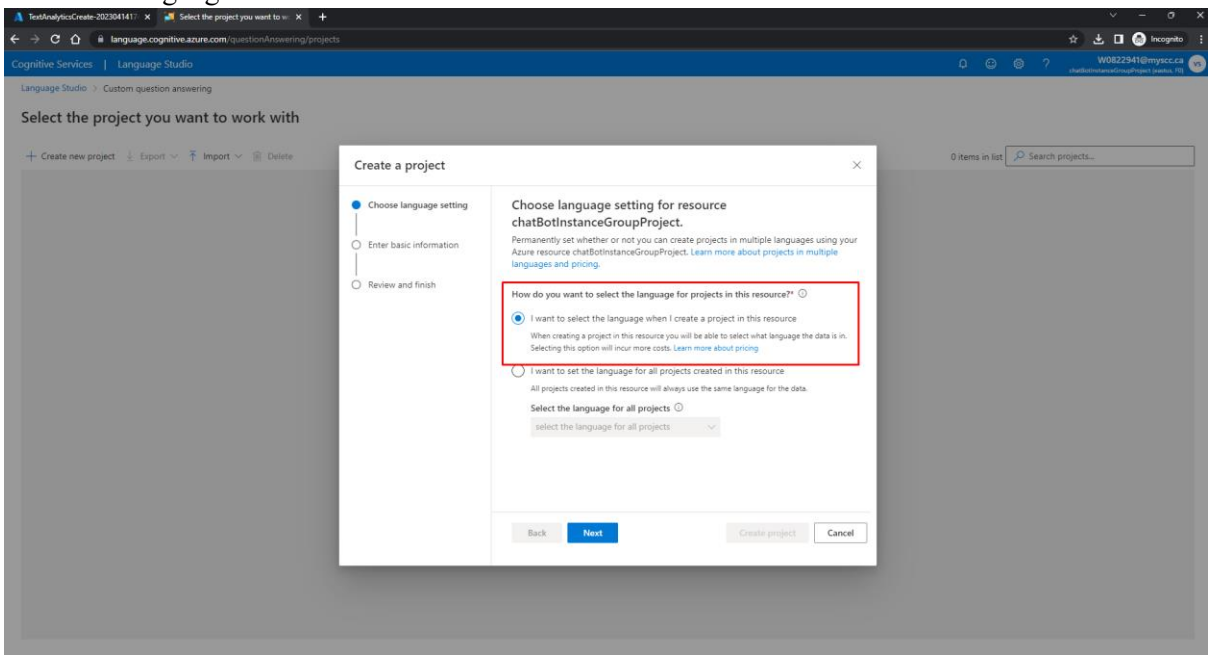
7. While we wait for deployment, go to language studio and select the azure resource with following details



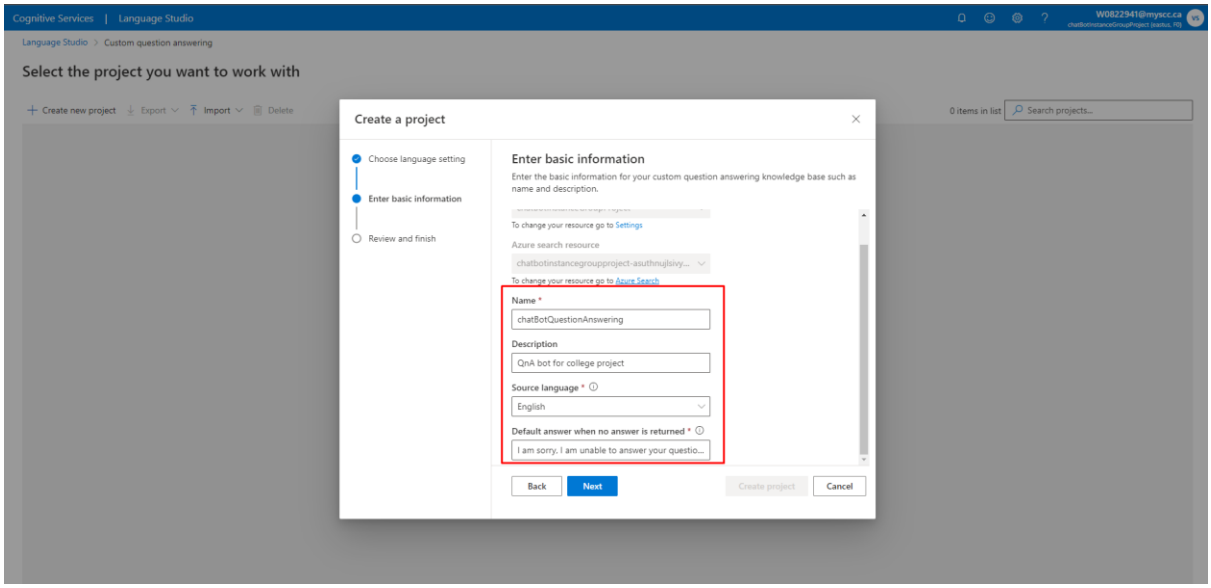
8. Select custom question answering as shown below



