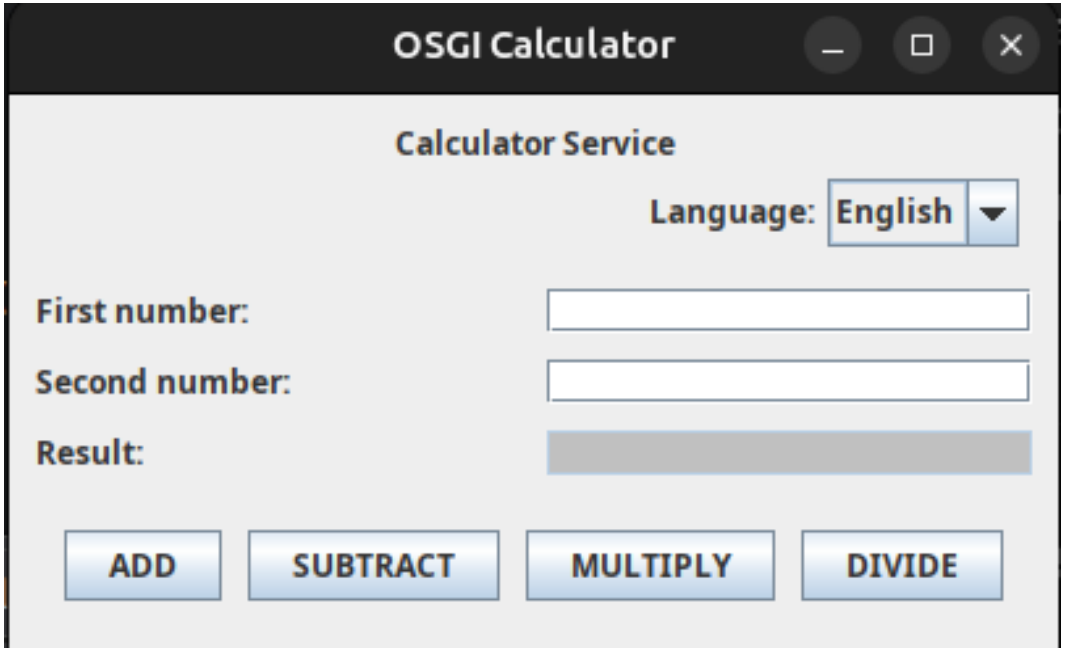
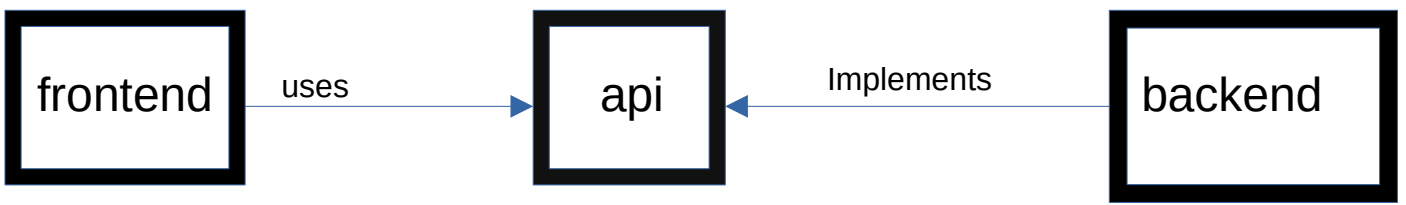
OSGI Calculator



Can Beydoğan

High-Level Architecture

- Modules:
  - **api** → interfaces
  - **backend** → language logic & services
  - **frontend** → UI & user interaction



API Module (api)

- **No implementations**
- Only interfaces
  - DataService
  - NumberLanguage
- Shared **dependency** for both backend and frontend

Backend Module (backend)

- An OSGi bundle that **implements** the interfaces from api
  - DataServiceImpl
- **Language-specific** implementations
  - TurkishNumbers
  - EnglishNumbers
- **Map-driven** number logic
- Language rules **isolated** per class
  - **Easy to add new** languages

