SIX WEEKS SUMMER TRAINING REPORT

ON

"Cloud Computing"

Submited by:

Vannala Rajesh

Registration No:12103182

Under the Guidance of

Board Infinity

School of Computer Science & Engineering

Lovely Professional University, Phagwara

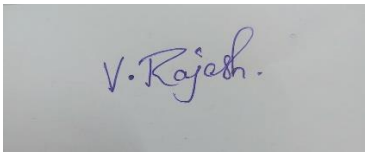
(June-July,2023)

Annexure-II:

Student DeclarationTo whom

so ever it may concern

I, Vannala Rajesh 12103182, hereby declare that the work done byme on "Cloud Computing and AWS" from May, 2023 to July, 2023, is a record of original work for the partial fulfillment of the requirements for the
award of the degree, B.Tech(Computer Science).



Signature of the student

Name of the Student (Registration

Number):

Vannala Rajesh

12103182

ACKNOWLEDGEMENT

I am grateful for the opportunity to have participated in the Cloud Computing. The program provided me with the knowledge and skills I need to get started with cloud computing. I am confident that theskills I have learned will be valuable in my future career.

Specifically, I would like to thank the instructors and teaching assistants for their clear and concise explanations of the material. I would also liketo thank the other participants in the program for making it a stimulating and collaborative learning experience.

I am excited to use the skills I have learned to build and deploy cloud- based applications and solutions. I am also grateful for the Cloud documentation, forums, and blog, which I found to be helpful resources.

I am confident that the Cloud computing program has prepared me well for a career in cloud computing. I am excited to continue learning and growing in this field.

CERTIFICATION:

CERTIFICATE OF COMPLETION

THIS CERTIFICATE IS AWARDED TO

Vannala Rajesh

for successfully completing Microlearning Program in
Cloud Computing And Aws

12 July, 2023		BI22LPBI345426039
ISSUED DATE	CEO, Board Infinity Sumesh Nair	CERTIFICATE NO.

BOARD

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Chapter-1

Introduction

Cloud computing is the delivery of computing services—including servers, storage, databases, networking, software, analytics, and intelligence—over the Internet ("the cloud") to offer faster innovation,flexible resources, and economies of scale.

Instead of buying and maintaining physical servers and other IT infrastructure, businesses and organizations can access cloud-basedservices and pay for only the resources they use. This can help businesses save money, improve efficiency, and focus on their core competencies.

There are three main types of cloud computing services:

- Infrastructure as a Service (IaaS): This provides businesses withaccess to virtual servers, storage, and networking resources.
- Platform as a Service (PaaS): This provides businesses with a platform to develop, deploy, and manage applications.
- Software as a Service (SaaS): This provides businesses withaccess to software applications that are hosted on the cloud.

Cloud computing is a rapidly growing field, and it is being used by businesses of all sizes. It offers a number of benefits, including:

- Scalability: Cloud computing services can be scaled up or downand needed, which can help businesses save money.
- Reliability: Cloud computing services are typically more reliablethan traditional IT infrastructure.
- Security: Cloud computing providers have invested heavily in security, and they offer a variety of security features.
- Accessibility: Cloud computing services can be accessed fromanywhere with an internet connection.

If you are considering using cloud computing, there are a few things youneed to keep in mind:

- The type of cloud service you need: IaaS, PaaS, or Saas

The security features offered by the cloud provider: Make surethe provider has the security features you need.

- The level of support offered by the cloud provider: Make sure youcan get the support you need when you need it.

Cloud computing is a complex topic, but it is a powerful tool that can help businesses of all sizes save money, improve efficiency, and focuson their core competencies.

Objectives

- Learn the basics of cloud computing: Cloud computing provides a comprehensive introduction to cloud computing, covering topics such as Infrastructure as a Service (IaaS), Platformas a Service (PaaS), and Software as a Service (SaaS).
- Get hands-on experience with IBM Cloud: Cloud computing includes a number of hands-on labs that allow you to learn by doing. You will learn how to create and manage cloud resources,deploy applications, and secure your cloud environment.
- Prepare for a career in cloud computing: Cloud computing is agreat way to prepare for a career in cloud computing. The program covers the skills that are in demand in the cloud computing industry, such as DevOps, security, and cloud architecture.
- Gain a competitive advantage: Cloud computing can help yougain a competitive advantage in your career. The program will teach you how to use cloud computing to improve the efficiency and agility of your organization.

Here are some specific learning outcomes that you can expect from Cloud computing:

- Understand the benefits of cloud computing
- Identify the different types of cloud computing services
- Create and manage cloud resources

- Deploy applications to the cloud

Use DevOps practices to improve the development and deployment of applications

- Understand the security risks associated with cloud computing
- Design and implement a secure cloud environment

IBM Cloud Essentials is a valuable program for anyone who wants to learn about cloud computing. The program is comprehensive, hands-on, and relevant to the latest cloud computing technologies. If you are interested in a career in cloud computing, IBM Cloud Essentials is a great place to start.

IMPORTANCE

Cloud computing is a valuable program that can help you learn about cloud computing and gain the skills you need to succeed in this growing field. Here are some of the importance of IBM Cloud Essentials:

- It is a comprehensive program that covers the basics of cloud computing. The program covers topics such as Infrastructure as aService (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS).
- It is a hands-on program that allows you to learn by doing. The program includes a number of labs that give you the opportunity topractice what you have learned.
- It is a vendor-neutral program that teaches you the skills that are indemand in the cloud computing industry. The program does not focus on any particular cloud provider,

so you can learn the skills that are transferable to any cloud platform.

- It is a self-paced program that you can complete at your own convenience. This makes it a great option for busy professionals who want to learn about cloud computing without having to committo a full-time program.
- It is an affordable program that is accessible to everyone. Theprogram is offered at a very affordable price, so you can learn about cloud computing without breaking the bank.

If you are interested in learning about cloud computing and gaining theskills you need to succeed in this growing field, then Cloud computing is a great place to start.

Applicability

Cloud computing is a program that can be applied to a wide rangeof industries and roles. Here are some examples of how the program can be applied:

- IT professionals: IT professionals can use the program to learn about the latest cloud computing technologies and how to use them to improve the efficiency and agility of their organizations.
- Developers: Developers can use the program to learn about cloud-native development and how to build and deploy applications on the cloud.
- Businesses: Businesses can use the program to learn about thebenefits of cloud computing and how to use it to lower costs, improve security, and increase agility.
- Students: Students can use the program to learn about cloud computing and gain the skills they need to succeed in this growingfield.
- Anyone interested in learning about cloud computing: Anyone who is interested in learning about cloud computing can benefit from the Board infinty program.

The program is designed to be flexible and adaptable, so it can be applied to a variety of situations and needs. If you are interested in learning about cloud computing Cloud Essentials is a great place tostart.

Relevance

Cloud computing is a program that is relevant to the latest cloud computing technologies. The program covers topics such as containers, microservices, DevOps, and security, which are all essential skills for cloud computing professionals.

The program is also relevant to the needs of businesses. Businesses are increasingly adopting cloud computing to lower costs, improve agility, and innovate faster. Cloud computing can help businesses learn about the benefits of cloud computing and how to use it to achievetheir goals.