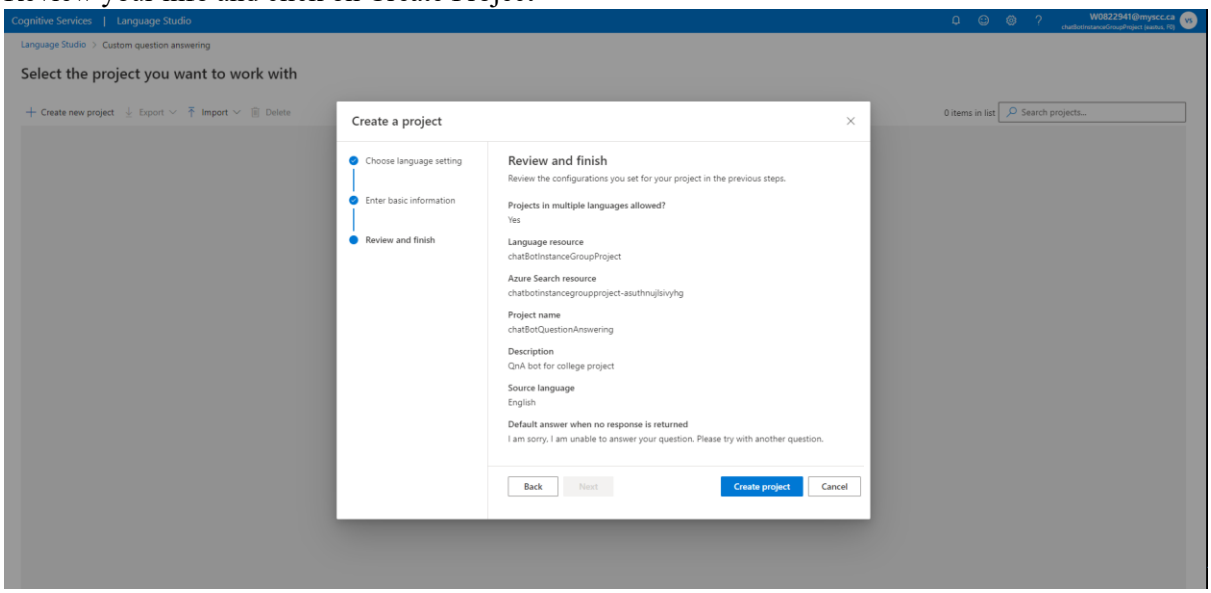
9. Select the language as shown below



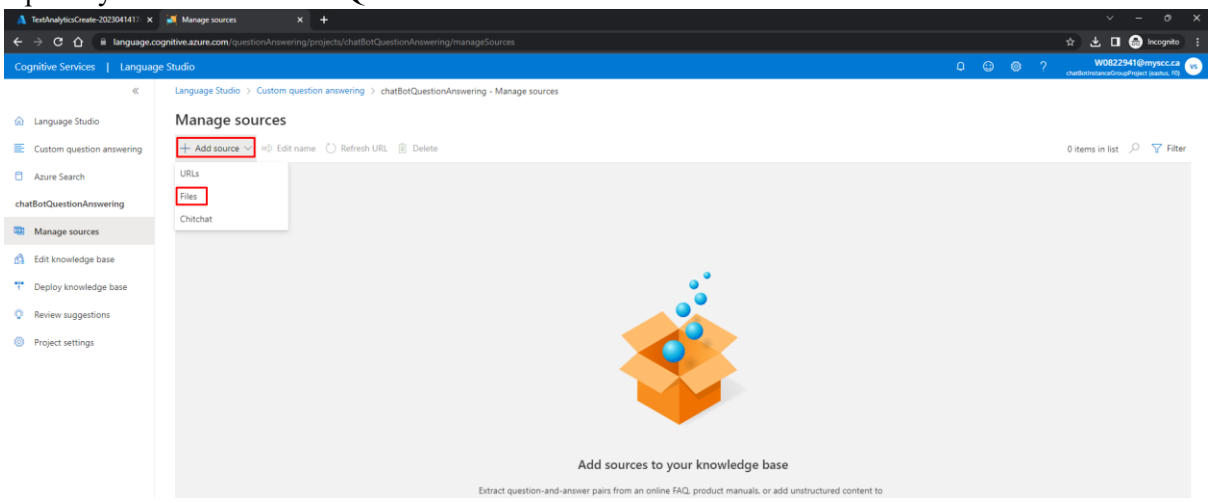
10. Enter basic info



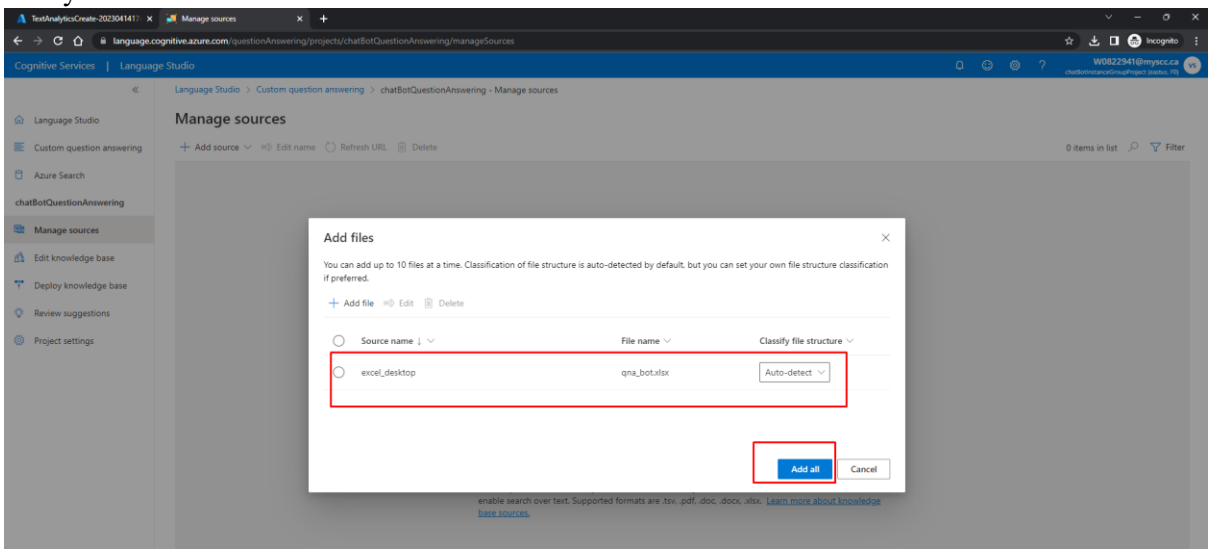
11. Review your info and click on Create Project



