

Voice Based Library Using Cloud

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CERTIFICATE

This is to certify that the report entitled “**Voice Based Library Using Cloud**” is a bonafied work carried out by **Ms. Jeel Soni (16IT133), Ms. Yastee A Shah (16IT148)** under the guidance and supervision of **Prof. Ravi Patel** for the subject **Software Group Project-II (IT345)** of **5th** Semester of Bachelor of Technology in **Information Technology** at Faculty of Technology & Engineering – CHARUSAT, Gujarat.

To the best of my knowledge and belief, this work embodies the work of candidate themselves, has duly been completed, and fulfills the requirement of the ordinance relating to the B.Tech. Degree of the University and is up to the standard in respect of content, presentation and language for being referred to the examiner.

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ABSTRACT

In today's world, the time is the most precious thing in one's life. The lack of time may lead to one's failure. The small example in the schools and the institutes are like the person wants to get the book from library for his/her work. He/she spares time to go to the library without knowing whether the book required by him/her is available there or not. Even if he/she goes there, chances are as someone had already issued the book from there. All the time is wasted and the need for book yet not solved.

We design a voice-based library using Alexa Skills. The system will allow users to ask for any particular book whether available in the library or not. If the book is available, the user can collect it from the library. If the book is not available, the e-book may be provided. Person may know about the book's availability in the library from anywhere, without going there.

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Chapter 1: Introduction

1.1 Project Overview

Voice Based Library allow users to ask for particular book whether available in the library or not. If the book is available, the user can collect it from the library.

For that users must registers themselves into library and collect libraryId from library, because If user ask for a particular book if it is available then Alexa ask for particular userId. If userId is available in their database then ask for a libraryId which is provided by library. If all the verification is completely done then the particular book is issued by that user. At any point of time if user provide any wrong detail then Alexa respond invalid input. Also, user will not issue more than three books.

User ask for a particular book along with their author name. If book name and author name both are match then Alexa respond yes but if book name is match but author name is not match then Alexa respond book name with author name which is available. If user want that book then provide details to the Alexa skill.

1.2 Scope

Voice Based library system is useful in universities and schools where students and faculties want to get the book from library. Now-a-days we have to personally go in library and find out the book without knowing that book is available or not. So, we are going to make a system in which user can check the availability of a particular book from anywhere. So, it is easy for the user and also saves our time. We also store all the books data and student's data in cloud so it is easy for library admin to manipulate and managing data.

1.3 Objective

Main purpose to make this system is to learn awesome world of cloud computing and voice recognition system of Alexa with cloud and also learn different cloud services provided by AWS.

Chapter 2: System Requirements Study

2.1 User Characteristics

We designed our system in such a way that anyone can easily access it.

It is useful to all the students as well as faculties whoever used library. Users can check the availability of the book from anyplace and anywhere without going library.

It is also useful to the admin of the library because maintain database and all are done automatically by the system so admin has not put any extra efforts. Also, the databases and functions are store in cloud so there are not any issues regarding storage and maintenance.