The program is also relevant to the needs of developers. Developers need to understand cloud computing in order to build and deploy applications that are scalable, reliable, and secure. Cloud computing can help developers learn the skills they need to succeed inthe cloud-native world.

Overall, Board infinty is a relevant program that can help you learn about cloud computing and gain the skills you need to succeed inthis growing field.

Scope and Technology learnt

- Cloud Fundamentals: This module introduces the basic conceptsof cloud computing, such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS).

- Containers: This module introduces containers, which are a way topackage and deploy applications.
- Microservices: This module introduces microservices, which are away to architect applications.
- DevOps: This module introduces DevOps, which is a way tocombine development and operations.

These are just a few of the technologies you can learn about in Cloud Essentials. The program also covers a variety of other topics, such as data analytics, machine learning, and artificial intelligence.

If you are interested in learning more about cloud computing, Cloud Essentials is a great place to start. The program is designed for beginners, and it provides a comprehensive overview of the cloud computing landscape.

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Now Deployment of a Web Project in Amazon Web Services (AWS)

1. Introduction

In the dynamic landscape of cloud computing and the vast ecosystem provided by Amazon Web Services (AWS), my internship at Board Infinity was an enriching experience that deepened my understanding of cloud technologies. Throughout this internship, I gained practical insights into AWS services, cloud architecture, and their pivotal role in powering innovative solutions.

As part of this immersive learning journey, I undertook a hands-on project aimed at converging cloud computing proficiency with the burgeoning field of conversational artificial intelligence.

In the dynamic landscape of digital communication, Amazon Lex stands as a cornerstone within the Amazon Web Services (AWS) suite, offering a sophisticated platform for the development of conversational chatbots. Amazon Lex excels in natural language understanding, employing cutting-edge deep learning algorithms to enable chatbots to decipher and interpret user inputs effectively. Its versatile framework allows developers to define intents, representing user goals, and slots, facilitating the extraction of crucial information from conversational exchanges.

An inherent strength of Amazon Lex lies in its seamless integration with AWS Lambda, enabling developers to embed custom business logic and backend processes directly into the chatbot's workflow. This integration not only enhances the bot's responsiveness but also opens avenues for creating highly tailored and context-aware conversational experiences. The synergy between Lex and Lambda

provides developers with a powerful toolkit to build intelligent chatbots capable of handling a myriad of tasks.

Businesses across industries find Amazon Lex applicable to a multitude of use cases. From automating customer support interactions to guiding users through e-commerce processes, and facilitating internal workflows, Lex-powered chatbots prove invaluable in enhancing operational efficiency and user satisfaction. Moreover, the service's scalability and robust security measures, including Identity and Access Management (IAM) controls, guarantee a reliable and secure environment for deploying chatbot solutions at scale.

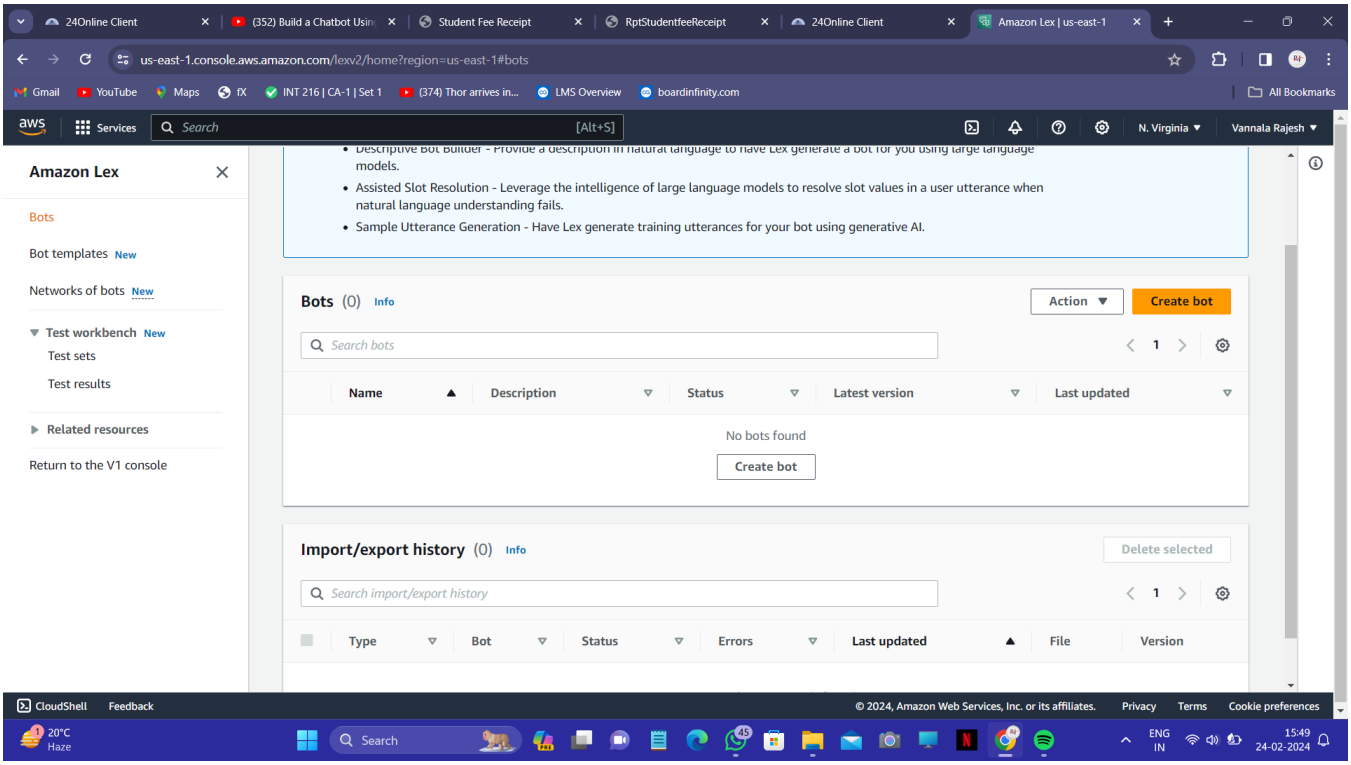
In summary, Amazon Lex emerges not only as a pioneering platform for crafting conversational interfaces but also as a catalyst for innovation in user interaction and engagement. Its integration with AWS Lambda, support for multiple messaging platforms, and adaptability to diverse business needs position it as a compelling tool for businesses aiming to stay at the forefront of conversational AI technologies.