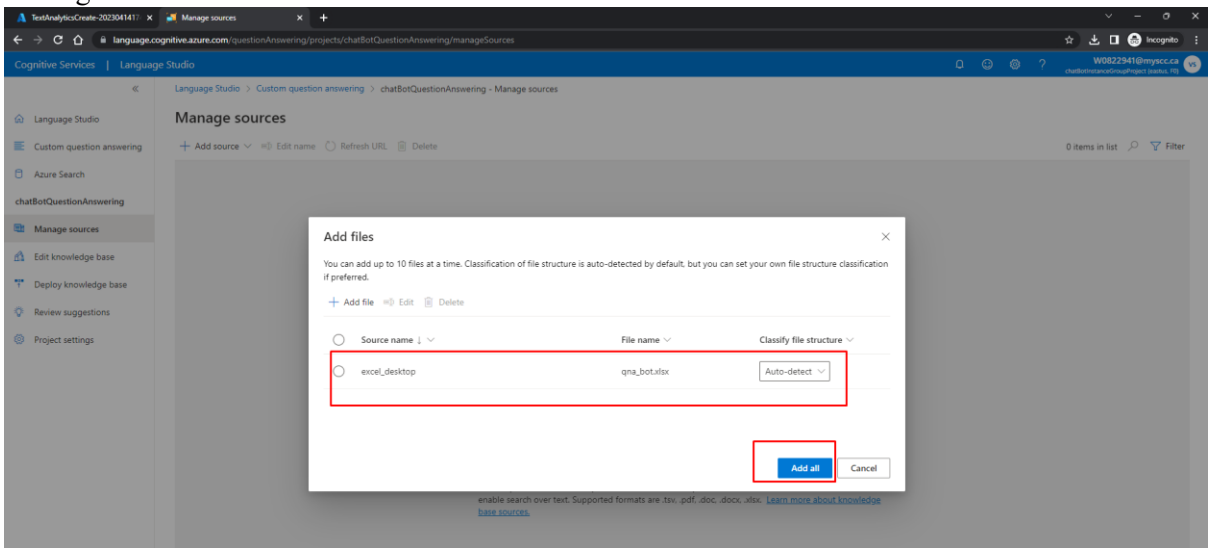
12. Upload your file with all the Questions and Answers



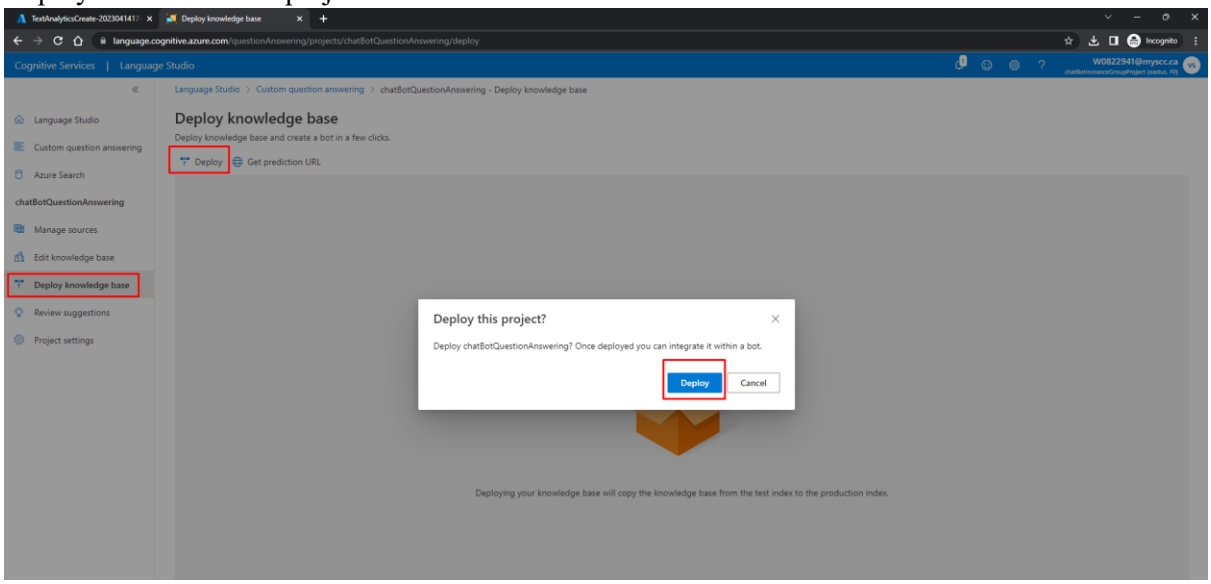
13. Verify the file name and add the source to the file



