Unit description

The Chatbots for Accessibility unit introduces students to the basics of designing and customizing chatbots with the Amazon Web Services (AWS) Cloud. Students will explore AWS services and complete challenges to learn how to improve accessibility through chatbots. This foundational-level unit is designed as supplemental STEM\(^1\) and CTE\(^2\) content for educators to incorporate into their classroom curriculum.

The 90-minute unit is broken into two 45-minute modules of presentations, guided demo simulations, and hands-on labs activities using the AWS Management Console, AWS Lex, Amazon Translate, Amazon Rekognition, and Amazon Polly.

Intended audience

This unit is intended for students and educators:

**Students:**
- At least 13 years or older
- Enrolled in participating AWS Spark secondary school STEM and/or CTE classes

**Educators:**
- Teach STEM and/or CTE classes to secondary school students at a participating AWS Spark school
- Interested in supplemental curricular content designed to highlight the ways in which cloud computing technology is used in the subjects they teach

Recommended delivery method

This unit is designed to be facilitated by an educator in a classroom setting. If necessary, the unit may be delivered in a virtual or "flipped classroom" manner with minimal educator instruction.

Prerequisites

We recommend the following prerequisites for students and educators:

**Students:**
- Completed Introduction to the AWS Cloud and Sustainability unit
- Empathy toward people with different needs

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\(^1\) Science, Technology, Engineering, Mathematics (STEM)
\(^2\) Career and Technology Education (CTE)
Willingness to solve problems on behalf of others  
Basic understanding of chatbot applications and use cases

**Educators:**
- Completed *Introduction to the AWS Cloud for K-12 Educators* training  
- Reviewed and completed the Instructor Guide for *Chatbots for Accessibility* unit  
- Basic understanding of Amazon Lex, Amazon Translate, Amazon Rekognition, and Amazon Polly  
- Experience explaining technological, computer science, scientific or mathematical concepts to secondary school students

**Technical requirements**
Educators and students must have:
- Access to a laptop or desktop computer running Windows, Mac or Linux, or a Chromebook  
- Access to internet connection  
- Access to the following sites prior to teaching the unit: *(Educators should ask the school district’s Network Administrator for assistance.)*
  - labs.vocareum.com  
  - labs.vocareum.com.cdn.cloudflare.net  
  - proxy*.vocareum.com  
  - proxy*.vocareum.com.cdn.cloudflare.net  
  - *.aws.amazon.com

**Unit and module objectives**
In the *Chatbots for Accessibility* unit, students will explore:
- Basics of AWS services, including: AWS Lex, Amazon Translate, Amazon Rekognition, and Amazon Polly  
- Natural language and speech recognition features of AWS Lex  
- Configuration of a chatbot in AWS Lex console  
- Ways to recognize the role of AWS technology in improving accessibility

This unit features two modules, where students should learn and recognize:

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<th><strong>Objectives</strong></th>
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<td><strong>Module 1: What is a chatbot?</strong></td>
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| • Describe the basics of AWS Lex  
• Interact with chatbot via natural language & speech  
• Describe key concepts and the workflow of building a chatbot  
• Explore the AWS Lex console via simulation  
• Access and navigate AWS Lex console  
• Apply the skills to customize “intents,” “slots,” and “dialogue flow” |
| **Module 2: Challenges for improving accessibility** |
| • Recognize the role of technology in improving accessibility  
• Describe the function of Amazon Translate, Amazon Rekognition, and Amazon Polly  
• Explore AWS services enabled by natural language and speech |
Unit outline

Module 1: What is a chatbot? (45 minutes)
- Introduction to AWS services
- **Activity:** Interact with pre-built chatbot
- **Simulation demo:** Explore AWS Lex console
- **Hands-on lab:** Build a chatbot with Amazon Lex

Module 2: Challenges for improving accessibility (45 minutes)
- **Activity:** Use Amazon Translate to translate English to five different languages
- **Activity:** Use Amazon Polly to read directions and send voice alert at specific time
- **Activity:** Use Amazon Rekognition for image detection