

Alexa, Should I Eat at Big Billy's Drive-In?

Darryl Booth, General Manager, Environmental Health

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Welcome

Welcome and Introductions

- › Darryl Booth, Accela General Manager for Environmental Health
- › My Crew: Hana AlBarazi and Bryan Hahlbeck
- › Current Projects
 - Accela Environmental Health
 - EnvisionConnect Migration Projects
 - NEHA Technical Advisor for Informatics and GIS

A Demonstration Project...

A Demonstration Project

- › Just for Fun
- › Nothing to Sell
- › An Open Data Initiative
- › Not Complete... A Starting Point
- › Intend to Inspire and Build Ideas – Show that it is Possible
- › Yes, I Will Share Code and Slides

The Vision





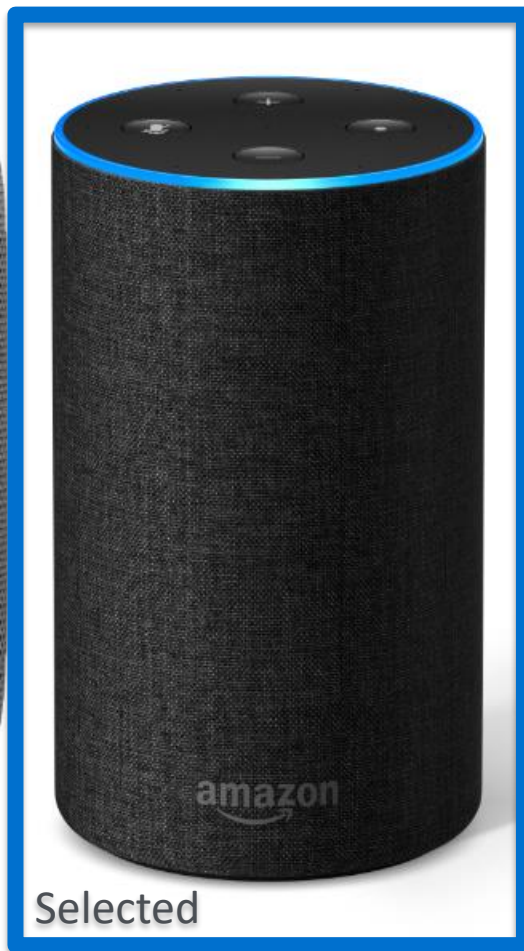
“Alexa, what is the inspection score of Big Billy’s Drive-In?”



“The facility was inspected June 1st with a score of 100”

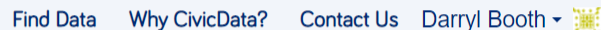
The Journey

Devices



Available Data

- › Local (Single) Restaurant Inspection Web Forms
 - Examples: [El Paso County, Colorado](#) and [Los Angeles County, California](#)
- › Local (Single) Data System API (Application Programmer's Interface)
- › Consolidated (Multiple) Restaurant Inspection Datastores
 - HDScores.com
 - Open Data Sources
 - [Civicdata.com](#)
 - [Socrata.com](#)
- › Others?



[Manage](#)
[Download](#)
[Data API](#)

Inspections conducted and published by El Paso County Colorado Environmental Health Department.