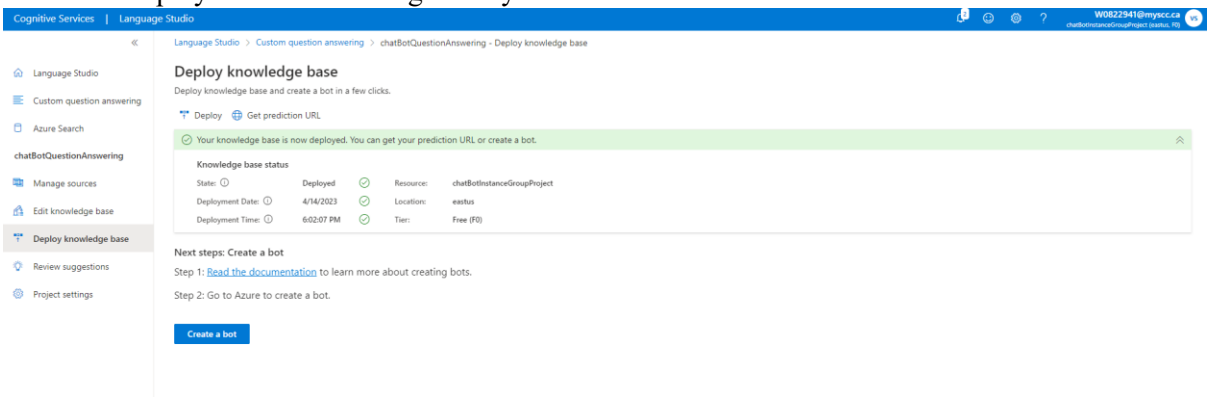
14. Testing the KB



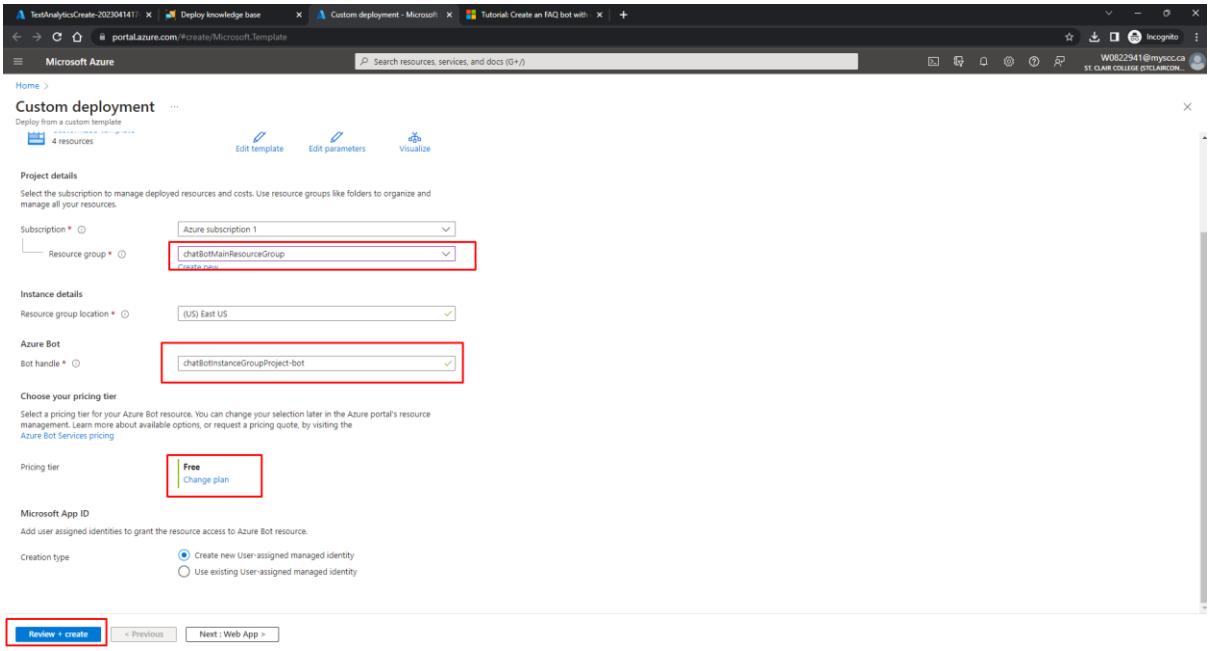
15. Deploy the KB into the project



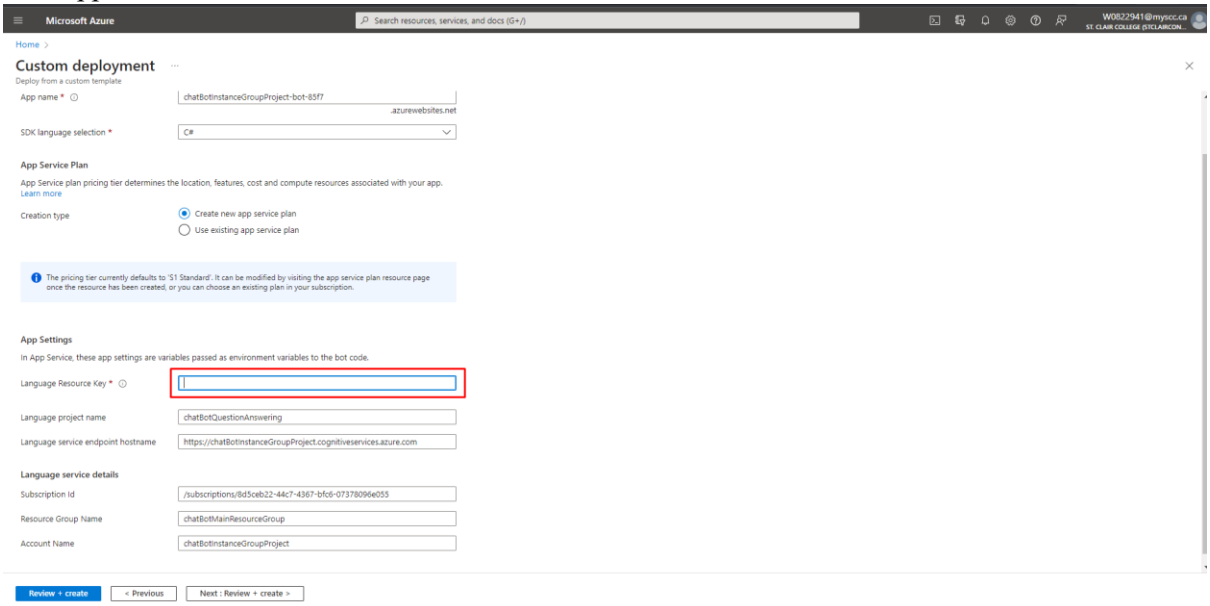
16. Check the deployment details and get ready to create a bot



