Node JS

Suprayogi, M.KOm

NodeJS

- Node.js is an open source server environment.
- Node.js is a JavaScript runtime built on the V8 JavaScript engine.
- Node.js allows you to run JavaScript on the server
- https://nodejs.org/en
- Node.js® is a free, open-source, cross-platform JavaScript runtime environment that lets developers create servers, web apps, command line tools and scripts.
- dibuat oleh Ryan Dahl 2009
- Runtime adalah lingkungan untuk menjalankan program.

Penggunaan nodeJS:

- Dynamic Single Page Application(SPA)
- Realtime App (chat,multiplayer game)
- API
- Streaming App
- Microservices
- Command Line tool
- MERN,MEAN,MEVN (mongo,express,React,Node,Angular,Vue)

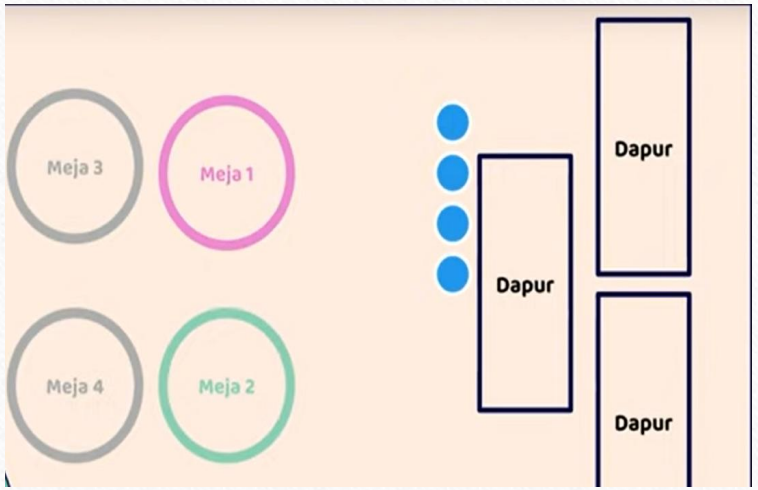
NodeJS vs PHP

	PHP	NodeJS
Tahun Dibuat	1994	2009
Engine	Zend Engine	Google's V8 Engine
Eksekusi Code	Single-Thread, Asynchronous	Multi-Thread, Synchronous
Web Server	Apache / IIS	Berjalan di runtime sendiri
Package Manager	Composer	NPM