Lets create a simple chatbot (Appointment Scheduler) with AWS Lex

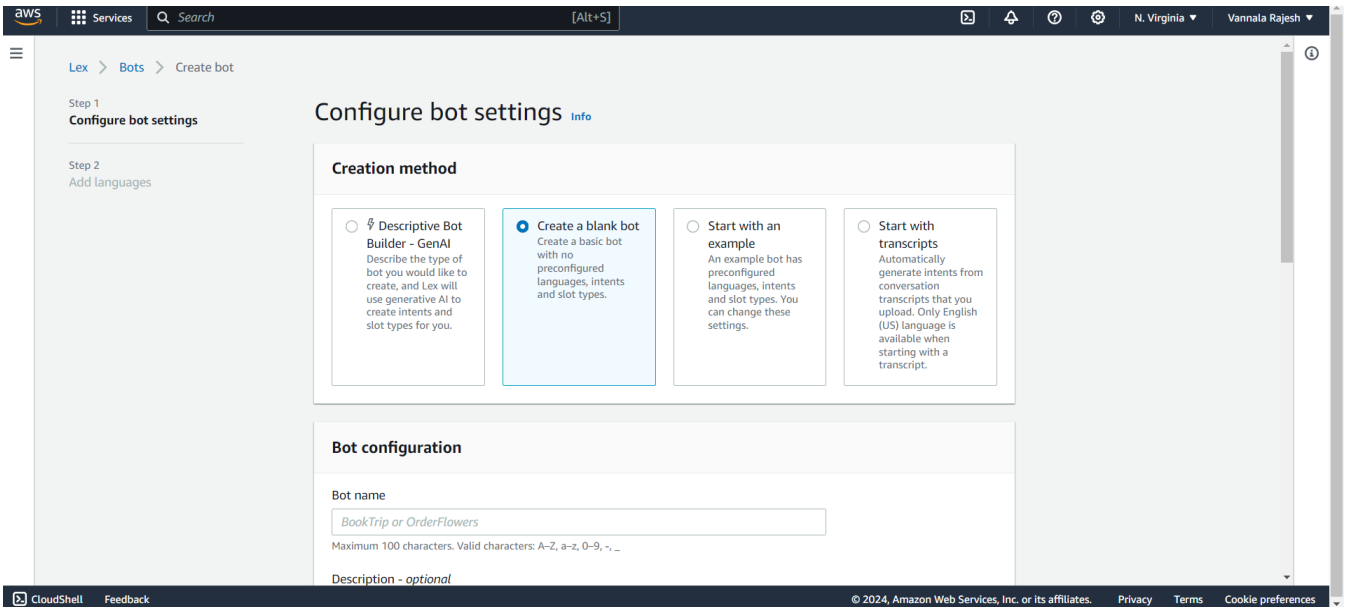
Create a Aws Account and open amazon lex

Amazon Lex extends its impact by offering compatibility with various messaging platforms, making it easy for developers to deploy chatbots across a spectrum of communication channels. Whether interacting on Facebook Messenger, Slack, or other platforms, Lex-powered chatbots provide a consistent and engaging experience. This

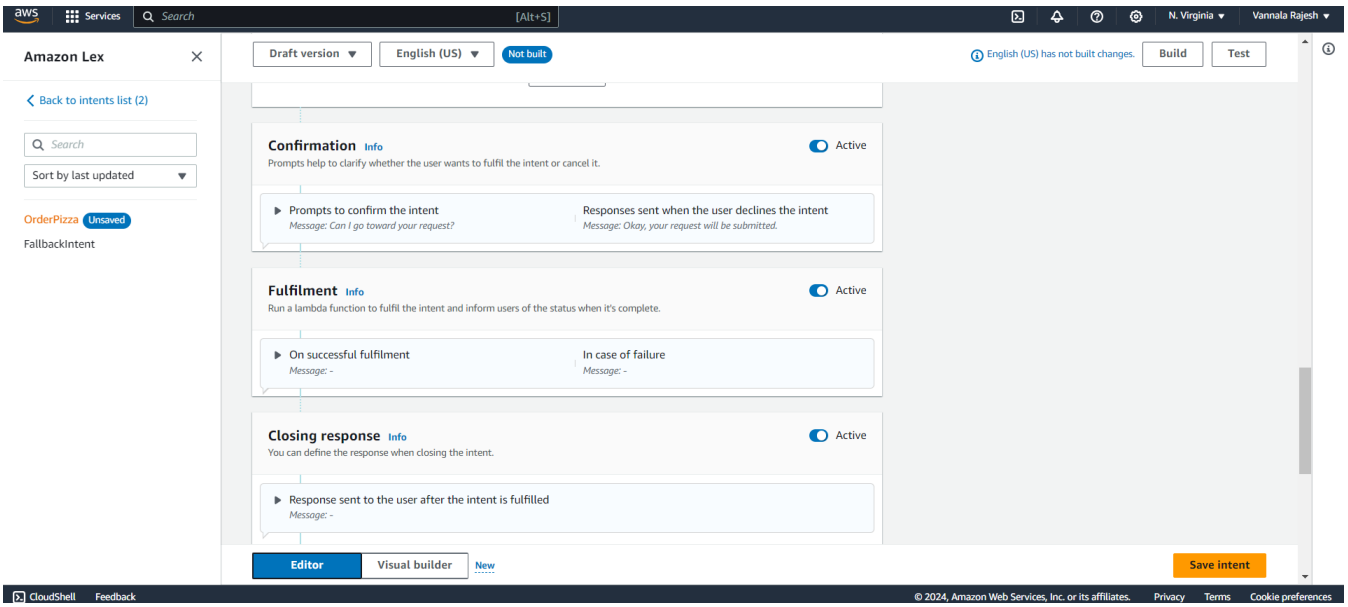
adaptability broadens the reach of chatbots, ensuring accessibility for users across diverse communication mediums.



Here we have to create a blank bot

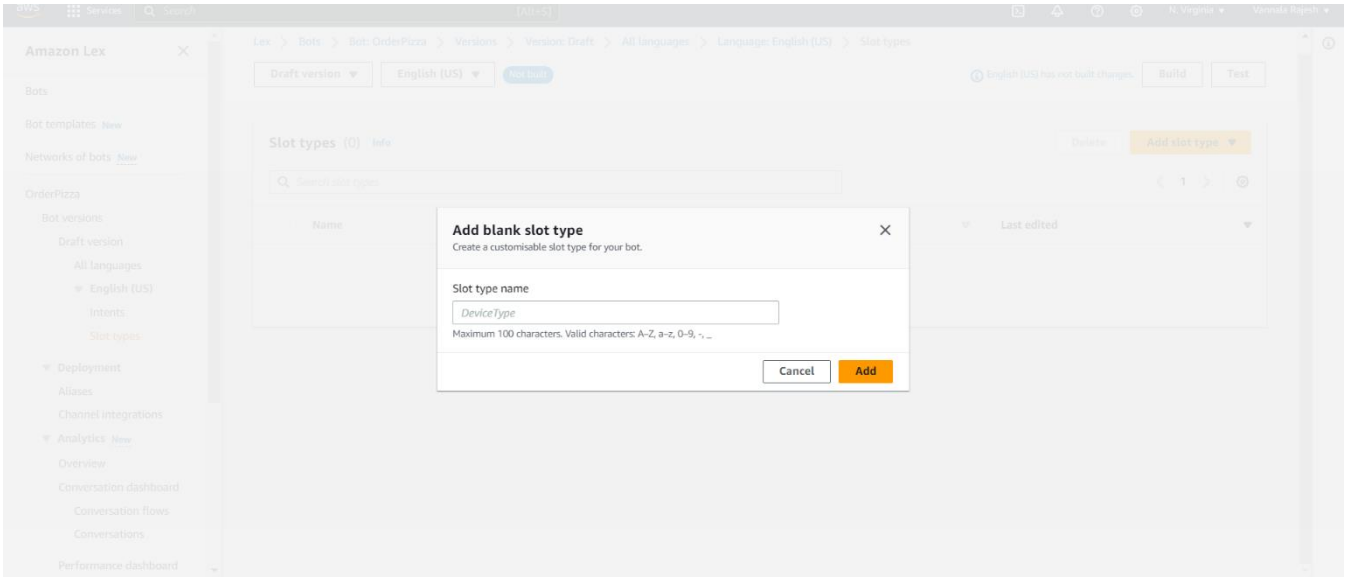


After creating the blank bot we have fill the intents as per our required so that the bot will reply according to that.