2.2 Tools & Technology Used

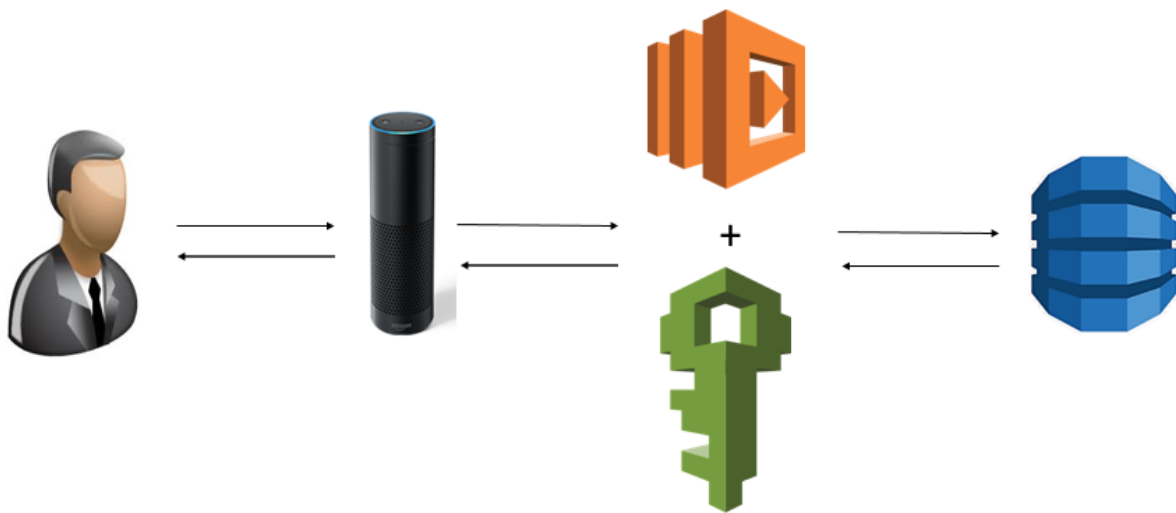
To develop this system, we used Alexa developer console to create an Alexa skill and as cloud service provider we used amazon web services.

In Alexa developer console we need to create a skill in that we have create intents and sample utterances and also provide AWS Lambda endpoint.

In AWS we used list of services like AWS Lambda, AWS DynamoDB, IAM etc. AWS Lambda is used to trigger between Alexa skill and DynamoDB database. AWS DynamoDB is used to store the data of library. Identity and Access Management (IAM) is used to give a permission to AWS Lambda to access AWS DynamoDB. In AWS if we want to access any of service from any other service then we need to use IAM.

Chapter 3: System Design

3.1 Project Flow



3.2 Major Functionality

- Ask for particular Book
- Ask particular book along with their author name
- Check the availability of any book from any place
- Everything is stored in cloud so no need to worry about storage and maintenance
- Time saving
- User can not issue more than three books
- Two-way verification using UserId and LibraryId so no one can issue book from any other UserId

3.3 GUI snapshot

Alexa developer console also provide online Alexa simulator in which we are testing our skill if we have not Alexa then using this simulator we can interact with Alexa.

