

23 May 2025

## **Project 2 Workshop Administrasi Jaringan**

“Membuat infrastruktur dengan teknologi docker”

Mata Kuliah: Workshop Administrasi Jaringan



Nama Dosen Pengampu:

Dr. Ferry Astika Saputra ST, M.Sc

Dikerjakan oleh:

Nama	: Ivan Rahmat Prakasa
NRP	: 3123600005
Kelas	: D4 IT A

**DEPARTEMEN TEKNIK INFORMATIKA DAN KOMPUTER  
POLITEKNIK ELEKTRONIKA NEGERI SURABAYA  
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## 1. Arsitektur Bisnis

### ➤ Tujuan Bisnis

- Mengelola data pelanggan secara efisien dan terstruktur
- Memudahkan proses pencarian dan pembaruan data pelanggan
- Meningkatkan efektivitas pelayanan pelanggan
- Menyediakan informasi pelanggan yang akurat dan real-time

### ➤ Proses Bisnis

Manajemen Data Pengalangan:

- Menambahkan data pelanggan baru
- Pembaruan informasi pelanggan
- Penghapusan data pelanggan
- Menampilkan data pelanggan

### ➤ Pengguna Aplikasi

Admin Manajemen Pelanggan: Memiliki akses untuk mencatat pelanggan masuk ataupun keluar.

## 2. Arsitektur Layanan

### ➤ Frontend Service

- Single Page Application dengan React
- Material UI untuk antarmuka pengguna yang modern
- Responsive design untuk akses multi-device
- State management untuk data handling
- Form validation dan error handling

### ➤ Backend Service

- RESTful API dengan Express.js
- Data validation dan sanitization
- Error handling dan logging
- Business logic separation
- Database abstraction dengan Sequelize ORM

### ➤ Database Service

- MySQL untuk penyimpanan data relasional
- Data persistence dengan Docker volumes
- Backup dan recovery management
- Data integrity dan referential integrity
- Connection pooling untuk performa optimal
- Arsitektur Database

CUSTOMERS			
int	customerNumber		PK
string	customerName		
string	contactLastName		
string	contactFirstName		
string	phone		
string	addressLine1		
string	addressLine2		
string	city		
string	state		
string	postalCode		
string	country		
int	salesRepEmployeeNumber		
decimal	creditLimit		

### 3. Arsitektur Aplikasi

#### 1) Frontend

- Teknologi:
  - React 18
  - Material-UI v5
  - React Router v6
  - Axios untuk HTTP requests
- Komponen Utama:
  - CustomerList: Menampilkan daftar pelanggan
  - CustomerForm: Form untuk tambah/edit pelanggan
  - Navbar: Navigasi aplikasi
- State Management:
  - React Hooks (useState, useEffect)
  - Props untuk component communication
  - Context API (jika diperlukan)

## 2) Backend

- Teknologi:
  - Express.js
  - Sequelize ORM
  - MySQL2 driver
  - CORS middleware
- Struktur Aplikasi:
  - Models: Definisi model data
  - Controllers: Business logic
  - Routes: API endpoint definitions
  - Config: Konfigurasi database dan aplikasi
- API Endpoints:
  - GET /api/customers - List semua customer
  - GET /api/customers/:id - Detail customer
  - POST /api/customers - Tambah customer
  - PUT /api/customers/:id - Update customer
  - DELETE /api/customers/:id - Hapus customer

## 4. Arsitektur Infrastruktur

### 1) Docker Container Architecture

- Frontend Container
  - Base image: Node.js 18 Alpine
  - Port: 3000
  - Volume: Source code mapping
  - Environment variables:
    - REACT\_APP\_API\_URL
    - NODE\_ENV
    - CHOKIDAR\_USEPOLLING
    - WATCHPACK\_POLLING
- Backend Container
  - Base image: Node.js 18 Alpine
  - Port: 5000
  - Volume: Source code mapping
  - Environment variables:
    - DB\_HOST
    - DB\_USER
    - DB\_PASSWORD
    - DB\_NAME

- Image: MySQL 8.0
- Port: 3307
- Volumes:
  - Data persistence
  - Initialization scripts
- Environment variables:
  - MYSQL\_ROOT\_PASSWORD
  - MYSQL\_DATABASE

- Internal Docker network untuk komunikasi antar container
- Port mapping untuk akses eksternal:
  - Frontend: 3000:3000
  - Backend: 5000:5000
  - MySQL: 3307:3306

