![aws]

AWS Project Documentation

AI / ML (Build a Chatbot with Lex)
Part -1 to Part 5

AWS LEX :

AWS Lex is a fully managed artificial intelligence service by Amazon Web Services (AWS) that enables developers to build conversational interfaces, such as chatbots and voice applications.

Key Features of AWS Lex:
1. Natural Language Understanding: Understands user intent from text or speech inputs.
2. Multi-Language Support: Allows the creation of chatbots in various languages.
3. Seamless Integration: Easily integrates with AWS Lambda, AWS S3, and other AWS services for advanced workflows.

Uses of AWS Lex:
1. **Task Automation:**
   - Automate tasks such as booking tickets, ordering food, or checking account balances.
2. **Interactive Voice Response (IVR):**
   - Enhance customer interaction systems for call centers.
3. **E-commerce Assistants:**
   - Help users navigate, search, and make purchases.

AWS Lex simplifies the creation of sophisticated conversational agents **without requiring in-depth AI expertise**, making it ideal for businesses aiming to deliver intuitive user experiences.

Notes

Actions We Are Undertaking in This Project:

1. 🎯 **Define a basic intent:** You configured a basic intent in Amazon Lex to control how your chatbot responds to user inputs.

2. 📝 **Create lists of utterances:** You compiled a list of sample utterances that trigger different intents, which means your chatbot can recognize different user phrases and respond.

3. 🛠️ **Handle failures with FallbackIntent:** You edited FallbackIntent to handle unrecognized or poorly understood user inputs.

4. 🔁 **Define variations to providesemi-random responses**: You designed a MessageGroup of variations, which makes your chatbot sound more natural and conversational.

5. 🧪 **Build and test your bot:** You tested your bot's setup in both text and voice formats. This comprehensive testing helps you confirm that your chatbot is ready for real-world interactions!