Search data ... Go » Filters

| _id | JURISDI... | FACILIT... | RECOR... | SERIAL... | FACILIT... | ADDRESS | CITY | STATE | ZIP | PROGR... |
|-----|-------------|------------|-----------|-----------|------------|-------------|-----------|-------|-------|------------|
| 1 | El Paso ... | FA0005... | PR0002... | DA0001... | ANTLER... | 4 S CAS... | COLORA... | CO | 80903 | ADD'L B... |
| 2 | El Paso ... | FA0003... | PR0003... | DA001X... | YMCA O... | 207 N N... | COLORA... | CO | 80903 | WATER ... |
| 3 | El Paso ... | FA0002... | PR0002... | DA0047... | ROMAN ... | 3005 N ... | COLORA... | CO | 80907 | RESTAU... |
| 4 | El Paso ... | FA0006... | PR0006... | DA004T... | CRABTR... | 7535 FM... | MARTIN... | TX | 78655 | SPECIAL .. |
| 5 | El Paso ... | FA0006... | PR0006... | DA0080... | AFC SUS... | 6925 M... | FOUNTAIN | CO | 80817 | RESTAU... |
| 6 | El Paso ... | FA0007... | PR0007... | DA0081... | SPRINGS... | 119 E Pl... | COLORA... | CO | 80903 | GROCE... |
| 7 | El Paso ... | FA0007... | PR0007... | DA0085... | SNOWBE... | 2727 N ... | COLORA... | CO | 80907 | RESTAU... |
| 8 | El Paso ... | FA0002... | PR0001... | DA0094... | MADISO... | 4120 C... | COLORA... | CO | 80909 | NO FEE ... |
| 9 | El Paso ... | FA0000... | PR0007... | DA0094... | ALPINE ... | 2760 FIE... | COLORA... | CO | 80919 | CHILD C... |
| 10 | El Paso ... | FA0007... | PR0007... | DA0094... | A BRAIN... | 1415 WE... | COLORA... | CO | 80904 | MOBILE ... |
| 11 | El Paso ... | FA0006... | PR0006... | DA0094... | SAIGON ... | 337 N C... | COLORA... | CO | 80909 | RESTAU... |
| 12 | El Paso ... | FA0006... | PR0006... | DA0094... | SOULWA... | 2316 N ... | COLORA... | CO | 80907 | MOBILE ... |
| 13 | El Paso ... | FA0003... | PR0002... | DA0094... | STRATT... | 2460 PA... | COLORA... | CO | 80907 | NO FEE ... |
| 14 | El Paso ... | FA0002... | PR0001... | DA0094... | MANN M... | 1001 E ... | COLORA... | CO | 80907 | NO FEE ... |
| 15 | El Paso ... | FA0006... | PR0007... | DA0094... | MELODY... | 7600 SA... | COLORA... | CO | 80924 | RESTAU... |

