

**COSC 310**

# **Dependencies & Services Guide**

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**This document outlines all dependencies, tools, and external services required to run the Task Management System successfully.**

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## **Core Dependencies**

### **Frontend Dependencies (React)**

### **Production Dependencies**

#### **React Core**

- react@18.3.1
- react-dom@18.3.1
- react-router-dom@7.1.5

#### **State Management**

- @reduxjs/toolkit@2.6.0
- react-redux@9.2.0
- redux@5.0.1

#### **UI Components**

- @headlessui/react@2.2.0
- @heroicons/react@2.2.0
- react-icons@5.4.0
- react-toastify@11.0.3
- react-tooltip@5.28.0

#### **Data Visualization**

- react-chartjs-2@5.3.0

#### **API & Communication**

- socket.io-client@4.8.1
- jwt-decode@4.0.0

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## **Backend Dependencies (Node.js)**

### **Production Dependencies**

#### **Server Framework**

- `express@4.21.2`
- `express-async-handler@1.2.0`
- `express-joi-validation@6.0.0`

## Database

- `mongoose@8.10.0`

## Authentication & Security

- `bcrypt@5.1.1`
- `jsonwebtoken@9.0.2`
- `cookie-parser@1.4.7`
- `cors@2.8.5`

## Email Service

- `nodemailer@6.10.0`
- `nodemailer-express-handlebars@7.0.0`

## Real-time Communication

- `socket.io@4.8.1`

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## External Services

### 1. MongoDB Cloud Database

- **Service:** MongoDB Atlas
- **Configuration:**
- **Location:** `backend/.env`
- **Variable:** `MONGODB_URI`
- **Format:**

`mongodb+srv://<username>:<password>@<cluster>.mongodb.net/<database>`

### 2. Email Service (SMTP)

- **Service:** Any SMTP provider (e.g., Gmail, SendGrid)
- **Configuration:**

`EMAIL_HOST=smtp.yourprovider.com`

`EMAIL_PORT=587`

`EMAIL_USER=your-email`

`EMAIL_PASS=your-password`

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## Configuration Files

### 1. Environment Variables

#### Backend (.env)

```
PORT=3200
MONGODB_URI=your_mongodb_uri
JWT_SECRET=your_jwt_secret
JWT_REFRESH_SECRET=your_refresh_secret
EMAIL_HOST=your_smtp_host
EMAIL_PORT=your_smtp_port
EMAIL_USER=your_email
EMAIL_PASS=your_email_password
```

#### Frontend (.env)

```
VITE_API_URL=http://localhost:3200
VITE_SOCKET_URL=http://localhost:3200
```

### 2. Docker Configuration

- **Location:** /docker-compose.yml
- **Key Settings:**
  - Port mappings: 3200, 5173, 80
  - Environment variables
  - Volume mounts

### 3. Nginx Configuration

- **Location:** /nginx/nginx.conf
- **Key Settings:**
  - Proxy rules for frontend and backend
  - SSL configuration (if applicable)

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## How to Update Dependencies

### Frontend

```
cd frontend
npm update          # Update all packages
npm update <package> # Update specific package
```

## Backend

```
cd backend  
npm update          # Update all packages  
npm update <package> # Update specific package
```

## Docker Images

```
docker-compose pull      # Pull latest images  
docker-compose up -d --build # Rebuild containers
```

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## Common Configuration Issues

### Database Connection

- Verify MongoDB URI in .env
- Check network connectivity
- Verify IP whitelist in MongoDB Atlas

### Email Service

- Confirm SMTP credentials
- Check port accessibility
- Verify email templates in /backend/templates

### JWT Authentication

- Ensure secrets are properly set
- Set proper token expiration times
- Verify cookie settings