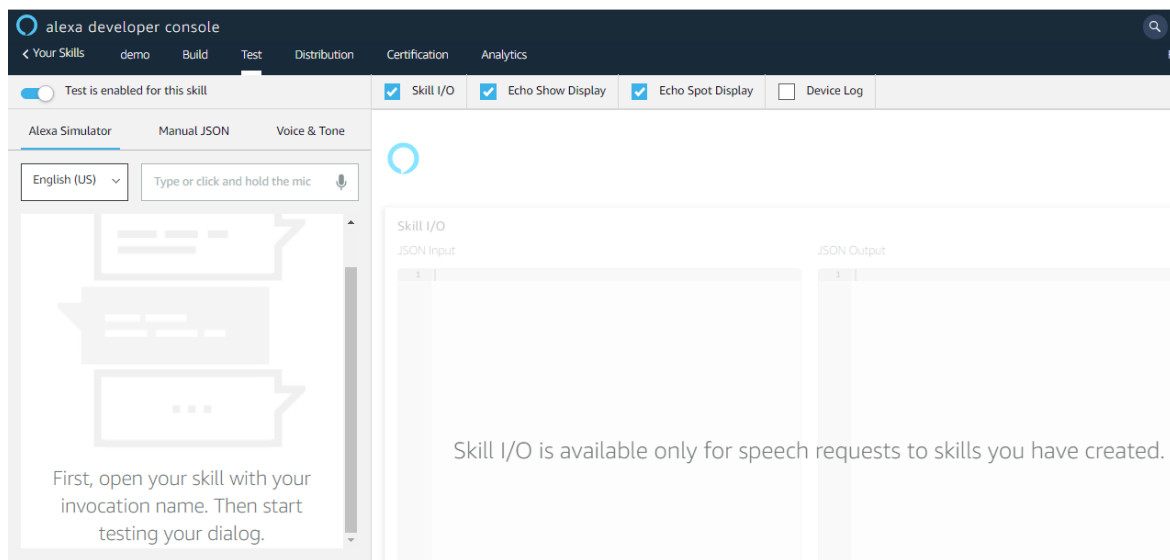


Fig. 3.1 Alexa Simulator

Chapter 4: Implementation Planning

4.1 Implementation Environment

- Amazon Web Services
- Alexa developer console

4.2 Program / Modules Specification

- **Open a particular skill on Alexa**

We have to train Alexa as per our requirement so for that we have to create a skill in Alexa developer console and after creating skill when we want to interact with Alexa first, we have to open that skill by saying “open demo” here, demo is our invocation model name which we set in Alexa skill.

- **Check Book availability along with or without author name**

In this system user will ask for a particular book or ask book with author name after asking we have to check the availability of the book in the database. For that we have to create a lambda function in which we fetch the value from database and compare with given input and respond to the user.

- **Verification of UserID and LibraryId**

After checking availability Alexa ask for userid and libraryid and also compare with its register value so none of the user can issued book without registration into library.

4.3 Coding Standards

Here we have implemented the voice-based library in Nodejs programming language. We used AWS Lambda platform to implement this.

```
const AWS = require('aws-sdk');
AWS.config.update({
  region: "us-east-1"
});
var docClient = new AWS.DynamoDB.DocumentClient();
var table = "issuedbook";
var getItem = (id, callback) => {
  var params = {
    TableName: table,
    Key: {
      "LibraryID": id
    },
  };
  docClient.get(params, function (err, data) {
    callback(err, data);
  });
};
module.exports = {
  getItem
};
```

4.4 Snapshots of project

- User ask for a book which is not in library.

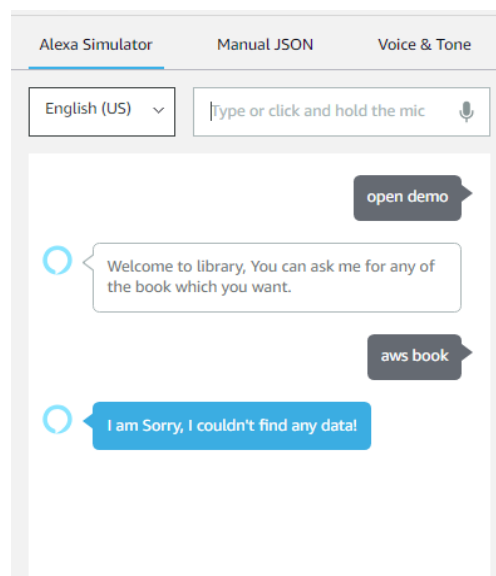


Fig. 4.1

- User ask for a book which is not present at that moment

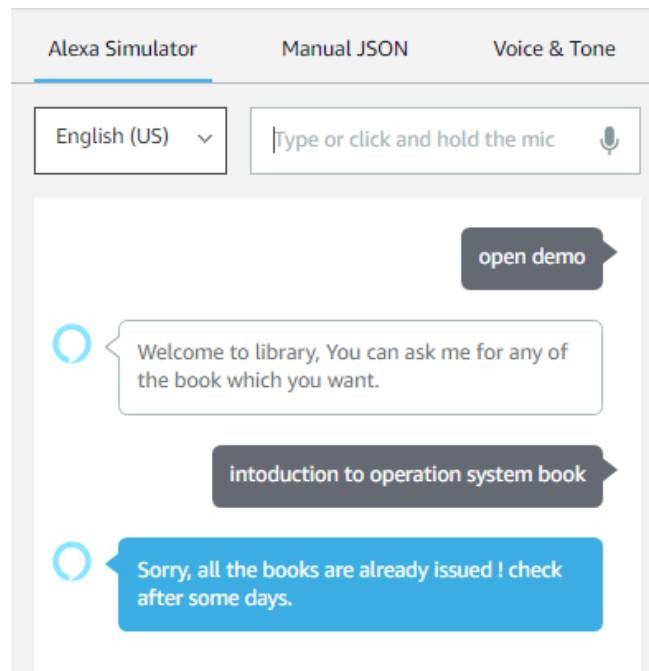


Fig. 4.2

- User ask for a book which is available.