Getting Familiar with the Amazon Echo

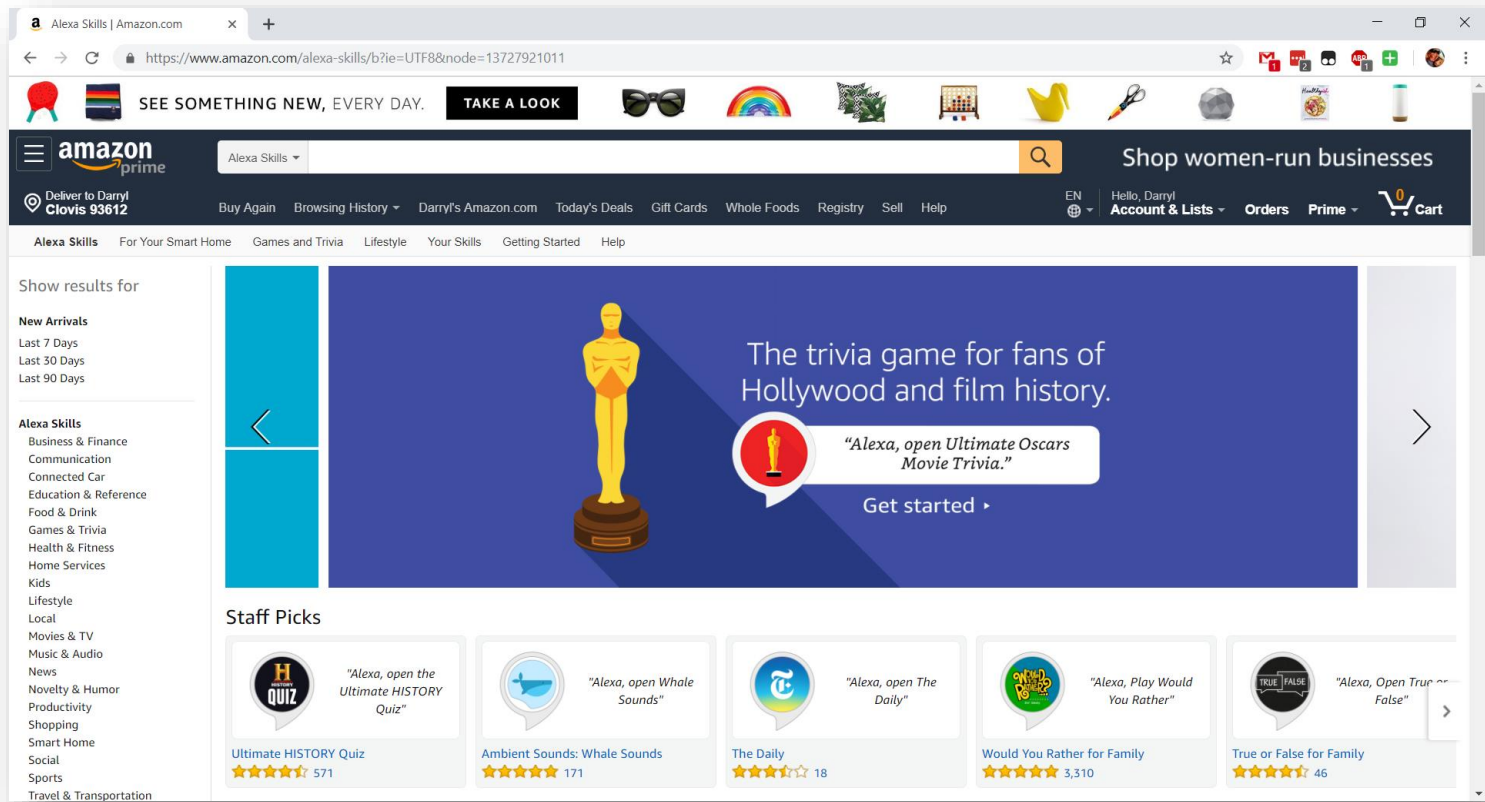
> Say “Alexa” (wake word) Followed by Command or Request

- Example: “Alexa, add popcorn to my shopping list”
- Example: “Alexa, set a timer for 12 minutes”
- Example: “Alexa, play Red Hot Chili Peppers”

> Just for fun

- Example: “Alexa, tell me a dad joke.”
- Example: “Alexa, surely you can't be serious?”

Alexa Skills Marketplace



- › Open To Developers and Hobbyists
- › Amazon is Great About Promoting and Supporting
- › Barriers to Entry are Very Low
- › Private or Public
- › Public Skills Require Certification
- › Public Skills Can be Monetized

Popular Alexa Skills in 2018

1. Ask My Buddy
2. I'm Bored
3. Deal or No Deal (unofficial)
4. This Day in History
5. Sleep Sounds, Heavy Rain
6. The Magic Door
7. TED Talk
8. The Bartender
9. Yes Sire
10. Sony's Android TV

Returning to The Journey

Getting to First Prototype

- › Sign Up for [Amazon Web Services](#) (AWS) Free Tier
 - 1M Requests per month
- › Sign Up for [Alexa Developer Program](#) (Free)
- › Studied
 - Tutorials
 - Pre-Built Skill “Recipes”
 - Documentation
- › Created and Maintained Google Doc for Notes
 - Vision, Resources, URLs, Missteps/Reminders