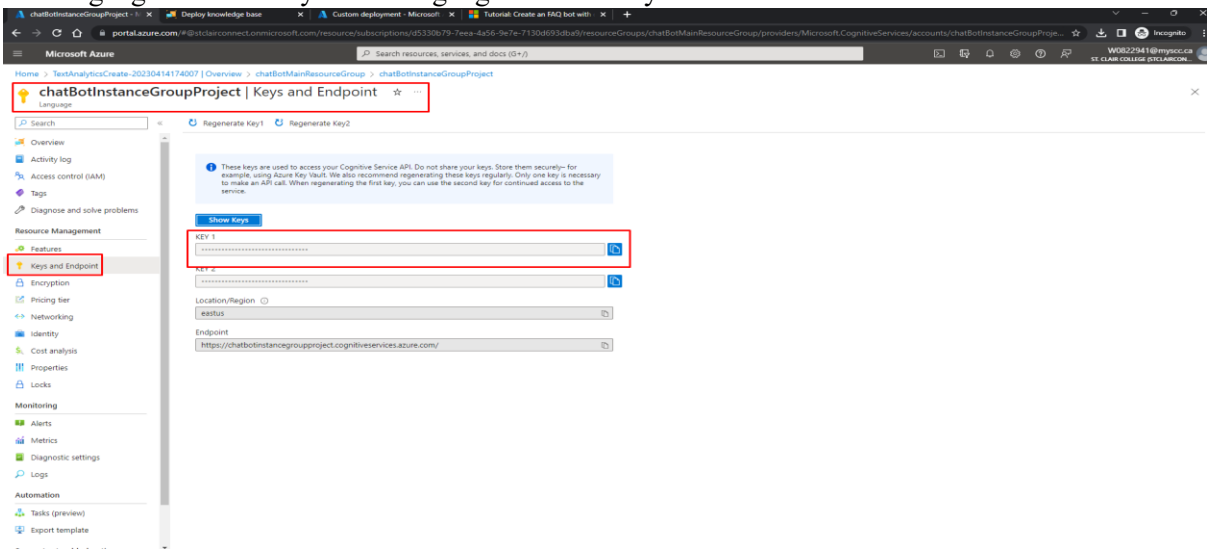
17. Bot creation



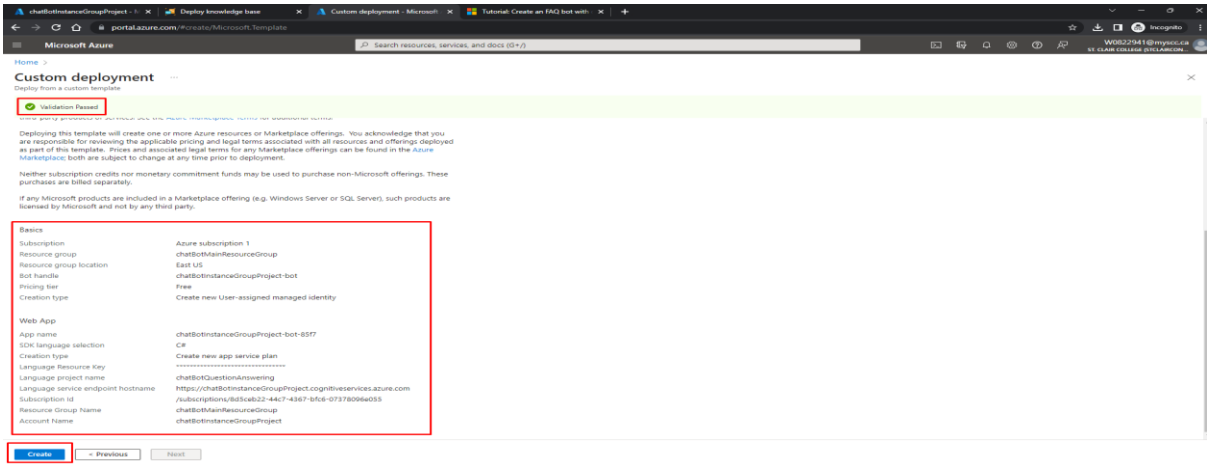
18. WebApp details



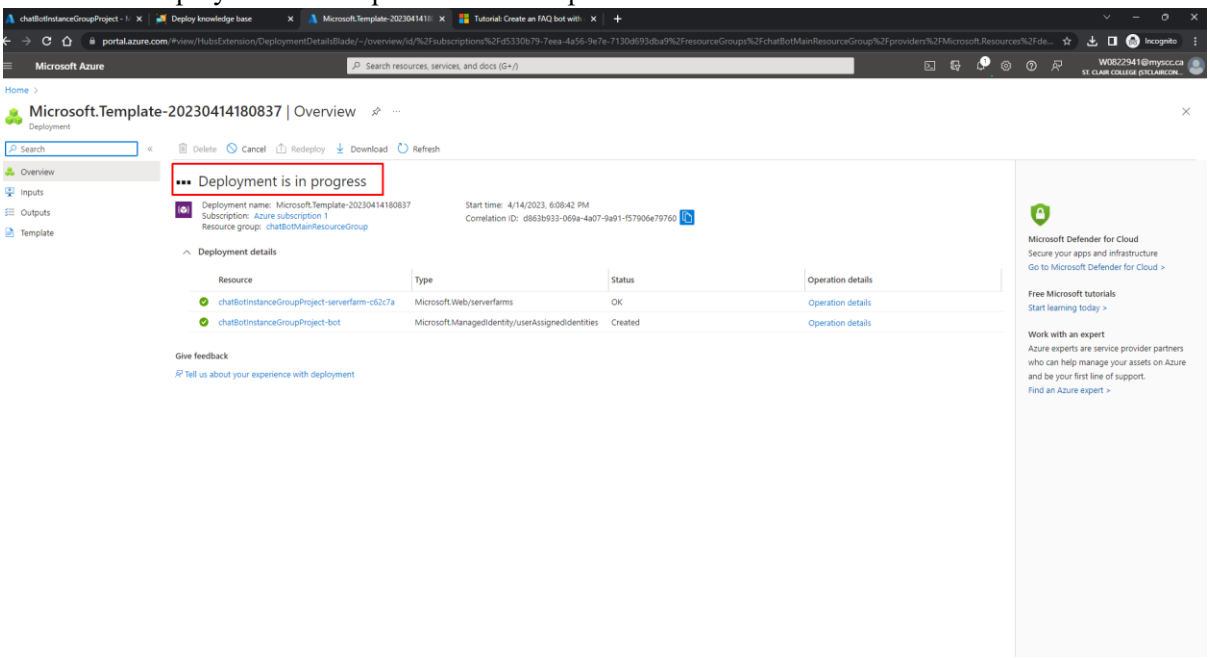
19. Get language resource key from Language resource key