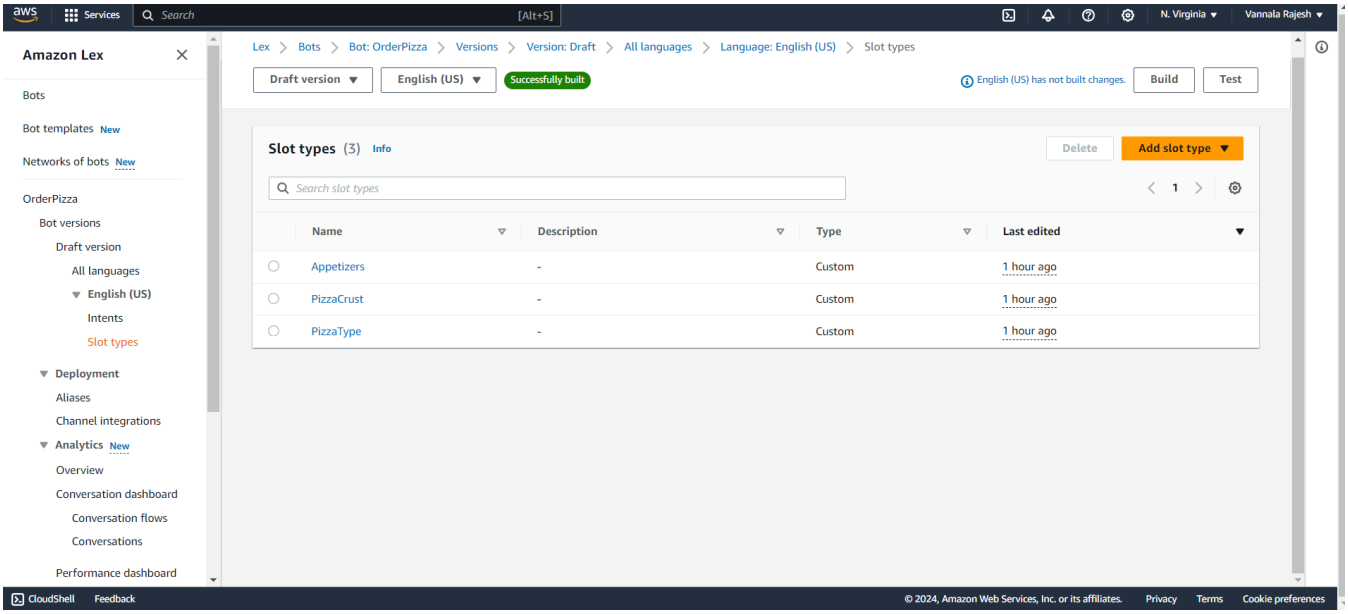


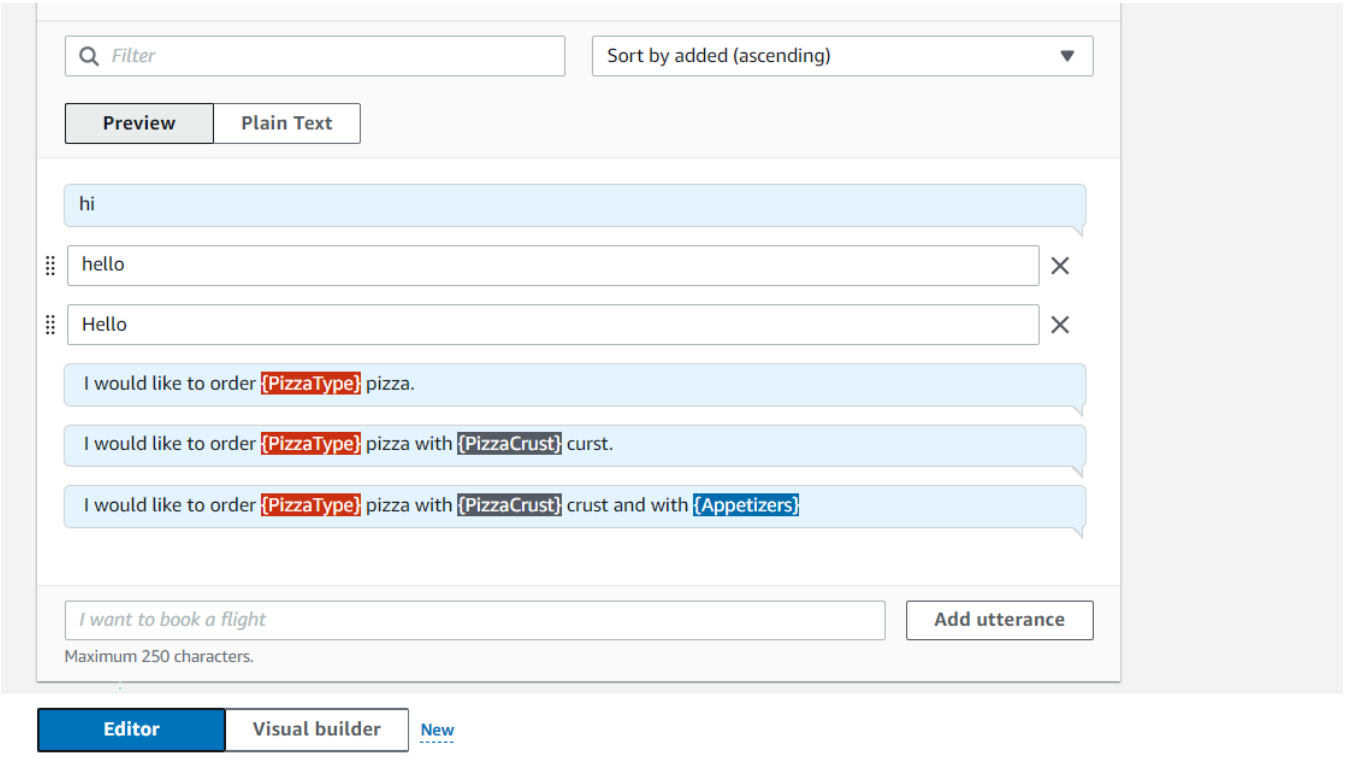
After entering the intents now, we have to create a slot types