Some Missteps

› Following Tutorials Blindly

- Dependencies on Local Tools/Techniques
- Out-of-Date Guidance and Examples

› Assuming Everything Works as Advertised

- Example: Civic Data API Requires Certain Key Words in All Caps

› Got Distracted

- Example: Adding language support
- Example: Adding more complex commands

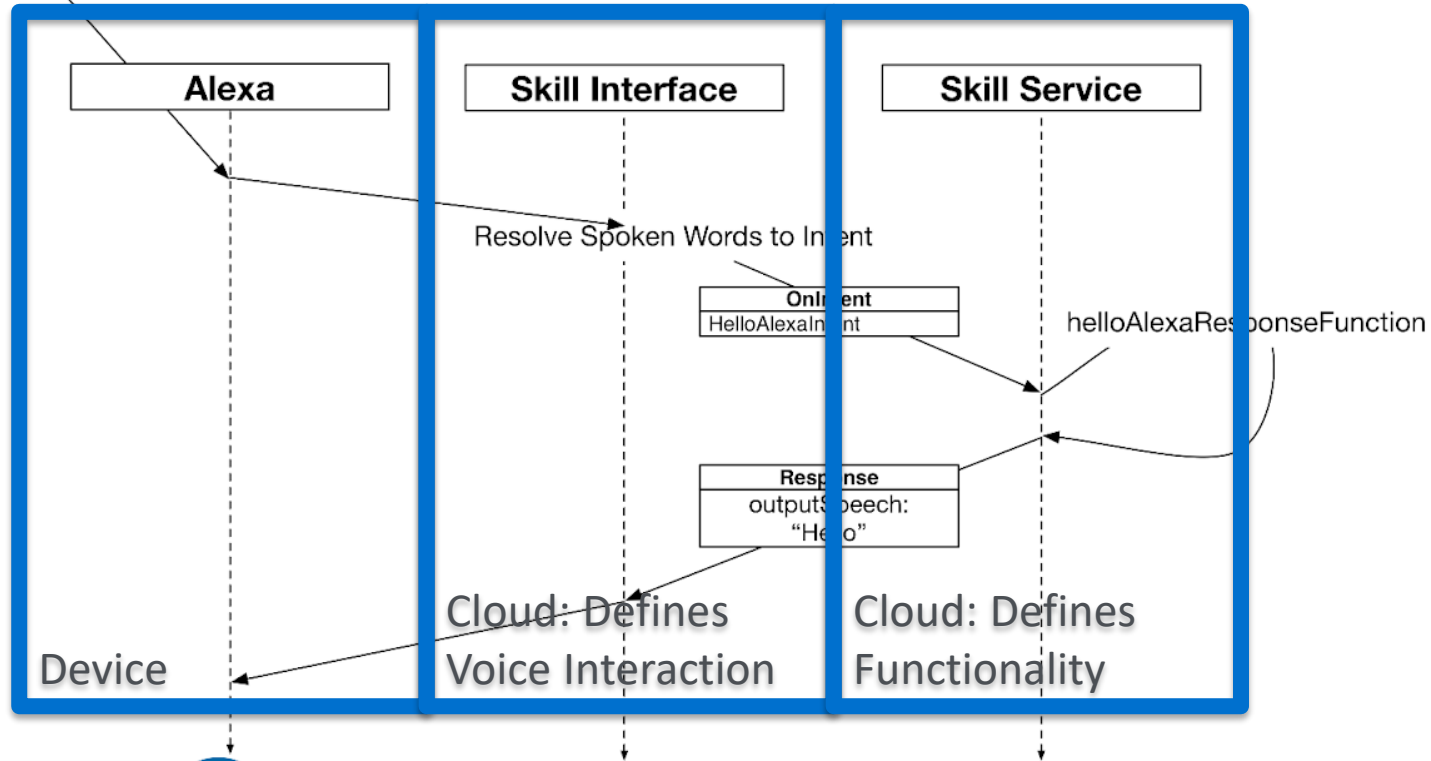
Some Things I Did Right

- › Time Boxed Project
- › Failed Fast
- › Relied on Google for Troubleshooting and Advice
- › Decided to Leave Some Ideas Undone

How Such a Thing Works



"Alexa, Ask Hello Alexa to say Hello"



Hello



User Utters Request to Echo

Wakes

Listens

Forwards Request to Voice Skills Interface



Skills Interface (Voice to Text)

Converts Request (Voice) to Text

Queries Skills Interface for Skill

Matches Intent

Identifies/Fills Slots

Forwards Formatted Command to Skills Service



Skills Service (My Health Department)