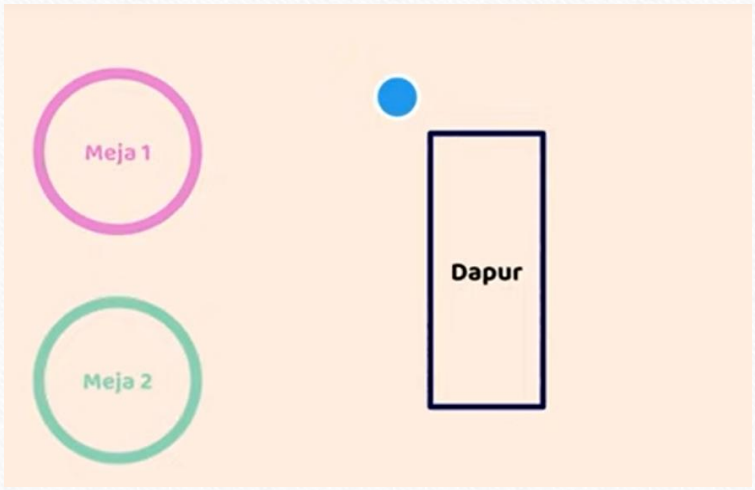
Arsitektur

- Multi thread , Synchronous/blocking

Blocking/ Synchronous



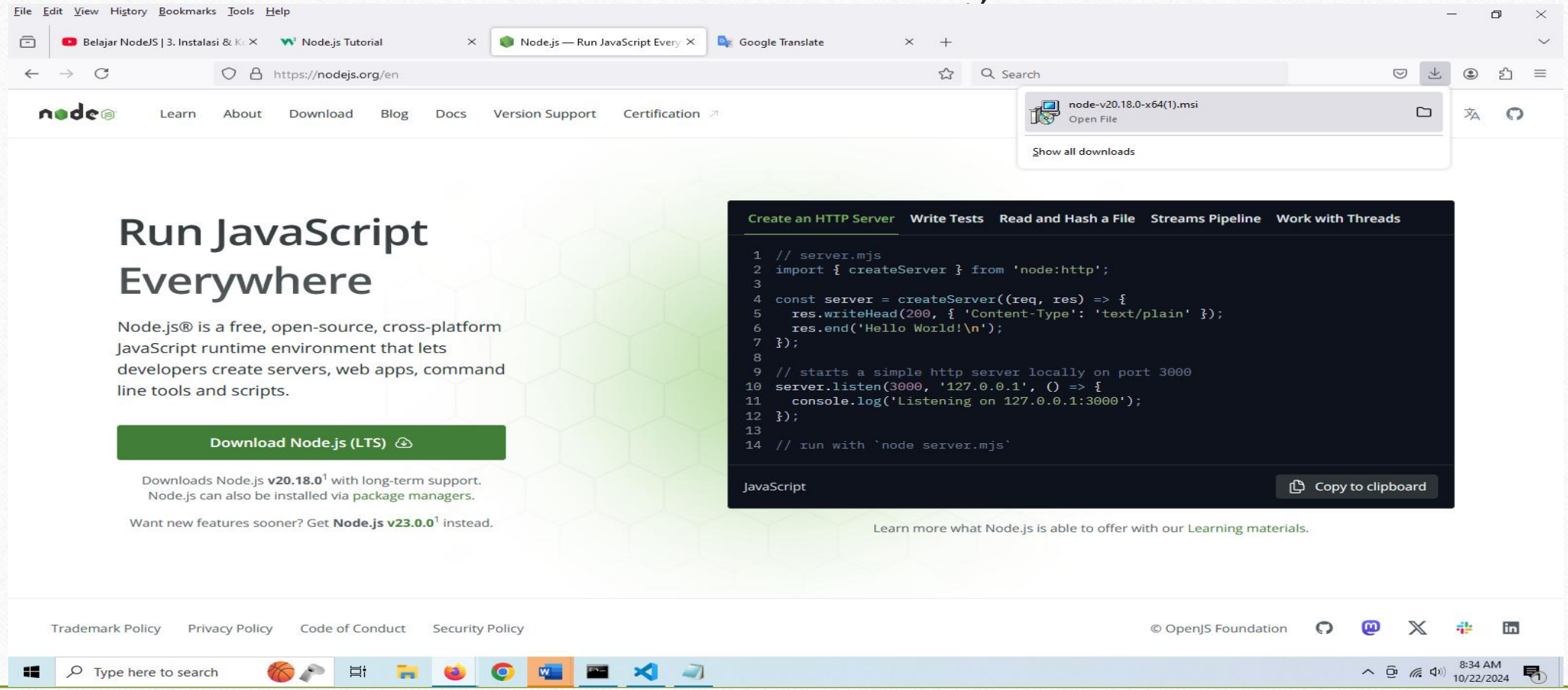
Unblocking / Unsynchronous



Arsitektur

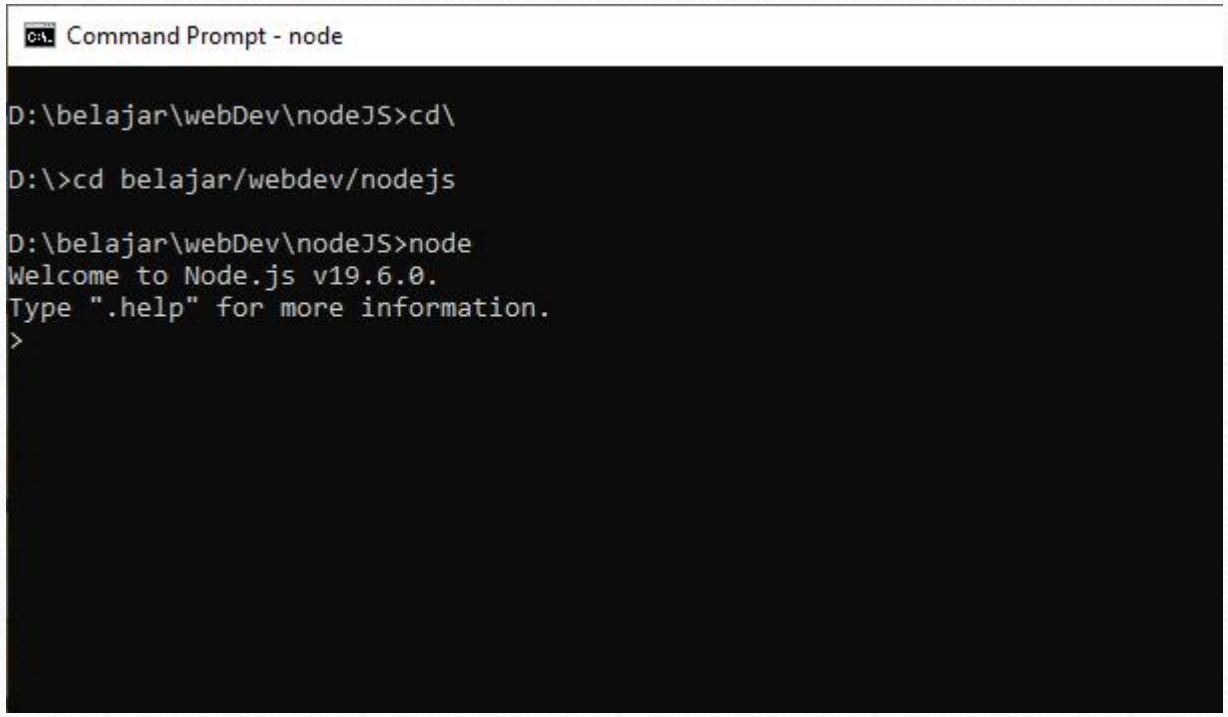
// Synchronous
const getUserSync = require('./src/getUserSync');
const userSatu = getUserSync(1);
console.log(userSatu);
const userDua = getUserSync(2);
console.log(userDua);
const halo = 'Hello World!';
console.log(halo);
memproses data user 1
menampilkan data user 1
memproses data user 2
menampilkan data user 2
isi variabel dan cetak
0 1 2 3 4 5 6 7
// Asynchronous
const getUser = require('./src/getUser');
const userSatu = getUser(1, (user) => {
console.log(user);
});
const userDua = getUser(2, (user) => {
console.log(user);
});
const halo = 'Hello World!';
console.log(halo);
mulai memproses data user 1
mulai memproses data user 2
isi variabel dan cetak
menampilkan data user 1
menampilkan data user 2
0 1 2 3 4 5 6 7