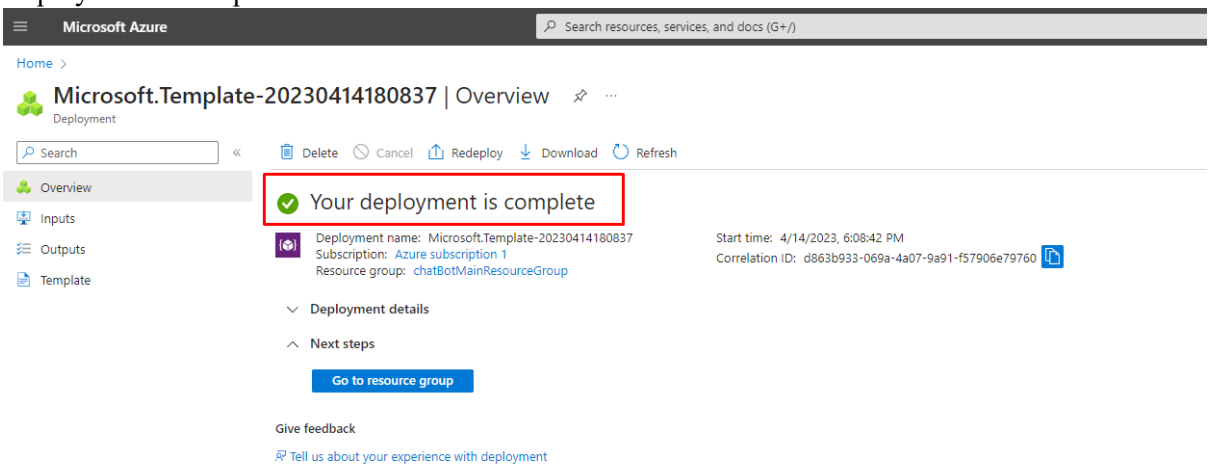
20. Check for validation and review the details



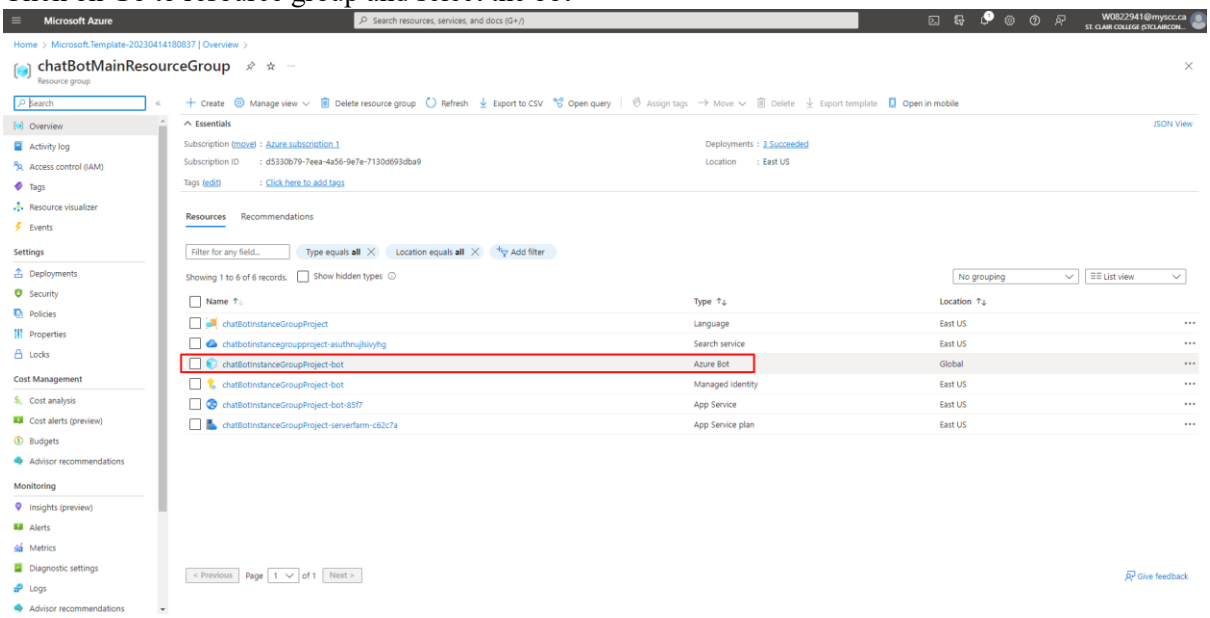
21. Wait till the deployment is complete for next steps