Drilling In

Does Work/Processing to Formulate Response

Drilling In



Skills Interface

Converts Response to Voice

Verbalizes Response

Skill Service (My Health Department)

Receives Intent (“Check
Inspection Score”)

Receives Slots (“Burger King”)

Sends Query



CivicData.com

Receives Query

Queries Its Database

Sends Back Data



Skills Service (My Health Department)

Parses Data

Forms Response

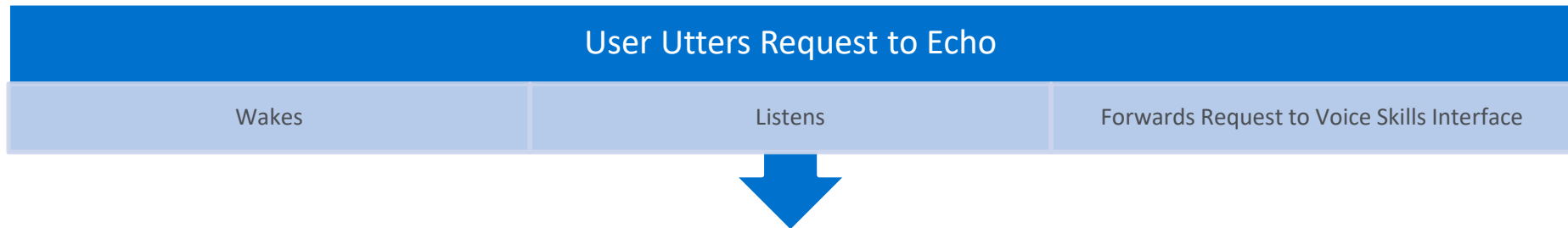
Sends Response to Skill
Interface

{"help": "Execute SQL queries on the DataStore.\n\n The datastore_search_sql action allows a user to search data in a resource\n or connect multiple resources with join expressions. The underlying SQL\n engine is the\n PostgreSQL engine <http://www.postgresql.org/docs/9.1/interactive/sql/.html>`.\n There is an enforced timeout on SQL queries to avoid an unintended DOS.\n DataStore resource that belong\n to a private CKAN resource cannot be searched with\n this action. Use :meth:`~ckanext.datastore.logic.action.datastore_search` instead.\n\n .. note:: This action is only available when using PostgreSQL 9.X\n and using a read-only user on the database.\n It is not available in :ref:`legacy mode<legacy-mode>`.\n\n :param sql: a single SQL select statement\n :type sql: string\n\n **Results:**\n\n The\n result of this action is a dictionary with the following keys:\n\n :rtype: A dictionary with the following keys\n :param fields: fields/columns and their extra metadata\n :type fields: list of\n dictionaries\n :param records: list of matching results\n :type records: list of dictionaries\n\n ", "success": true, "result": {"resource_id": "f3f78434-23fa-496a-a9f2-76a7b346aad6", "fields": [{"type":\n "text", "id": "FACILITY_NAME"}, {"type": "timestamp", "id": "ACTIVITY_DATE"}, {"type": "numeric", "id": "SCORE"}], "private": false, "records": [{"FACILITY_NAME": "BURGER KING 3636", "ACTIVITY_DATE": "2018-07-18T00:00:00", "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING 11827", "ACTIVITY_DATE": "2018-01-11T00:00:00", "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING 17545", "ACTIVITY_DATE": "2018-07-05T00:00:00", "SCORE":\n "5"}, {"FACILITY_NAME": "BURGER KING 11827", "ACTIVITY_DATE": "2018-11-21T00:00:00", "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING", "ACTIVITY_DATE": "2019-01-23T00:00:00", "SCORE": "20"}, {"FACILITY_NAME":\n "BURGER KING 3636", "ACTIVITY_DATE": "2019-02-14T00:00:00", "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING", "ACTIVITY_DATE": "2018-07-23T00:00:00", "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING 17384",\n "ACTIVITY_DATE": "2017-07-13T00:00:00", "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING 17545", "ACTIVITY_DATE": "2018-01-04T00:00:00", "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING 17545", "ACTIVITY_DATE": "2019-01-08T00:00:00", "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING 17384", "ACTIVITY_DATE": "2019-03-08T00:00:00", "SCORE": "10"}, {"FACILITY_NAME": "BURGER KING 5931", "ACTIVITY_DATE": "2017-11-28T00:00:00",\n "SCORE": "15"}, {"FACILITY_NAME": "BURGER KING 2347", "ACTIVITY_DATE": "2018-03-08T00:00:00", "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING 9832", "ACTIVITY_DATE": "2017-11-08T00:00:00", "SCORE": "0"},\n {"FACILITY_NAME": "BURGER KING 6551", "ACTIVITY_DATE": "2018-05-21T00:00:00", "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING 13609", "ACTIVITY_DATE": "2019-04-30T00:00:00", "SCORE": "10"}, {"FACILITY_NAME":\n "BURGER KING 2404", "ACTIVITY_DATE": "2017-12-12T00:00:00", "SCORE": "17"}, {"FACILITY_NAME": "BURGER KING 11827", "ACTIVITY_DATE": "2019-05-13T00:00:00", "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING 2404",\n "ACTIVITY_DATE": "2018-12-13T00:00:00", "SCORE": "1"}, {"FACILITY_NAME": "BURGER KING 2347", "ACTIVITY_DATE": "2017-08-14T00:00:00", "SCORE": "2"}, {"FACILITY_NAME": "BURGER KING", "ACTIVITY_DATE": "2017-12-19T00:00:00", "SCORE": "5"}, {"FACILITY_NAME": "BURGER KING 13609", "ACTIVITY_DATE": "2018-04-16T00:00:00", "SCORE": "16"}, {"FACILITY_NAME": "BURGER KING 3636", "ACTIVITY_DATE": "2018-01-10T00:00:00", "SCORE":\n "11"}, {"FACILITY_NAME": "BURGER KING 11827", "ACTIVITY_DATE": "2017-07-11T00:00:00", "SCORE": "17"}, {"FACILITY_NAME": "BURGER KING 11827", "ACTIVITY_DATE": "2018-06-29T00:00:00", "SCORE": "0"},\n {"FACILITY_NAME": "BURGER KING 2347", "ACTIVITY_DATE": "2018-10-12T00:00:00", "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING 2404", "ACTIVITY_DATE": "2018-06-13T00:00:00", "SCORE": "1"}, {"FACILITY_NAME":\n "BURGER KING 3636", "ACTIVITY_DATE": "2017-07-21T00:00:00", "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING 17384", "ACTIVITY_DATE": "2018-07-20T00:00:00", "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING 5931",\n "ACTIVITY_DATE": "2018-07-23T00:00:00", "SCORE": "1"}, {"FACILITY_NAME": "BURGER KING 13609", "ACTIVITY_DATE": "2018-10-12T00:00:00", "SCORE": "15"}, {"FACILITY_NAME": "BURGER KING 6551", "ACTIVITY_DATE": "2018-11-05T00:00:00", "SCORE": "22"}, {"FACILITY_NAME": "BURGER KING 17545", "ACTIVITY_DATE": "2017-07-06T00:00:00", "SCORE": "15"}, {"FACILITY_NAME": "BURGER KING 13609", "ACTIVITY_DATE": "2017-08-18T00:00:00",\n "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING 6551", "ACTIVITY_DATE": "2019-04-25T00:00:00", "SCORE": "10"}, {"FACILITY_NAME": "BURGER KING 9832", "ACTIVITY_DATE": "2018-04-24T00:00:00", "SCORE": "0"},\n {"FACILITY_NAME": "BURGER KING 5931", "ACTIVITY_DATE": "2019-01-07T00:00:00", "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING 17384", "ACTIVITY_DATE": "2018-01-05T00:00:00", "SCORE": "0"}, {"FACILITY_NAME":\n "BURGER KING 9832", "ACTIVITY_DATE": "2018-10-09T00:00:00", "SCORE": "30"}, {"FACILITY_NAME": "BURGER KING 2347", "ACTIVITY_DATE": "2019-05-02T00:00:00", "SCORE": "0"}, {"FACILITY_NAME": "BURGER KING 6551",\n "ACTIVITY_DATE": "2017-11-28T00:00:00", "SCORE": "35"}], "sql": "SELECT \"FACILITY_NAME\", \"ACTIVITY_DATE\", \"SCORE\" from \"f3f78434-23fa-496a-a9f2-76a7b346aad6\" WHERE \"FACILITY_NAME\" LIKE 'BURGER KING'\nAND \"SERVICE\"='REGULAR INSPECTION'"}