Instalasi NodeJS

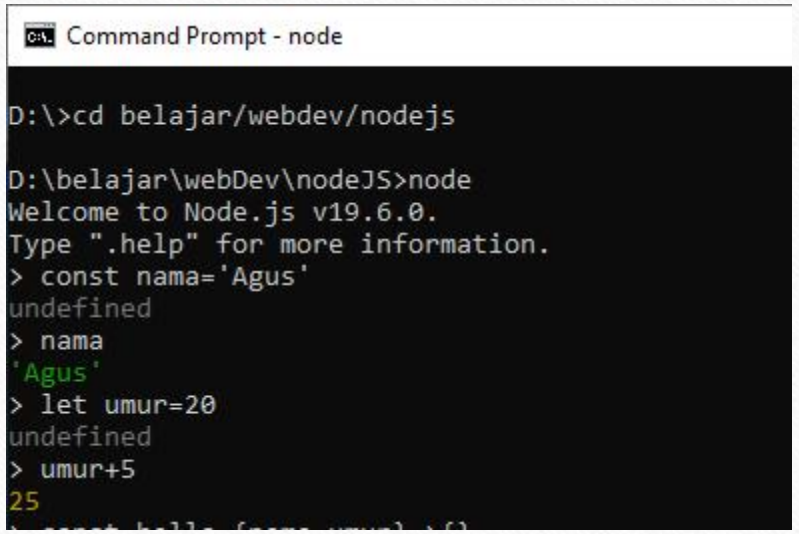


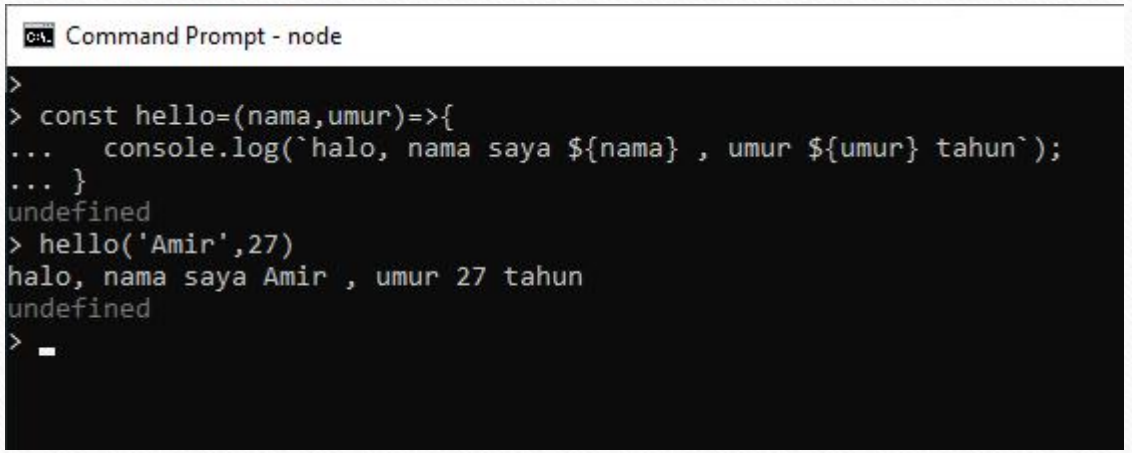
REPL

- Read Evaluate Print Loop
- Debuging
- Execute app lewat termina

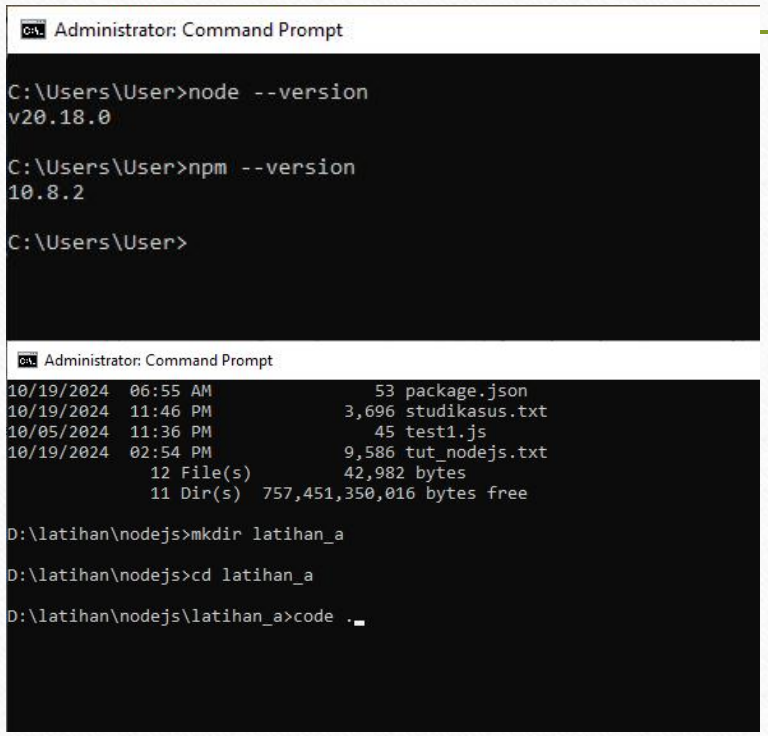


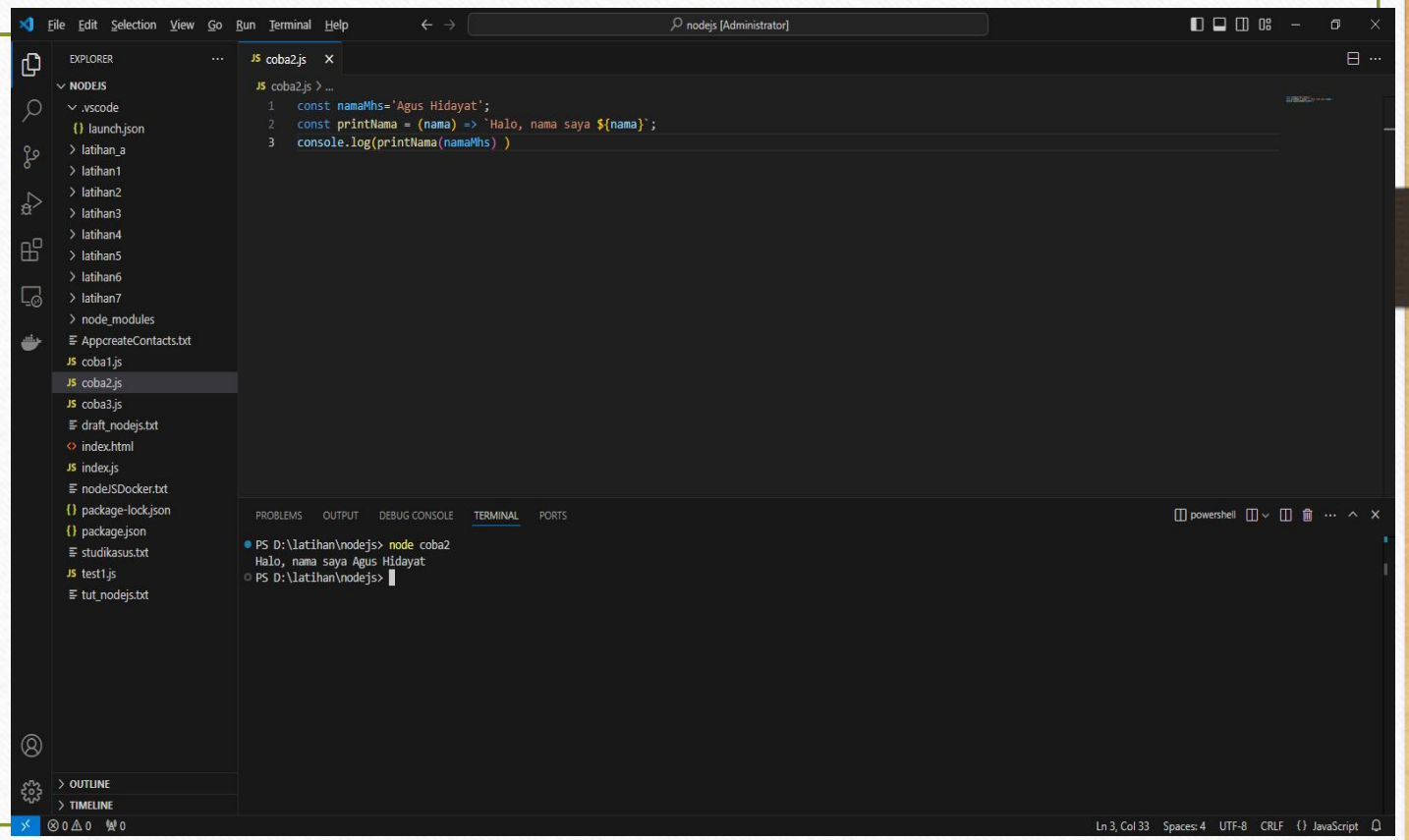
REPL


Command Prompt - node
D:\>cd belajar/webdev/nodejs
D:\belajar\webDev\nodeJS>node
Welcome to Node.js v19.6.0.
Type ".help" for more information.
> const nama='Agus'
undefined
> nama
'Agus'
> let umur=20
undefined
> umur+5
25