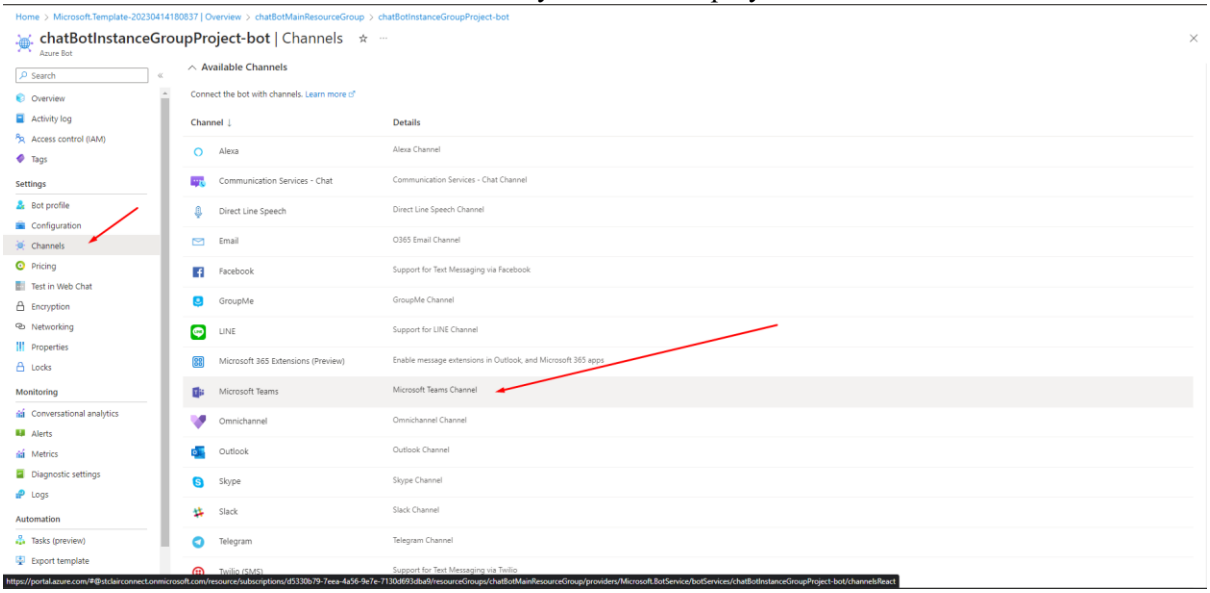
22. Deployment is complete



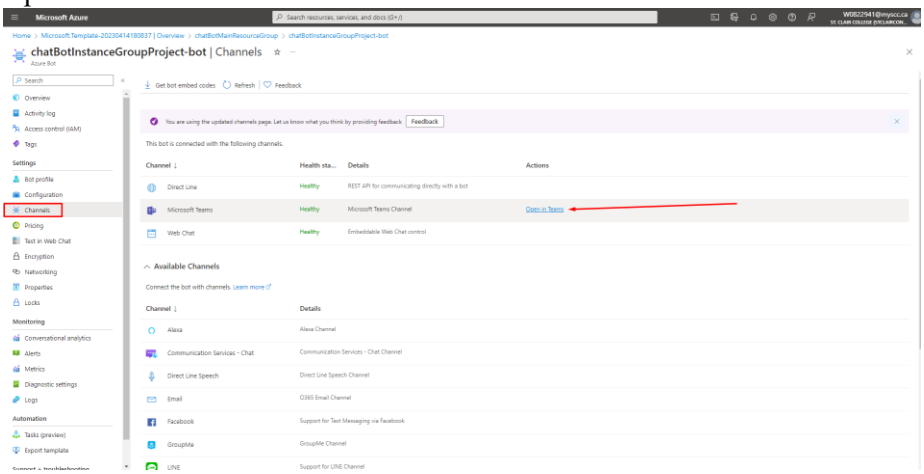
23. Click on Go to resource group and select the bot



24. Click on channels and select the channel that you want to deploy



25. Open in teams



Limitations of the chatbot:

- Chatbots based on custom question answering are limited to the questions and responses that they have been programmed to handle in the knowledge base. If a user asks a question that the chatbot is not available in the knowledge base, the chatbot may not be able to provide a helpful response.
- Chatbots based on custom question answering typically cannot provide personalized responses that take into account a user's specific preferences or needs. This can result in responses that are not relevant or helpful to the user.
- Chatbots may struggle to understand questions or queries that are written in a different language or dialect than the one they have been programmed to understand. This can limit the usefulness of the chatbot for users who do not speak the language of the chatbot.
- Chatbots may struggle to understand the context of a user's query. For example, a user might ask about a specific room at Caesars hotel at Windsor without providing additional context, such as the date of their stay or the purpose of their visit. So without this information, the chatbot may struggle to provide a relevant or helpful response.

Part- B

Ethical concerns related to Artificial Intelligence

Artificial Intelligence (AI) is ubiquitous nowadays. There is no denying that AI has become an integral part of lives. People are utilizing AI, consciously or unconsciously, in day-to-day activities. Using Siri on phones, tagging people or location in social media platforms to watching movies on digital media platforms, AI is involved in one form or another. It has made its way in every industry. Retail, Finance, Sports, Healthcare, Automotives are few names in this list.

Undoubtedly, it has benefitted human in many ways. For example- the tasks which used to take days to be completed, are now can be done in few minutes. It has maximized the productivity, reduced costs, time, and efforts. Consequently, the comfort level of people has improved. Apart from it, the adoption of AI in medical has revolutionized the health care industry by increasing accuracy and success rate of diagnosis. But at what cost we are getting these benefits is the major concern associated with it. It is drastically changing and evolving field and has the capability to alter the way we look at the industry. As artificial intelligence is becoming more advanced, it also brings new ethical threats or concerns that cannot go un-noticed. Like, other technologies, it has also various issues related to it and one of those issues is Ethical implications of AI. Below are the ethical issues associated with AI.

Ethical Bias

AI is a technology where various models are created to work based on requirements. These models are trained with data to make decisions and perform tasks accordingly. Therefore, the nature of models depends on the humans who are creating them, and the kind of data used to train them. The people who are creating AI models can be prejudiced and judgemental and in turn the machines created by them can also incorporate these properties. It can be racist, sexist, or unfair imitating the current world and society's entrenched stereotypical psychology.

One example of such biased AI model is deploying a machine learning algorithm in job portals by a particular company to select the resumes of potential candidates for one of the position and model selecting only while male candidates for the position. The reason behind such biases is that the model is trained with this kind of data and hence, it is not considering other ethnicities and genders. This is one of the examples of biased AI model. Today, the world is becoming more global and diverse. Therefore, such algorithms can reinforce bigotry in society.

Privacy and Security

With the increasing usage of AI in every field, the privacy of users has become a major concern. The companies which are creating AI applications are storing the personal data of consumers including the images, daily activities, banking information, health data, conversations without the consent of individuals and then training the models on basis of that data to provide more customised experience which is a clear breach of privacy. Moreover, the personal information can be misused and hence, can jeopardise the security and safety of people. The various repercussions of capturing the personal information of consumers are identity theft, financial fraud, cyberattacks, and abuse of other types. Therefore, the application of AI is the biggest threat to the human privacy.

Accountability

There are two types of accountabilities associated with AI machines. The first is legal and another is moral accountability. This is another major concern of AI. It is quite ambiguous to find out who will be answerable for the nefarious activities of machine learning models. If anything goes wrong, will it be the accountability of the organisation who has made the machines or the engineers who have worked on developing the algorithm or the model itself or the person who is using it to be blamed.

Trust and Transparency

The AI models are trained with myriad of datasets. It is possible that the data available in datasets is erroneous resulting in models which is giving incorrect information. Additionally, such models can produce skewed result putting the trust of people at stake. Moreover, how the models are trained and on basis of what, AI- based system made decisions is not clear as sometimes AI models are trained on black box principle. Therefore, AI machines are not clear in functioning. During the recent times, the false news and information on social media websites, which are applying machine learning models in the background, has increased exponentially resulted in manipulated users giving rise to hate speeches and violences across the world. For example, deep learning (the form of AI learning method) has enabled humans to apply the voice of one person on the face of another person producing videos which are not real and compromise the belief system on AI machines. Therefore, it has become a challenge to identify what is correct and what is not.