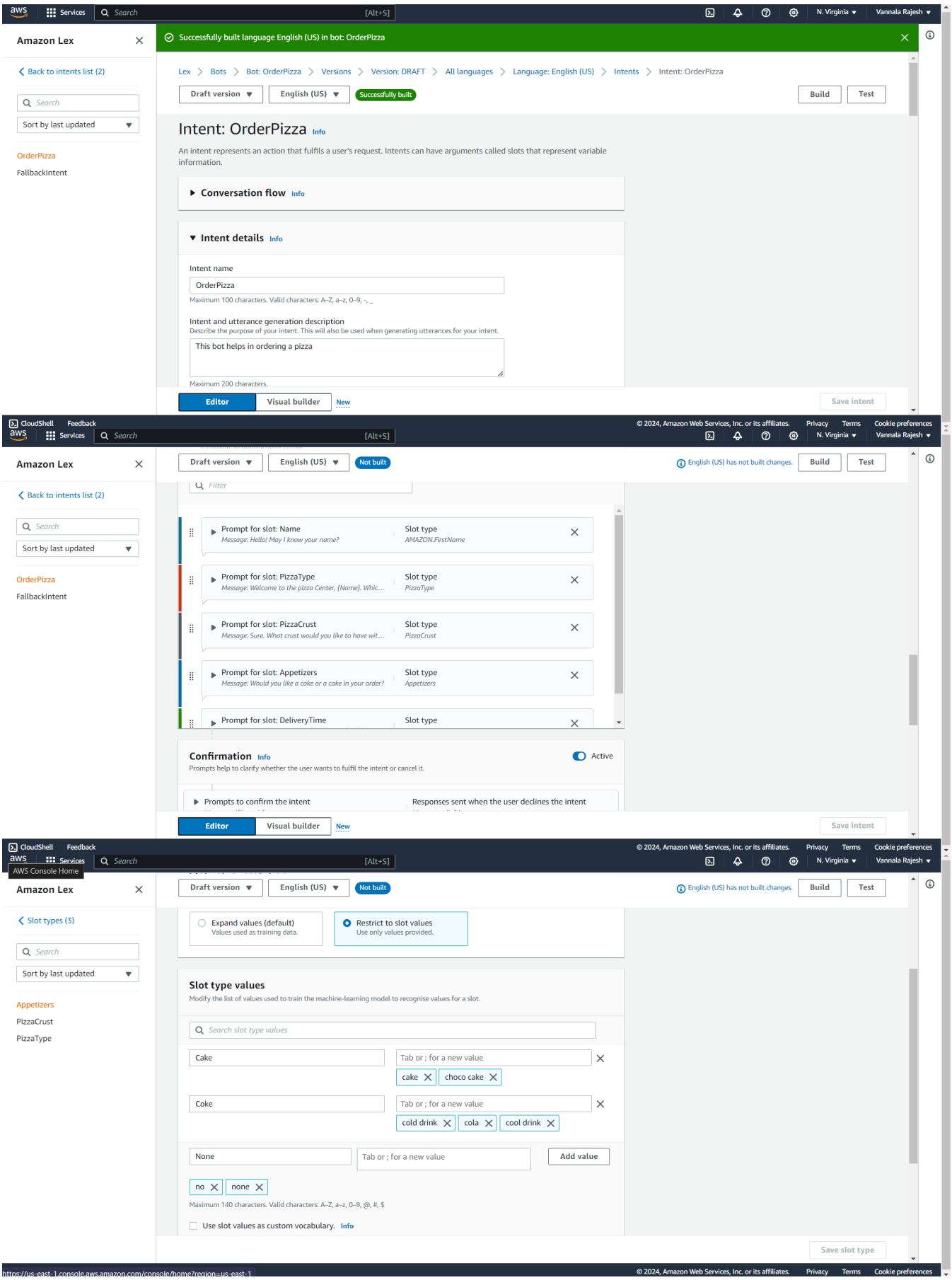
In Amazon Lex, a "slot type" is a way to define the expected type of data that a user should provide for a specific slot within an intent. Slots are parameters that represent the information your chatbot needs to fulfill a user's request, and slot types help define and validate the kind of input the bot should expect for each slot.



