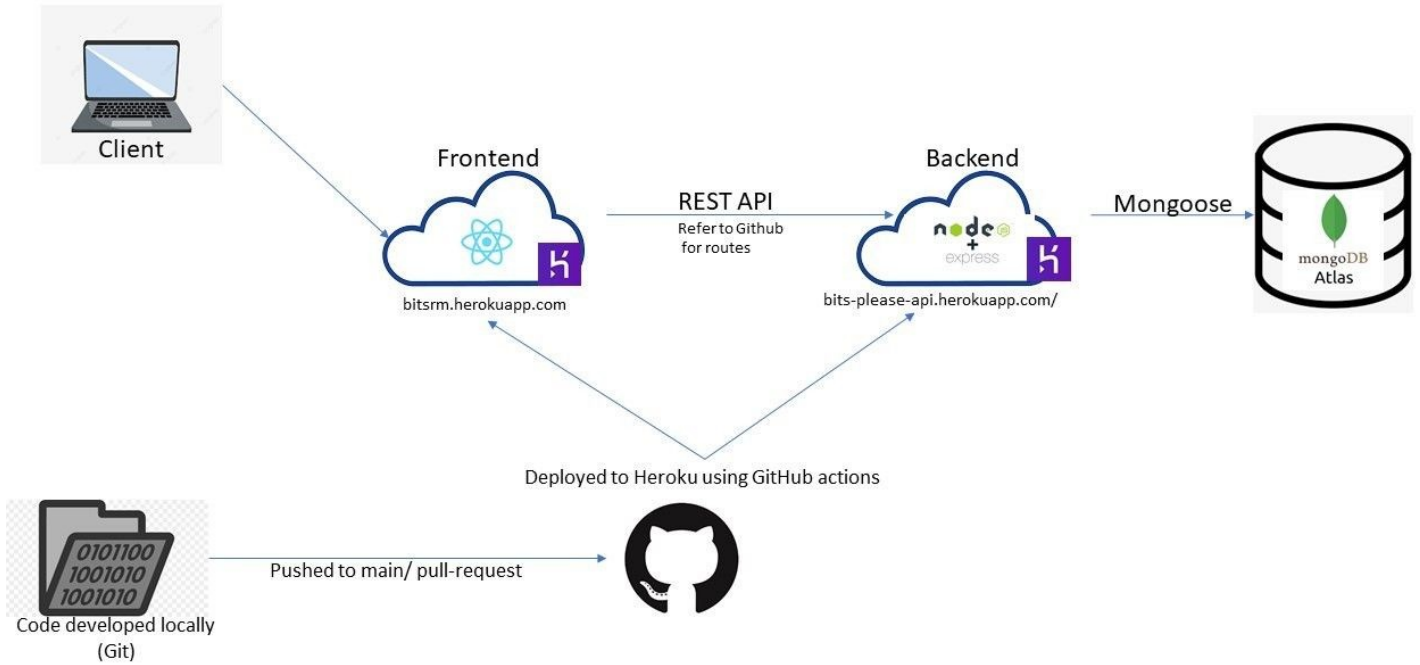


System Design

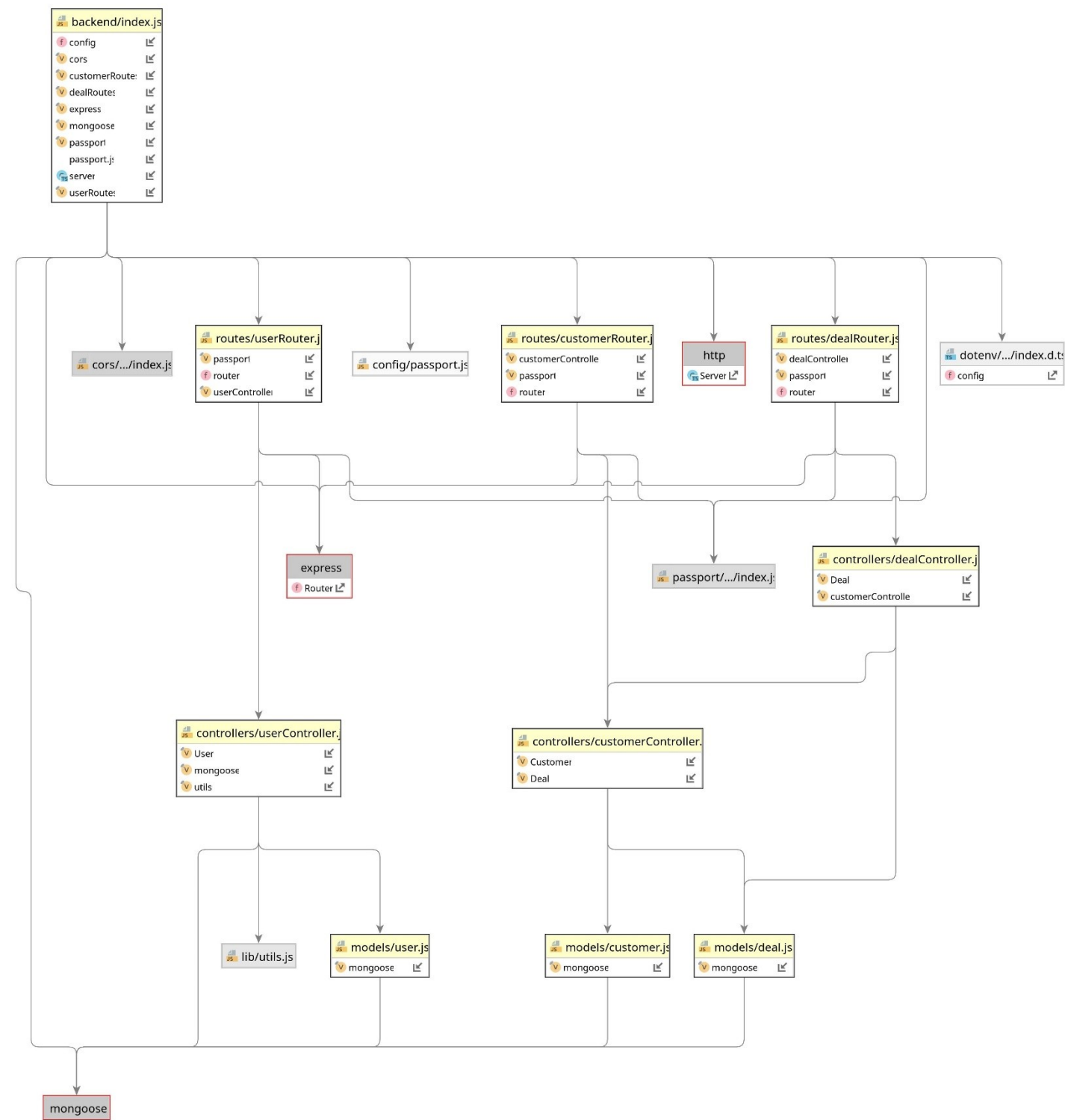
- Web-App Architecture
- Design Diagram – Backend
- Database Structure
- Deployment