Architecture :
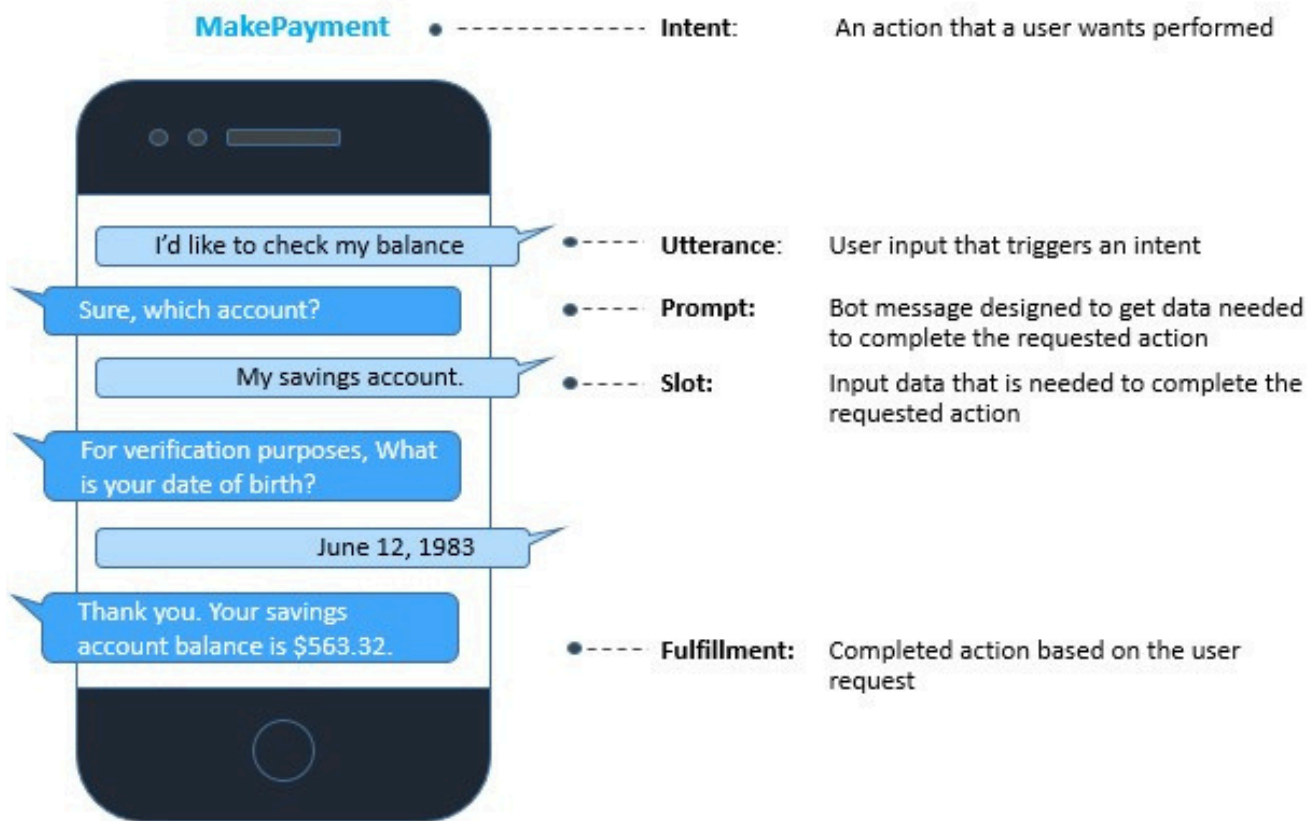
1. **Intent**

An intent represents the purpose or goal of the user's interaction with the chatbot.

For example:

- Intent Name: CheckBalancePurpose: The user wants to check their bank account balance.

Key Features of Intents:

- Each bot can have multiple intents to cover different user goals.
- An intent is triggered when the bot recognizes user input (based on utterances or dialog context).

Notes

2. Slots

Slots are variables within an intent that capture specific information from the user, enabling the bot to fulfill the intent.

- Slots are used to gather parameters required to perform an action.
- Example: In a banking bot's TransferFunds intent, slots could include:
  - amount (e.g., "$100")
  - accountNumber (e.g., "123456789")

Slot Configuration:

- Slot Types: Define the kind of data a slot should capture (e.g., numbers, dates, names).
  - **Predefinedtypes:**AMAZON.Number,AMAZON.Date
  - **Custom types**: Create your own slot types (e.g., AccountType with values like "savings" or "checking").
- **Prompts:** Lex asks the user for missing slot values with pre-configured prompts.
  - Example:
    - User: "I want to transfer money."
    - Bot Prompt: "How much money would you like to transfer?"
  - **Slot Constraints:**Required Slots: The bot won't proceed until these slots are filled.
  - Optional Slots: Enhance interaction but are not mandatory for fulfillment.

3. Utterances

Utterances are phrases or statements users might say to express a specific intent.

For example, to trigger a CheckBalance intent, users might say:

- "What's my account balance?"

Key Features of Utterances:

- Define multiple variations of what a user might say.
- AWS Lex uses natural language processing (NLP) to recognize intents even if the user doesn't say an exact match.

4. Fulfillment

Fulfillment refers to the action the bot performs once an intent is identified and all required slots are filled.

Fulfillment Options:

- **AWS Lambda Function:**
  - Attach a Lambda function to an intent to handle business logic.
  - The Lambda function can:
    - Process slot values.
    - Perform database queries.
    - Call external APIs.

By configuring intents, slots, utterances, and fulfillment properly, you can create a highly functional and natural chatbot for any use case, such as banking, e-commerce, or customer service.

Notes

Sample Output:

Test Draft version
Last build submitted: Now

[Inspect]

> I want to check my balance please

For which account would you like your balance?

> Checking

For verification purposes, what is your date of birth?

> 01/01/1993

Intent CheckBalance is fulfilled

Test Draft version
Last build submitted: 5 minutes ago

[Inspect]

> check my balance

For which account would you like your balance?

> amex

For verification purposes, what is your date of birth?

> 12/12/1992

Thank you. The balance on your Credit account is $114.59 dollars.

Which account are you transferring to?

> savings

How much money would you like to transfer?

> 4000

Got it. So we are transferring 4000 from Checking to Savings. Can I go ahead with the transfer?

> yes

The transfer is complete. 4000 should now be available in your Savings account.

For Detialed Description:
- https://learn.nextwork.org/projects/aws-ai-lex1
- https://learn.nextwork.org/projects/aws-ai-lex2
- https://learn.nextwork.org/projects/aws-ai-lex3
- https://learn.nextwork.org/projects/aws-ai-lex4
- https://learn.nextwork.org/projects/aws-ai-lex5

@sAnandha