These are the slot types I created in this chatbot






Amazon Lex
Successfully built language English (US) in bot: OrderPizza
Lex > Bots > Bot: OrderPizza > Versions > Version: DRAFT > All languages > Language: English (US) > Intents > Intent: OrderPizza
Draft version
English (US)
Successfully built
Build
Test
Intent: OrderPizza Info
An intent represents an action that fulfils a user's request. Intents can have arguments called slots that represent variable information.
Conversation flow Info
Intent details Info
Intent name
OrderPizza
Maximum 100 characters. Valid characters: A–Z, a–z, 0–9, -, _
Intent and utterance generation description
Describe the purpose of your intent. This will also be used when generating utterances for your intent.
This bot helps in ordering a pizza
Maximum 200 characters.
Editor
Visual builder
New
Save intent
Back to intents list (2)
Search
Sort by last updated
OrderPizza
FallbackIntent
Not built
English (US) has not built changes.
Prompt for slot: Name
Message: Hello! May I know your name?
Slot type
AMAZON.FirstName
Prompt for slot: PizzaType
Message: Welcome to the pizza Center, {Name}. Whic...
PizzaType
Prompt for slot: PizzaCrust
Message: Sure. What crust would you like to have wit...
PizzaCrust
Prompt for slot: Appetizers
Message: Would you like a coke or a cake in your order?
Appetizers
Prompt for slot: DeliveryTime
Confirmation Info
Active
Prompts help to clarify whether the user wants to fulfil the intent or cancel it.
Prompts to confirm the intent
Responses sent when the user declines the intent
Slot types (3)
Appetizers
PizzaCrust
PizzaType
Expand values (default)
Values used as training data.
Restrict to slot values
Use only values provided.
Slot type values
Modify the list of values used to train the machine-learning model to recognise values for a slot.
Search slot type values
Cake
Tab or ; for a new value
cake
choco cake
Coke
cold drink
cola
cool drink
None
Add value
no
none
Maximum 140 characters. Valid characters: A–Z, a–z, 0–9, @, #, $
Use slot values as custom vocabulary. Info
Save slot type
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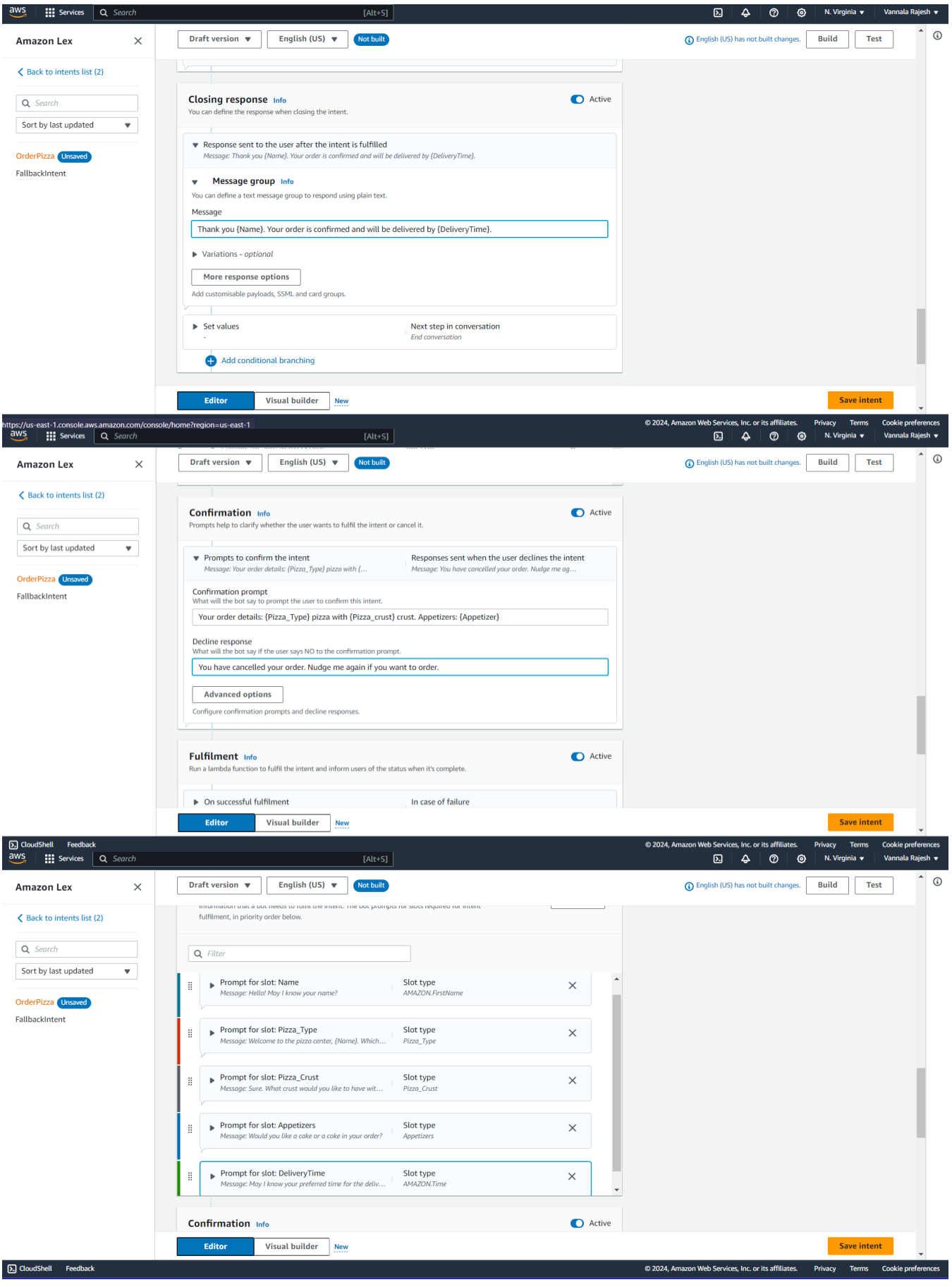
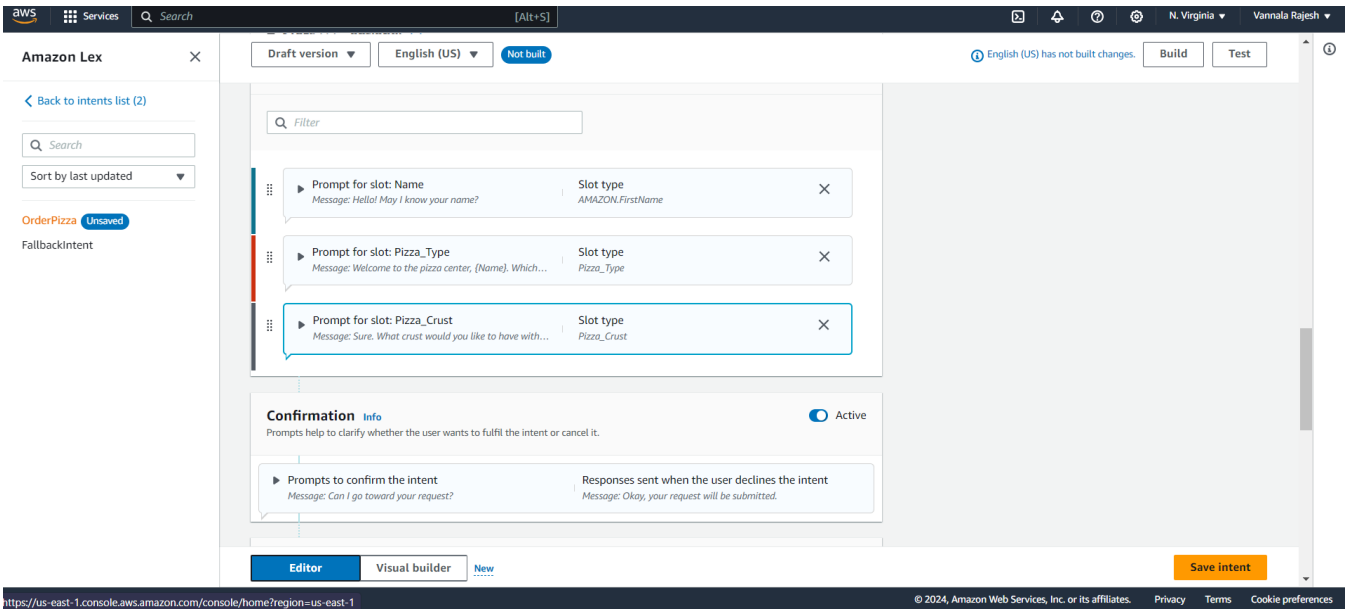
Terms
Cookie preferences


Amazon Lex
Back to intents list (2)
Search
Sort by last updated
OrderPizza Unsaved
FallbackIntent
Draft version
English (US)
Not built
English (US) has not built changes.
Build
Test
Closing response Info
You can define the response when closing the intent.
Active
Response sent to the user after the intent is fulfilled
Message: Thank you {Name}. Your order is confirmed and will be delivered by {DeliveryTime}.
Message group Info
You can define a text message group to respond using plain text.
Message
Thank you {Name}. Your order is confirmed and will be delivered by {DeliveryTime}.
Variations - optional
More response options
Add customisable payloads, SSML and card groups.
Set values
Next step in conversation
End conversation
Add conditional branching
Editor
Visual builder
New
Save intent
Confirmation Info
Prompts help to clarify whether the user wants to fulfil the intent or cancel it.
Prompts to confirm the intent
Responses sent when the user declines the intent
Message: You have cancelled your order. Nudge me ag…
Confirmation prompt
What will the bot say to prompt the user to confirm this intent.
Your order details: {Pizza_Type} pizza with {Pizza_crust} crust. Appetizers: {Appetizer}
Decline response
What will the bot say if the user says NO to the confirmation prompt.
You have cancelled your order. Nudge me again if you want to order.
Advanced options
Configure confirmation prompts and decline responses.
Fulfilment Info
Run a lambda function to fulfil the intent and inform users of the status when it's complete.
On successful fulfilment
In case of failure
Filter
Prompt for slot: Name
Message: Hello! May I know your name?
Slot type
AMAZON.FirstName
Prompt for slot: Pizza_Type
Message: Welcome to the pizza center, {Name}. Which…
Slot type
Pizza_Type
Prompt for slot: Pizza_Crust
Message: Sure. What crust would you like to have wit…
Slot type
Pizza_Crust
Prompt for slot: Appetizers
Message: Would you like a cake or a coke in your order?
Slot type
Appetizers
Prompt for slot: DeliveryTime
Message: May I know your preferred time for the deliv…
Slot type
AMAZON.Time
Confirmation Info
Active
Editor
Visual builder
New
Save intent


