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Smart Assistant for Data Collection In Epidemiology



Introduction

Health research is interested in understanding factors that influence people's food intake and how different diets affect health. Collecting reliable and accurate dietary information is a difficult process in this area and can result in inconsistent and poorly evidenced data for epidemiological research.

"By definition, epidemiology is the study (scientific, systematic, and data-driven) of the distribution (frequency, pattern) and determinants (causes, risk factors) of health-related states and events (not just diseases) in specified populations (neighborhood, school, city, state, country, global)."

Motivation

Example: "The second generation of the Avon Longitudinal Study of Parent and Children"

This is a generational study, analysing behaviour, including nutrition of a large group of participants over three generations.

- Logging data of over 14,000 participants
- Data has to be reliable/consistent and centralised
- Traditional methods involve pen/paper
 - Prone to mistakes
 - Tedious
 - Can be lost

Approach

- 1. Develop Alexa Skill on Developer Portal
- 2. Create Java Application to handle intents dispatched by the skill.
- 3. Set up mySQL database for nutrition data storage
- 4. Host Java App and database on Tomcat Server
- 5. Configure Alexa skill to use the server endpoint.
- 6. Create Docker image of stack

User ID logged as 12345!

breakfast! Food logged was

bagel! Amount logged as 1!

Meal type logged as

7. Deploy docker image on university server.

Challenge

Investigate whether a smart assistant can provide an alterantive way of logging nutritional data for Epidemiology.

Added value:

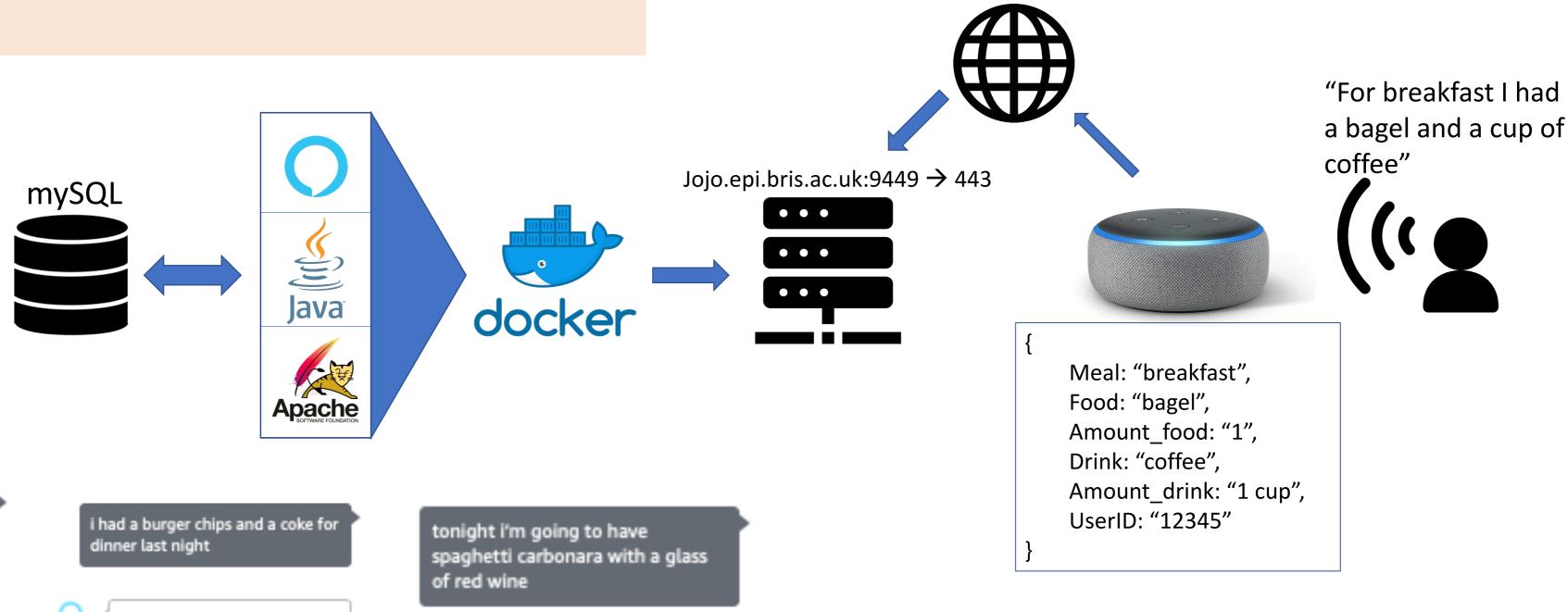
- Create a fast and easy way of logging nutrition using a voice assistant.
- Easily distribuitable
- Data can be stored immediately in one, centralised database

Testing

Ngrok creates a public URL for local server inculding HTTPS.

- Make changes to Java
- Rebuild .war
- Add .war to Tomcat directory
- Restart Tomcat server
- Start ngrok on localhost port 8080
- Set public URL as endpoint for skill

Jojo.epi.bris.ac.uk:9449





Food amount logged as one

one glass!

bowl! Drink amount logged as

Food logged was burger

chips! Drink logged as coke!

Food amount logged as one

plate! Drink amount logged

as one can!

Drinks

eventID	description	•
614569001 1071859570	red wine coffee red wine coke red wine	one glass 1 one plate one plate one bowl

Foods

eventId	description	amount
1831087454 1071859570 134897539 319900691 213072149 1896024319 1480702033 1111188103	bagel bagel carbonara apple bagel burger chips bagel carbonara	1 1 one plate 1 1 one plate 1 one bowl