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Smart Assistant for Data Collection In Epidemiology

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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

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

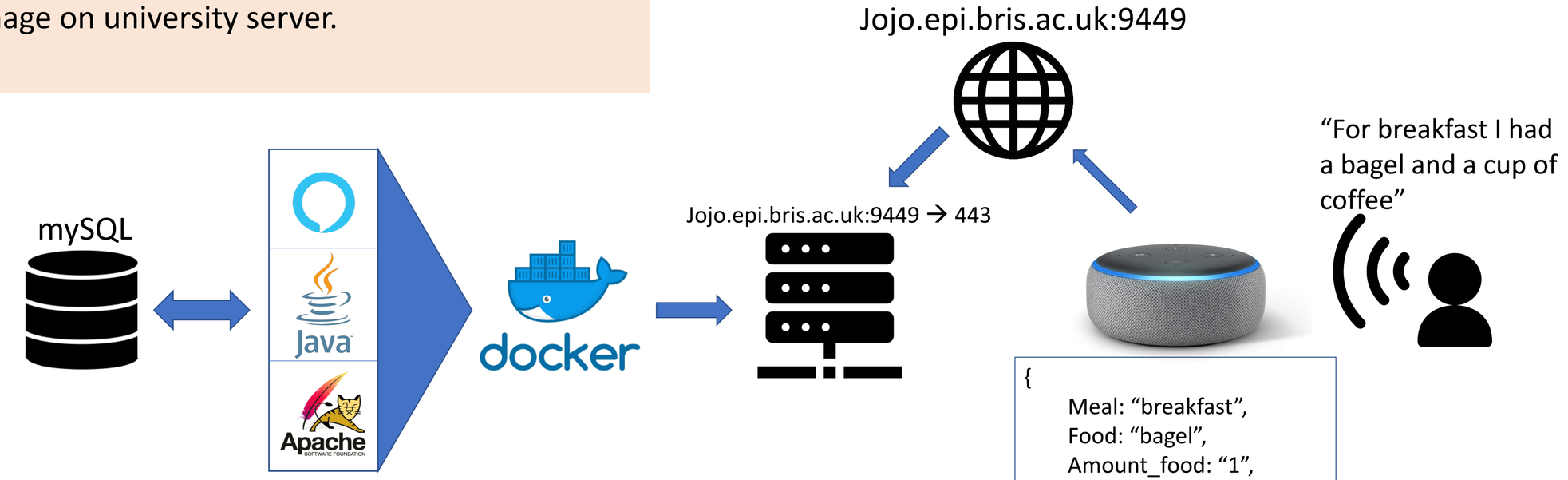
Approach

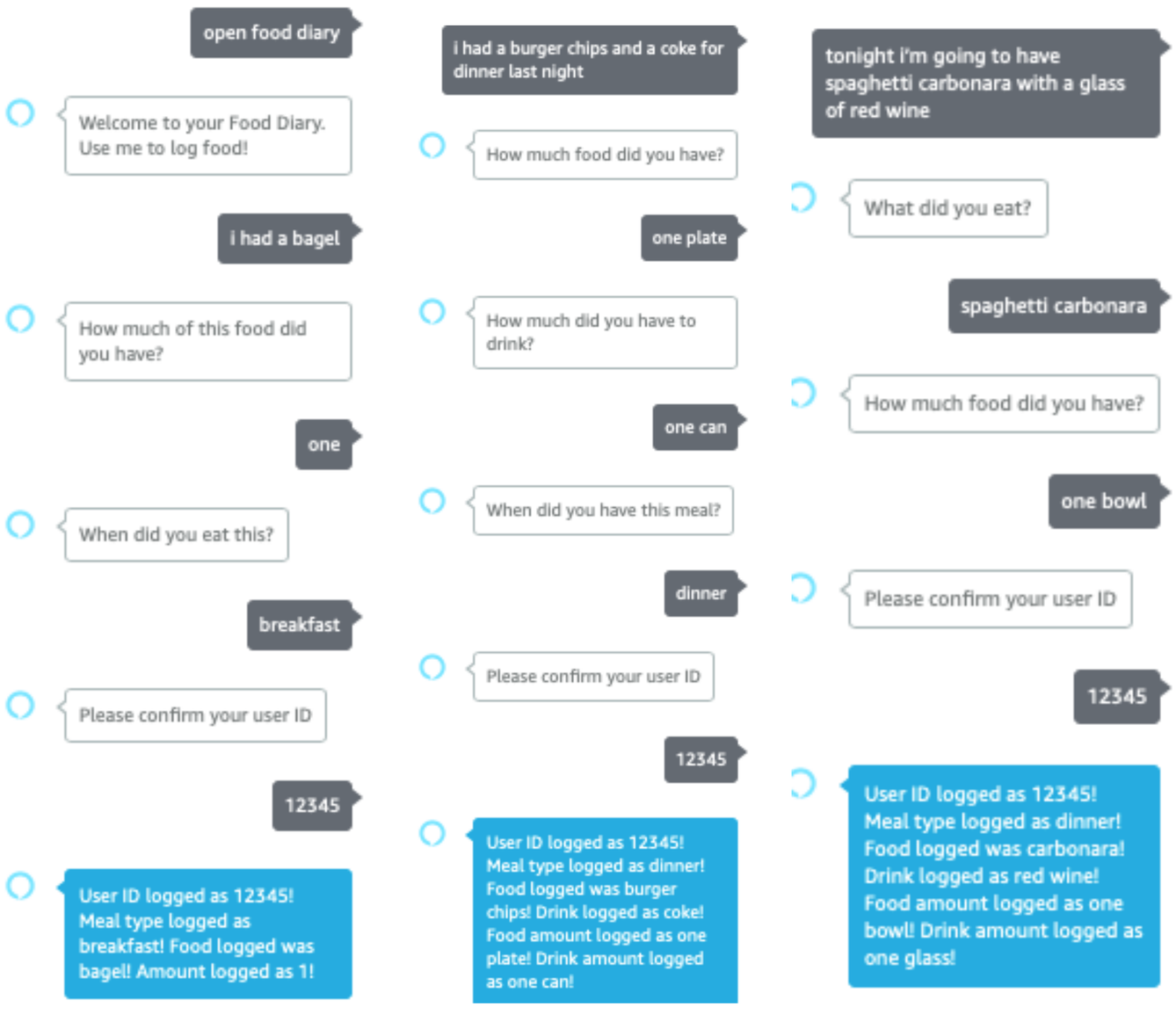
1. Develop Alexa Skill on Developer Portal
2. Create Java Application to handle intents dispatched by the skill.
3. Set up mySQL database for nutrition data storage
4. Host Java App and database on Tomcat Server
5. Configure Alexa skill to use the server endpoint.
6. Create Docker image of stack
7. Deploy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

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





Drinks

eventID	description	amount
614569001	red wine	one glass
1071859570	coffee	1
134897539	red wine	one plate
1896024319	coke	one plate
1111188103	red wine	one bowl

Foods

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