Amazon Lex
Back to intents list (2)
Search
Sort by last updated
OrderPizza
Unsaved
FallbackIntent
Draft version
English (US)
Not built
English (US) has not built changes.
Build
Test
Filter
Prompt for slot: Name
Message: Hello! May I know your name?
Slot type
AMAZON.FirstName
Prompt for slot: Pizza_Type
Message: Welcome to the pizza center, {Name}. Which...
Slot type
Pizza_Type
Prompt for slot: Pizza_Crust
Message: Sure. What crust would you like to have with...
Slot type
Pizza_Crust
Confirmation
Info
Active
Prompts help to clarify whether the user wants to fulfil the intent or cancel it.
Prompts to confirm the intent
Message: Can I go toward your request?
Responses sent when the user declines the intent
Message: Okay, your request will be submitted.
Editor
Visual builder
New
Save intent
https://us-east-1.console.aws.amazon.com/console/home?region=us-east-1
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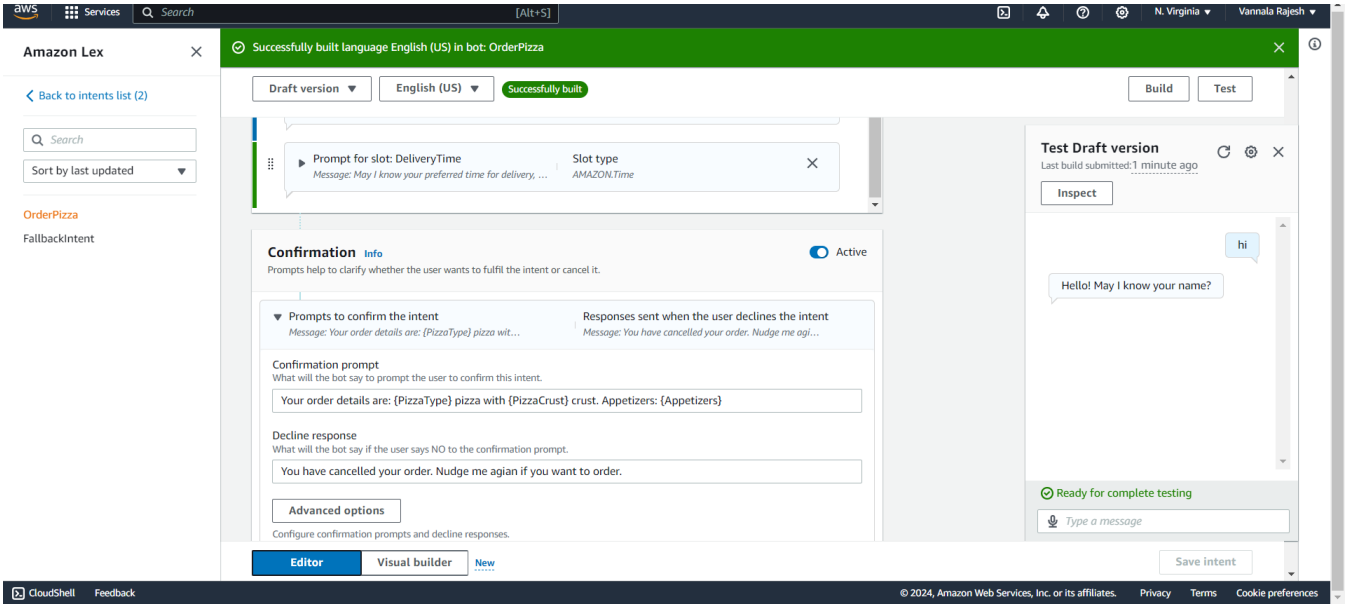
Privacy
Terms
Cookie preferences


Amazon Lex
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Back to intents list (2)
Search
Sort by last updated
OrderPizza
FallbackIntent
Draft version
English (US)
Successfully built
Build
Test
Prompt for slot: DeliveryTime
Message: May I know your preferred time for delivery, ...
Slot type
AMAZON.Time
Test Draft version
Last build submitted: 1 minute ago
Inspect
hi
Hello! May I know your name?
Confirmation
Info
Active
Prompts help to clarify whether the user wants to fulfil the intent or cancel it.
Prompts to confirm the intent
Message: Your order details are: {PizzaType} pizza wit...
Responses sent when the user declines the intent
Message: You have cancelled your order. Nudge me agi...
Confirmation prompt
What will the bot say to prompt the user to confirm this intent.
Your order details are: {PizzaType} pizza with {PizzaCrust} crust. Appetizers: {Appetizers}
Decline response
What will the bot say if the user says NO to the confirmation prompt.
You have cancelled your order. Nudge me agian if you want to order.
Advanced options
Configure confirmation prompts and decline responses.
Ready for complete testing
Type a message
Editor
Visual builder
New
Save intent
CloudShell
Feedback
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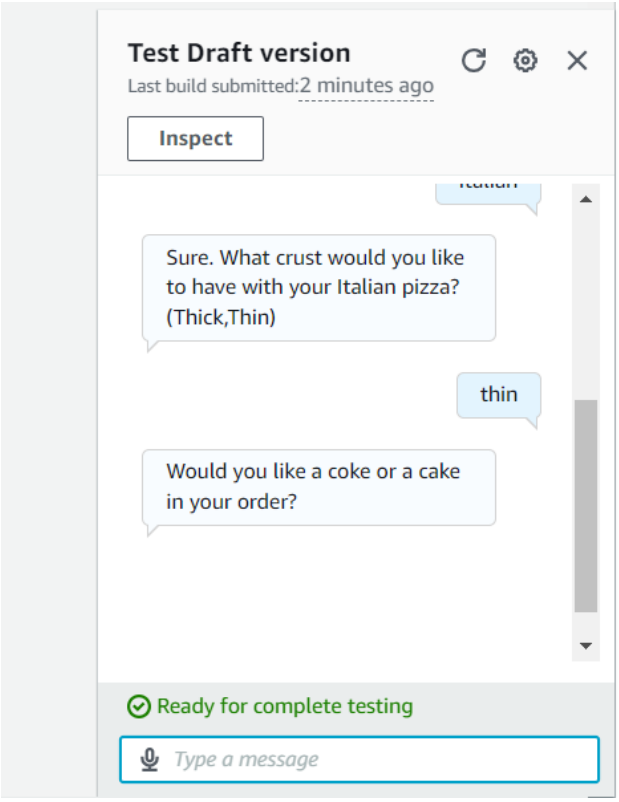
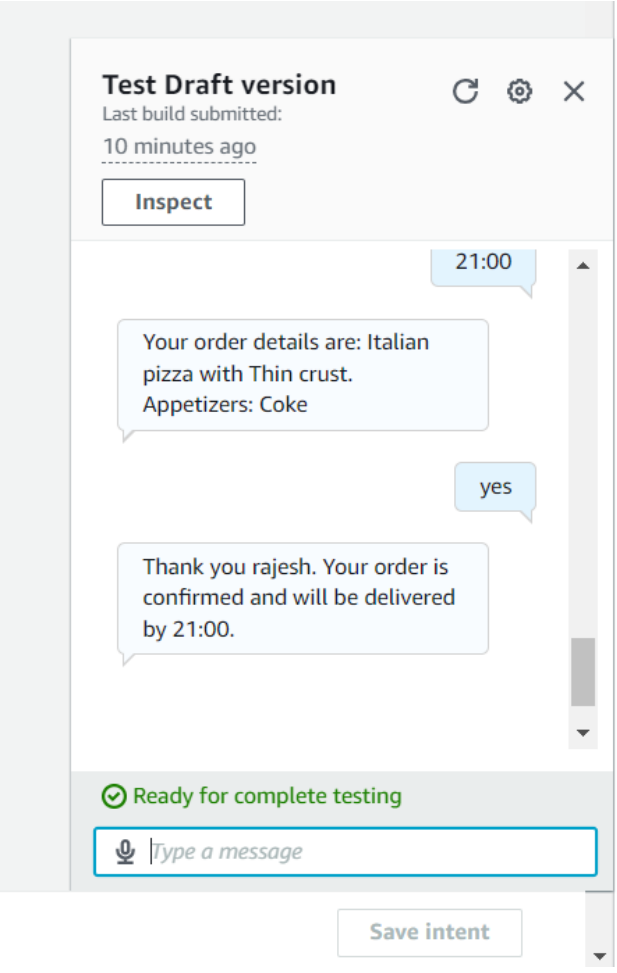
Privacy
Terms
Cookie preferences