Unemployment and Inequality

The popularity and application of AI machines in every sector has given rise to speculations that human jobs will be impacted by it and more and more human will be unemployed. The top consultant firm Mckinsey Global Institute has published a report that artificial intelligence machines will devour 800 million jobs around the world by 2030. Moreover, there will not be any need to pay machines the way humans are paid, implying that the owners and top executives of AI-driven organisations will make billions of dollars by deploying ML driven robots in workforce resulting in imbalance between higher and lower economical class of people. Consequentially, widening the gap between rich and poor which can have detrimental impacts on society.

Ethical implications of using AI in Education:

As mentioned above, with deployment of Artificial Intelligence in every industry, there are potential ethical concerns or threats that are associated with it. Here we are going to discuss about the Ethical Implications of Artificial Intelligence in **Education** sector. Artificial Intelligence is improving the education sector by amplifying learning experience for students and for teachers as well. AI- powered tools will open so many options for them. Students can involve themselves in personalized self-assessment, learn things which lies withing their interest, and can receive on-time solution for queries. Teachers can use AI to create more effective teaching schemes, can enhance student experience by providing more detailed knowledge of every field. In general, artificial intelligence is converting the education system by entitling students and educators with new opportunities and options for growth. The use of artificial intelligence in education sector is growing immensely and is completely changing the sophisticated education system. But as AI is converging more into the system, the ethical threats or concerns it brings cannot be overlooked. The ethical issues associated with education system needs to be addressed as it is essential for the education system to don't get compromised.

It is very important to keep track of bias and discrimination while developing an algorithm for education system. Whenever algorithm is trained with dataset, it also intake the biasness of the data. Not intentionally, however, the model also tends to follow this biasness. For example, the AI system which is built to make the decision about academic performance of students, it can be discriminating against certain group of students which doesn't fall under the criteria that the dataset was fed to generate the algorithm. For example, students coming from low-income background and disabilities might wrongfully terminated if an AI model to

predict the possibility of dropping out of schools/colleges is designed with biased data. If AI model is trained using the data for race, it will be difficult for them to get progress and education.

Data privacy and security is one of the measure concerns when it comes to internet and its technology. Artificial Intelligence is one of the rapidly growing technologies with advance functionality and ability to learn itself by keeping in mind previous experiences. Data privacy is a critical issue when it comes to AI-powered education system. Artificial Intelligence incorporated with Education system is an amazing way to enhance learner's experience as well as the academic structure.

It is often noticed that whenever educational institutes try to enhance their educational structure with technologies, a third-party company is always associated and often a system is operated by them. Educational AI system collects and use all the personal as well as sensitive information about the students such as their name, address, phone number, grades, academic records, family background, health status and societal status as well. This information must be protected, and the developers should make sure of the security of these data as it should not be misused by the unauthorized entities. One who makes the algorithm should be responsible for the confidentiality of these personal student's information.

Transparency is very critical concern in educational AI for building trust and making sure that the decisions made by the system are fair and not biased. In educational AI, transparency can be maintained by certain ways. Regular checking and testing of the model should be performed to ensure the decision-making capability of the model and it can help identifying any issues or biasness that may arise. The developers should make algorithms publicly available so that user can know this is the algorithm that is used to arrive at this decision. The algorithms should be developed in a way that it can provide clear explanation for

their decision making. Feedback from students, educators or parents will always be useful to make educational AI more efficient and accurate and improve transparency.

In educational AI, accountability plays a vital role. As it ensures the AI systems are fair, transparent. It also checks that the models are not biased, discriminatory and has adverse effects on students. Accountability makes sure that the system is built keeping students' interest in mind. This includes assuring the user that their data is secured, well maintained, and protected from the unauthorized use. Accountability forces the developers to take responsibility of the model to be fair, transparent and trustworthy.

Most importantly, students must provide their consent before using AI-powered educational system. And it is the educator's or policymaker's responsibility to make sure that they are not forcing students in using technology which in future may turn on themselves. Without consent, use of AI in education can turn out to be dubious and questionable.

Recommendation of Designing Ethical AI System:

AI systems have become a crucial part of everyone's daily lives, AI is playing a vital role from intelligent voice-activated assistants to self-driving cars. However, despite the many advantages that AI provides, it is more important to think about ethics so that AI does not cause harm to people or society. For that designing ethical AI is very indispensable for ensuring that the technological development and implementation are in responsible and beneficial way. There are some recommendations for designing ethical AI systems.

To design AI system free from biasness, it is ideal for the developers to check the credibility of the data they are feeding to train the algorithm. The developers should also check the fairness and accuracy of the model on a regular basis.

AI systems should be responsible for privacy rights. The meaning of this is that data collection, utilization, shared, and archived, as well as deletion must follow some international

laws and principles based on ethics, and AI systems should follow the rules and laws of the country in which they are used for their purpose. Additionally, in AI systems, algorithmic systems require to assess the privacy impact while considering the ethical and societal factors, and for those the developer of AI systems should be responsible for assuring that the personal information of everyone is protected. By analysing some techniques AI systems can build models while preserving the privacy of users' data. There is one method which is called federated learning. In this method, we can create training machine learning without collecting data in one place. Instead, the data remains the same on anyone's devices and the model is also utilizing those data from devices so this method helps to protect the privacy of user data rather than sent to any central location.

Another way to modify the AI model is Transparency and creating explainable AI, with the help of this AI model can build user trust and privacy concerns issues and make the decision-making process transparent. So, any individual can identify how their data is being used by the model for making the decision and based on that they can know whether to share their data with an AI system. For an instance, if an AI system is recommended for any products based on an individual's purchase history, then users might be more willing to share their data if they can see that AI is not sharing their data with other third parties, it's just used for a personalized recommendation.

In order to prevent AI systems from social, economic, and cultural inequalities, we should include promoting diversity in AI developer teams to make sure that AI systems are fair with individual irrespective of race, sex and ethnicity. Everyone should prioritize equal treatment for all the individual and use AI in ways that are good for each one. This will help people to put their trust in AI technology in positive ways.

By promoting the Accessibility of AI systems everyone should be able to use AI systems, despite their physical or cognitive limitations.AI developer ought to be sure that the systems are created in a way that is accessible and can work well with all the assistive technologies.

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Ethical Implications of Artificial Intelligence

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