Multilingual Number Conversion

- Converting numbers between:
  - Text → Integer
  - Integer → Text

Text → Integer

- **Goal** : Convert written numbers into integers
  - Normalize input (lowercase, trim)
  - Split sentence into words
  - Map each word to numeric value
  - Build number using scale logic (hundred, thousand, million)
    - Uses two accumulators: **current, result**
- **Example**:

  "two thousand five hundred six" → 2506

Integer → Text

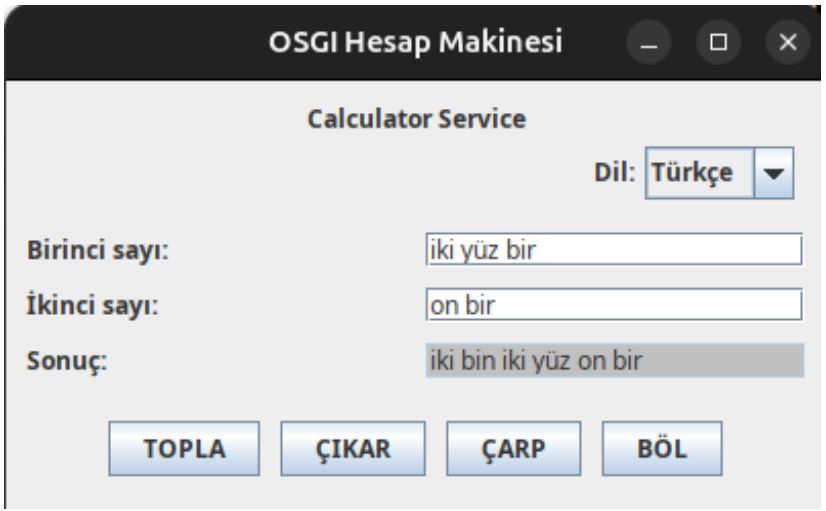
- **Goal:** Convert integer into words
  - Handle special cases (0, negative)
  - Process large scales first (million → thousand → hundred)
  - Language-specific rules (Turkish):
    - No “bir yüz”, no “bir bin”
    - But “bir milyon” is allowed
  - Use recursion for each part
  - Lookup words for small numbers
- **Example:**

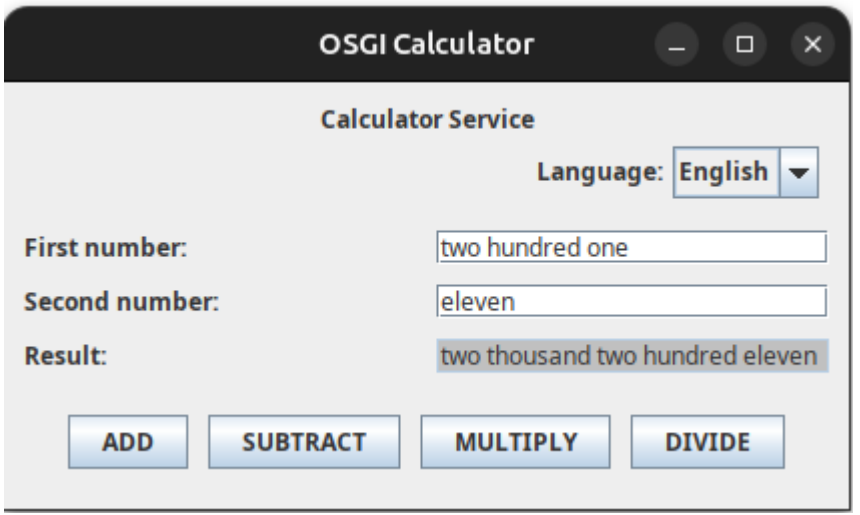
  2345 → two thousand three hundred forty five

Frontend Module (frontend)

- **Purpose** : User interface & localization
- **Contents**:
  - MainWindow.java
  - UI.java
  - properties
- **Responsibilities**:
  - UI rendering
  - Locale detection
- **Localization**:
  - messages_en.properties
  - messages_tr.properties
  - UI text separated from logic

Examples





Default Language: "tr"
Locale: "en"

Any Question

- GitHub repo:

  https://github.com/Cann23/OSGI-Calculator