Output


Test Draft version
Last build submitted:2 minutes ago
Inspect
Sure. What crust would you like to have with your Italian pizza? (Thick,Thin)
thin
Would you like a coke or a cake in your order?
Ready for complete testing
Type a message


Test Draft version
Last build submitted:
10 minutes ago
Inspect
21:00
Your order details are: Italian pizza with Thin crust. Appetizers: Coke
yes
Thank you rajesh. Your order is confirmed and will be delivered by 21:00.
Ready for complete testing
Type a message
Save intent

Use of cloud essentials

Cloud Essentials can be used for a variety of purposes, including:

- Learning about cloud computing: Cloud Essentials is a great wayto learn about the basics of cloud computing, such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS).
- Gaining hands-on experience with cloud computing: Cloud Essentials includes a number of hands-on labs that allow you to practice what you have learned. This is a great way to get experience with cloud computing and to see how it can be used tosolve real-world problems.
- Preparing for a career in cloud computing: Cloud Essentials can help you prepare for a career in cloud computing by giving you theskills and knowledge you need to succeed in this growing field.
- Improving your understanding of cloud computing: Whether you are a beginner or an experienced professional, Cloud Essentials can help you improve your understanding of cloud computing. Theprogram covers a wide range of topics, including cloud computing fundamentals, security, and cost management.
- Staying up-to-date on the latest cloud computing technologies: Cloud Essentials is constantly updated with newcontent to ensure that you are learning about the latest cloud
  computing technologies. This is important for anyone who wants tostay ahead of the curve in this rapidly

changing field.

Overall, Cloud Essentials is a valuable resource for anyone who wants to learn about cloud computing. The program is comprehensive, hands-on, and relevant to the latest cloud computing technologies. If you are interested in cloud computing, I encourage you to check out Cloud Essentials.

Here are some specific examples of how Cloud Essentials can be used:

- A software developer can use Cloud Essentials to learn about cloud-native development and how to build and deploy applications on the cloud.
- A business analyst can use Cloud Essentials to learn about the benefits of cloud computing and how to use it to improve the efficiency and agility of their organization.
- A IT manager can use Cloud Essentials to learn about the security features of cloud computing and how to protect their organization's data.
- A student can use Cloud Essentials to learn about cloud computing and gain the skills they need to succeed in this growing field.

Cloud Essentials is a versatile program that can be used by a variety of people for a variety of purposes.

Chapter 2

The learning outcomes of the program include:

- Understand the benefits of cloud computing
- Identify the different types of cloud computing services
- Create and manage cloud resources
- Deploy applications to the cloud
- Secure your cloud environment
- Use DevOps practices to improve the development anddeployment of applications
- Understand the security risks associated with cloud computing
- Design and implement a secure cloud environment

The program also includes a number of hands-on labs that allow you topractice what you have learned.

Here are some specific learning outcomes that you can expect from IBMCloud Essentials:

- Understand the different types of cloud computing services, such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS).
- Create and manage cloud resources, such as virtual machines,storage, and networks.

- Deploy applications to the cloud, such as web applications, mobile applications, and big data applications.
- Secure your cloud environment, such as by using firewalls, intrusion detection systems, and encryption.
- Use DevOps practices to improve the development and deployment of applications, such as by using continuous integration and continuous delivery (CI/CD).
- Understand the security risks associated with cloud computing, such as data breaches and denial-of-service attacks.
- Design and implement a secure cloud environment, such as by using security best practices and by implementing security controls.

Conclusion

In conclusion, creating a chatbot with Amazon Lex offers a streamlined and powerful solution for developers and businesses seeking to implement conversational interfaces. By following the outlined steps, users can define intents, configure slots, integrate custom business logic with AWS Lambda, and deploy chatbots that understand and respond to natural language inputs. Amazon Lex's seamless integration with messaging platforms and scalability ensures a wide reach and adaptability to diverse communication channels. As businesses deploy Lex-powered chatbots for customer support, e-commerce, and various internal processes, they benefit from the service's advanced natural language understanding, robust security measures, and the flexibility to iterate and optimize based on user feedback. Embracing Amazon Lex not only simplifies the development of intelligent chatbots but also positions businesses at the forefront of conversational AI, enhancing user engagement and fostering innovation in digital interactions.

Moreover, the versatility of Amazon Lex extends beyond simple text-based interactions, as it supports rich media and multi-turn conversations, allowing for more engaging and interactive user experiences. By leveraging Lex's capabilities, businesses can automate repetitive tasks, streamline customer interactions, and enhance operational efficiency across various domains.

Furthermore, the deployment of Lex-powered chatbots opens doors to valuable insights and analytics through integration with AWS CloudWatch, enabling businesses to track performance metrics, analyze user interactions, and iterate on their chatbot designs based on real-world data.

As organizations embrace conversational AI technologies, Amazon Lex serves as a catalyst for innovation, driving advancements in customer service, marketing, sales, and beyond. By harnessing the power of natural language understanding and intelligent automation, businesses can stay ahead of the curve, delivering personalized and efficient experiences that resonate with users in today's digital landscape. In essence, Amazon Lex represents not only a tool for building chatbots but a gateway to transformative possibilities in the realm of human-computer interaction.

As a synthesis of knowledge gained during an internship in cloud computing and AWS, this project serves as a tangible representation of the skills acquired. It goes beyond a mere technological demonstration, embodying the spirit of innovation, problem-solving, and the application of theoretical cloud computing concepts in a practical scenario.

References:

Borad infinity

YouTube

Google search

AWS