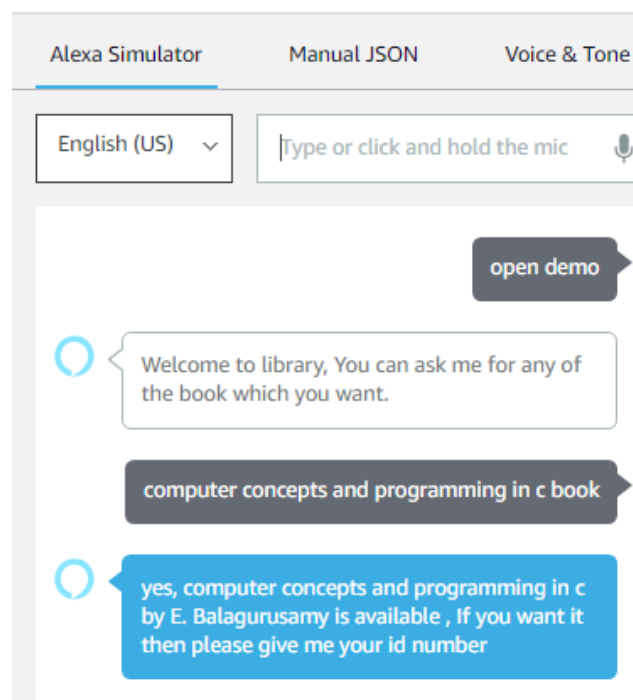


Fig. 4.3

- User give their correct details

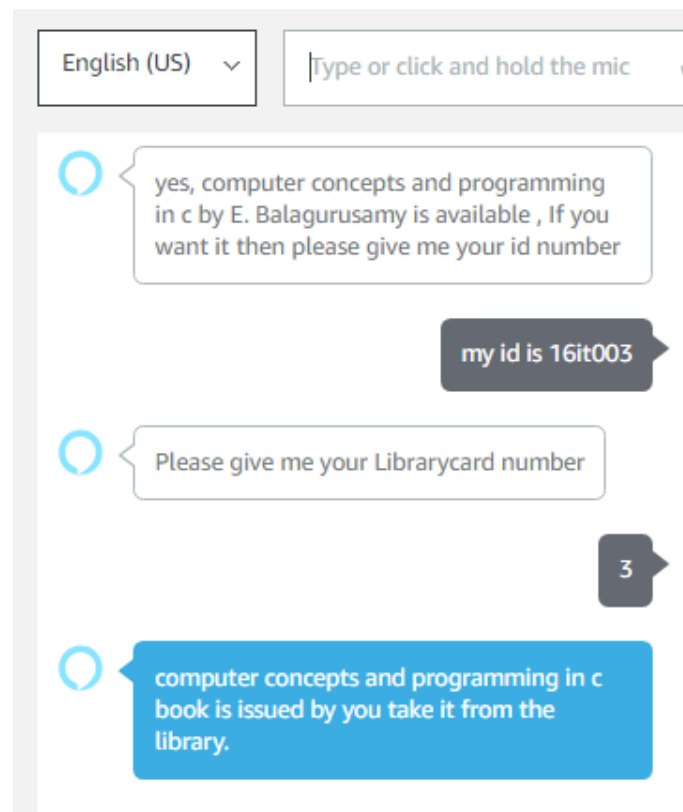


Fig. 4.4

- If user hasn't register in library

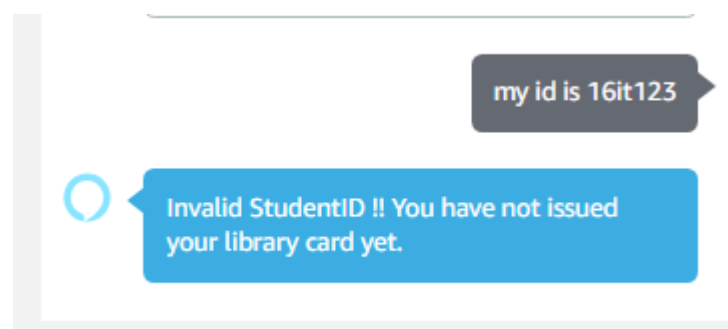


Fig. 4.5

- User provide invalid Libraryid

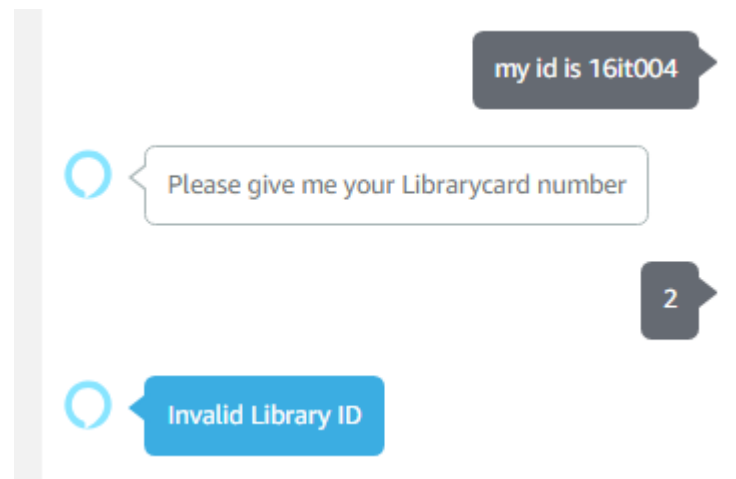


Fig. 4.6

- User can not issue more than three books

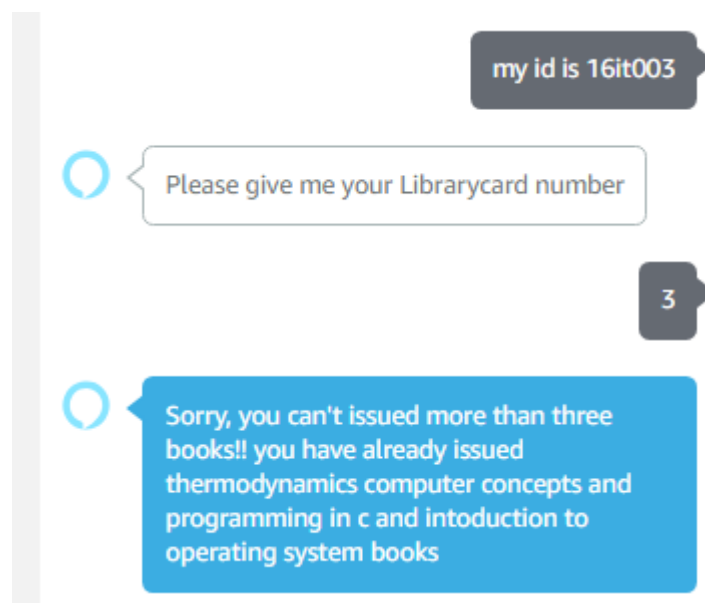


Fig. 4.7

Chapter 5: Constraints and Future Enhancement

❖ Limitations:

- Must remember whole book name
- Have Alexa voice assistant to use this skill

❖ Future Enhancement:

- Check the due date
- Check availability date of book if not present at moment
- Suggests reference book asked by user based on author or the subject
- Ask for book using keyword or related book name so no need to remember whole book name
- If book is not available at moment then try to provide e-book
- Send a notification to the user if the due date of the book after a day.

Chapter 6: Conclusion

From this project we familiar with many of the AWS services. We also learnt to integrate two services in AWS using IAM service and also learnt how to work with database how to fetch the data, put the data and update data in database from the lambda function which is written in NodeJS. So, we also learnt basics of NodeJS and its integration with database.

We also learnt how to create a skill in Alexa developer console in that we have to set intents and utterances and integrate it with amazon web services using lambda endpoint.

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