Web-App Architecture

App Architecture Diagram

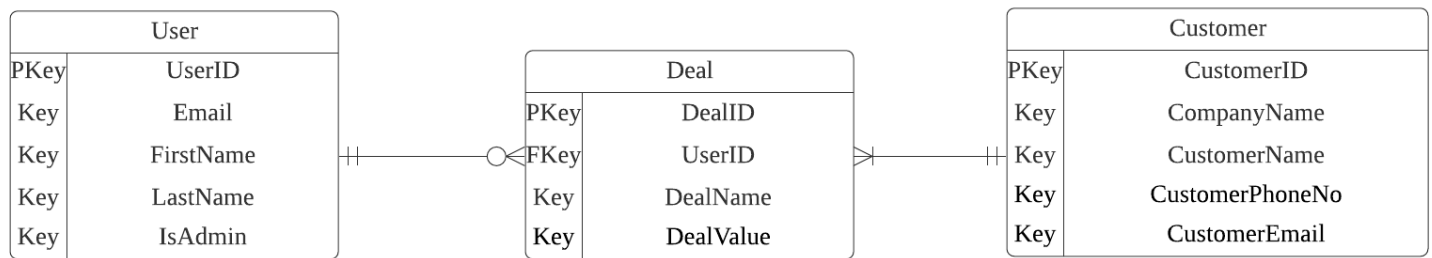


Design Diagram – Backend



Database Structure

DBMS ER diagram (UML notation)



Deployment

Automated deployment to Heroku using GitHub Action CI pipeline

- On pull request/ push to the main branch the Deploy to heroku pipeline (build → test → deploy) gets triggered
- Repository: Github
- Type: Monorepo (both front-end and back-end code in one repo)
- Deployment strategy:
 - main branch- src/client (front-end) code to heroku server on <http://bitsrm.herokuapp.com>
 - main branch -src/backend (backend) code to heroku server on <https://bits-please-api.herokuapp.com/status>

The screenshot shows the GitHub interface for the repository 'Hwijayas / IT-Project-053'. The 'Actions' tab is selected, displaying a workflow named 'trigger build pipeline' with the commit message 'Push stack to heroku #139'. The workflow status is 'succeeded 1 hour ago in 20m 12s'. A table lists the steps of the workflow:

Step	Duration
Set up job	2s
Run actions/checkout@v1	2s
Release API	46s
Release Web Client	19m 22s
Complete job	0s

Connecting to MongoDB on prod env

- Create database user in BitsRM MongoDB
- Save user details in .env in the root folder for main branch -src/backend, in the format
MONGO_USER = <your database user name>
MONGO_PW = <your database user password>
- Run npm start in src/backend

Yaml script for the automated deployment

```
name: Push stack to heroku

on:
  # Trigger the workflow on push or pull request,
  # but only for the main branch
  push:
    branches:
      - main
  pull_request:
    branches:
      - main

jobs:
  build:
    runs-on: ubuntu-latest
    steps:
      - uses: actions/checkout@v1
      - name: Release API
        uses: akhileshns/heroku-deploy@v3.0.4
        with:
          heroku_api_key: ${secrets.HEROKU_API_KEY}
          heroku_app_name: "bits-please-api"
          heroku_email: ${secrets.HEROKU_API_KEY}
        env:
          HD_APP_BASE: "src/backend"
      - name: Release Web Client
        uses: akhileshns/heroku-deploy@v3.0.4
        with:
          heroku_api_key: ${secrets.HEROKU_API_KEY}
          heroku_app_name: "bits-please-web-client"
          heroku_email: ${secrets.HEROKU_API_KEY}
        env:
          HD_APP_BASE: "src/client"
          HD_REACT_APP_API_URL: "https://bits-please-api.herokuapp.com"
```

Resources

1. <https://medium.com/softup-technologies/how-to-deploy-a-monorepo-to-multiple-heroku-apps-using-github-actions-65e87dc27878>