- Build and run container

```
ivanrhmt@ivanrhmt-HP-Laptop-14-em0xx: ~/kuliah/Semester_4/Jaringan/UAS/Project2
```

```
File Edit View Search Terminal Tabs Help
```

```
ivanrhmt@ivanrhmt-HP-Laptop-14-em0xx  x  ivanrhmt@ivanrhmt-HP-Laptop-14-em0...  x  ivanrhmt@ivanrhmt-HP-Laptop-14-em0...  x  +  ▾
```

```
ivanrhmt@ivanrhmt-HP-Laptop-14-em0xx:~/kuliah/Semester_4/Jaringan/UAS/Project2$ docker compose up --build -d  
WARNING: Error loading config file: /home/ivanrhmt/.docker/config.json: invalid character '/' looking for beginning of  
object key string  
WARNING: Error loading config file: /home/ivanrhmt/.docker/config.json: invalid character '/' looking for beginning of  
object key string  
[+] Building 3.2s (17/17) FINISHED                                docker:default  
=> [backend internal] load build definition from Dockerfile          0.0s  
=> => transferring dockerfile: 156B                                  0.0s  
=> [frontend internal] load metadata for docker.io/library/node:18-alpine 2.8s  
=> [backend internal] load .dockerignore                             0.0s  
=> => transferring context: 2B                                         0.0s  
=> [backend internal] load build context                              0.0s  
=> => transferring context: 3.52kB                                     0.0s  
=> [frontend 1/5] FROM docker.io/library/node:18-alpine@sha256:8d6421d663b4c28fd3ebc498332f249011d118945588d0a 0.0s  
=> CACHED [frontend 2/5] WORKDIR /app                               0.0s  
=> CACHED [backend 3/5] COPY package*.json ./                       0.0s  
=> CACHED [backend 4/5] RUN npm install                             0.0s  
=> [backend 5/5] COPY . .                                           0.0s  
=> [backend] exporting to image                                      0.0s  
=> => exporting layers                                                 0.0s  
=> => writing image sha256:8ec9ac0dab77ffa177263cb52509a991f66a53c039de7d87449042c5b922d2d5 0.0s  
=> => naming to docker.io/library/project2-backend                 0.0s  
=> [frontend internal] load build definition from Dockerfile        0.0s  
=> => transferring dockerfile: 246B                                   0.0s  
=> [frontend internal] load .dockerignore                           0.0s
```

➤ Menambahkan data pelanggan baru

The screenshot shows a web browser window with the URL `localhost:3000/customers/add`. The application is titled "Classic Models" and has a "CUSTOMERS" tab. The form is titled "Tambah Customer" and contains the following fields:

- Customer Number \*: 100
- Customer Name \*: TES
- Contact Last Name \*: Rahmat Prakasa
- Contact First Name \*: Ivan
- Phone \*: 0852-6796-8495
- Address Line 1 \*: Jalan Kolonel Santoso
- Address Line 2: (empty)
- City \*: Kab. Kepahiang
- State: Bengkulu
- Postal Code: 39372
- Country \*: Indonesia
- Credit Limit: 200

At the bottom of the form are two buttons: "SIMPAN" (Save) and "BATAL" (Cancel).

➤ Setelah menambahkan data pelanggan baru, data tersebut akan ditampilkan di CustomerList

Customer Number	Customer Name	Contact Name	Phone	City	Country	Credit Limit	Actions
100	TES	Ivan Rahmat Prakasa	0852-6796-8495	Kab. Kepahiang	Indonesia	\$200.00	<button>EDIT</button> <button>HAPUS</button>

➤ Edit data pelanggan

The screenshot shows a web browser window with the URL `localhost:3000/customers/edit/100`. The application is titled "Classic Models" and has a "CUSTOMERS" tab. The form is titled "Edit Customer" and contains the following fields:

- Customer Number \*: 100
- Customer Name \*: COBA EDIT
- Contact Last Name \*: Rahmat Prakasa
- Contact First Name \*: Ivan
- Phone \*: 0852-6796-8495
- Address Line 1 \*: Jalan Kolonel Santoso
- Address Line 2: (empty)
- City \*: Kab. Kepahiang
- State: Bengkulu
- Postal Code: 39372
- Country \*: Indonesia
- Credit Limit: 200.00

At the bottom of the form are two buttons: "UPDATE" and "BATAL" (Cancel).

➤ Output setelah edit pelanggan

Customer Number	Customer Name	Contact Name	Phone	City	Country	Credit Limit	Actions
100	COBA EDIT	Ivan Rahmat Prakasa	0852-6796-8495	Kab. Kepahiang	Indonesia	\$200.00	<a href="#">EDIT</a> <a href="#">HAPUS</a>

➤ Menghapus data pelanggan

hique	Carine Schmitt	40.32.2555	Nantes	France	\$210
Stores					\$718
Collectors, Co.				ia	\$117
Gifts	Janine Labrune	40.67.8555	Nantes	France	\$118

**Konfirmasi Hapus**

Apakah Anda yakin ingin menghapus customer COBA EDIT?

[BATAL](#) [HAPUS](#)