Putting it All Together

User Utters Request to Echo

> “Alexa, Open My Health Department”



Alexa Skills Interface

- › Finds “My Health Department” in Database of Invocations

Invocation

Users say a skill's invocation name to begin an interaction with a particular custom skill. For example, if the invocation name is "daily horoscopes", users can say:

User: Alexa, ask daily horoscopes for the horoscope for Gemini

Skill Invocation Name ?

my health department

Skills Interface

Converts Request (Voice) to Text

Queries Skills Interface for Skill

Matches Intent



Identifies/Fills Slots

Forwards Formatted Command to Skills Service



Utterances

Sample Utterances (8)

 Bulk Edit  Export

What might a user say to invoke this intent?



to check on {FacilityName}



what is the inspection score for {FacilityName}



Check on {FacilityName}



How did {FacilityName} do



What is the score for {FacilityName}



What was the score for {FacilityName}



What was the inspection score for {FacilityName}





What is the inspection score of {FacilityName}



Other Utterances

Sample Utterances (2)

 Bulk Edit  Export

What might a user say to invoke this intent?



Food safety tip



Give me a food safety tip



When they are open



When are they open



What are the hours of operation



› Skills Service Knows What to Do

```
const APP_ID           = 'amzn1.ask.skill.5ab4f319-ae41-41b1-b653-13c324026076';  
const SKILL_NAME       = 'My Health Department';  
const WELCOME_MESSAGE = 'Welcome. You can ask me to find your health department, check inspection scores, or give food safety tips.';  
const HELP_MESSAGE    = 'You can say where is my health department?';  
const HELP_REPROMPT   = 'What would you like to do?';  
const FALLBACK_MESSAGE = 'Sorry, your request isn\'t one of the things I\'m programmed to do yet. Come back later.';  
const STOP_MESSAGE    = 'Goodbye!';  
const UNHANDLED_MESSAGE = 'You\'ve reached an unhandled function. Please try again.';
```

Skills Service (My Health Department)

Takes Formatted Command

Does Work/Processing to Formulate Response

Forwards Response to Skill Interface



User Utters Request to Echo

Wakes

Listens

Forwards Request to Voice Skills Interface



Skills Interface (Voice to Text)

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Skills Interface

Converts Response to Voice

Verbalizes Response

Testing

- › Skills Service Testing
- › Skills Interface Testing
 - Simulator
- › Alexa App
- › Echo
- › Challenges:
 - Error Could Occur at Any Level
 - Logging is Terse / Non-Obvious

Publishing Skill

› Amazon Certification

- Policy Guidelines
- Security Requirements
- Functional Tests

› Submit for Public Search

› Amazon Payments?

Next Steps

Next Steps: In What Ways Can We Access Our Data?

› Tune Data Sets & Response

- Other Sources / Flexibility

› Other Platforms

- Google / Siri

› Other Usages

- Inspection Checklists / Regulation Search
- Closing Open Violations
- Recording Events (e.g., “Alexa, tell my health department that I want to file a complaint”)

My Health Department Code

Resources on Google Drive

- › URL: <https://github.com/darrylbooth/Alexa-MyHealthDepartment>
 - Source Code / Sample Project
 - PowerPoint Deck
 - Project Notes

Questions and Comments

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