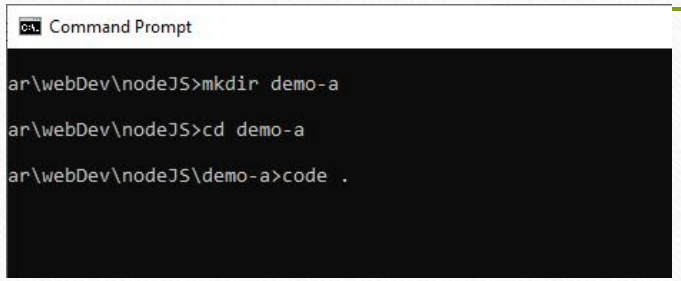

Command Prompt - node
>
> const hello=(nama,umur)=>{
... console.log(`halo, nama saya ${nama} , umur ${umur} tahun`);
... }
undefined
> hello('Amir',27)
halo, nama saya Amir , umur 27 tahun
undefined
>

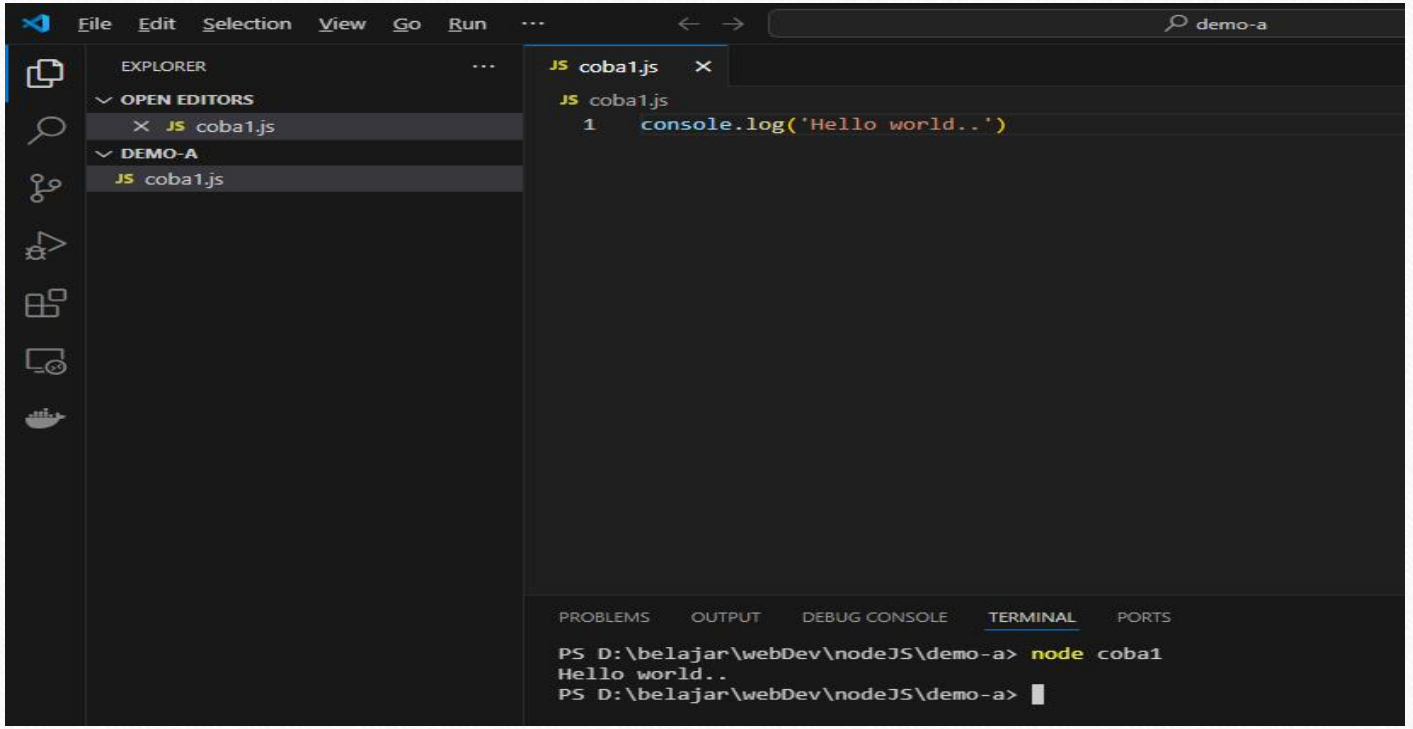
Interface Development Environment





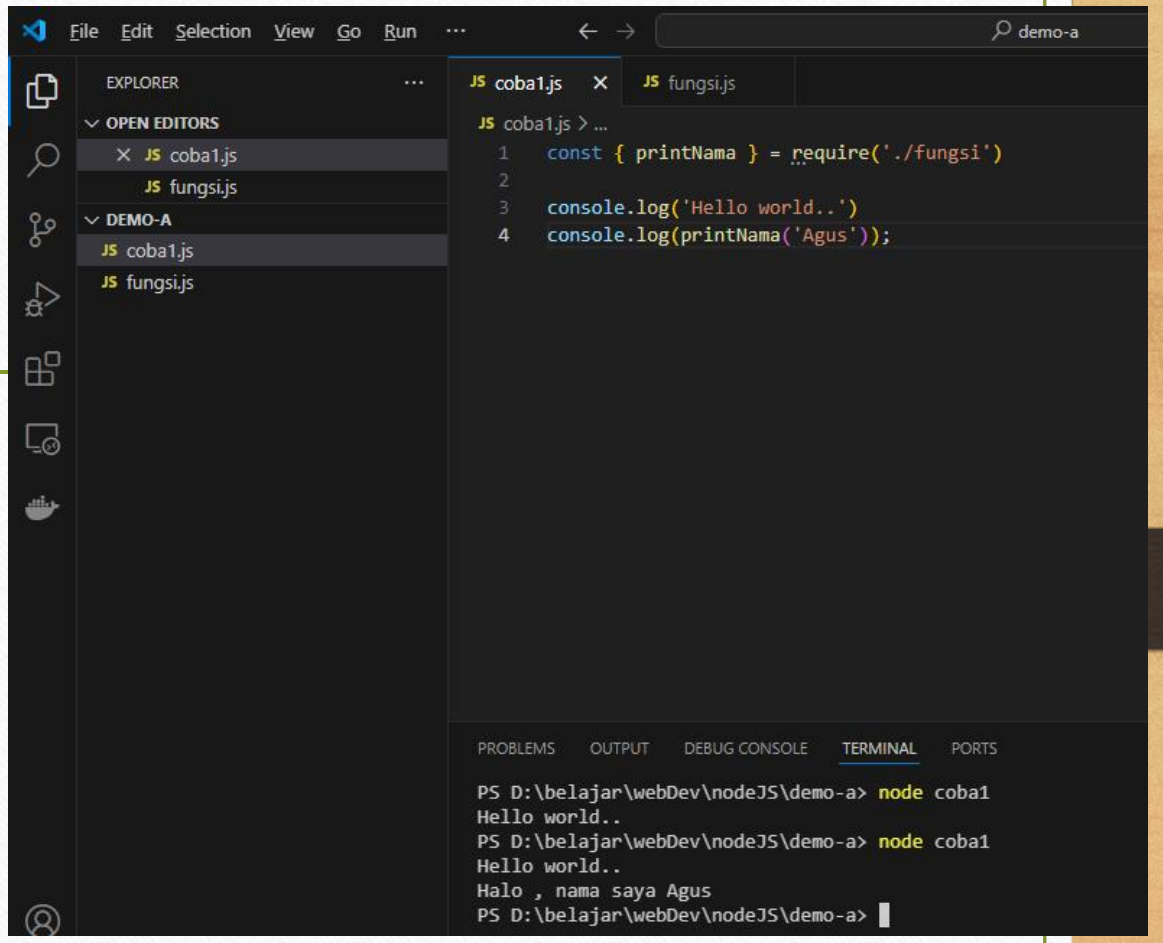
Menjalankan file node



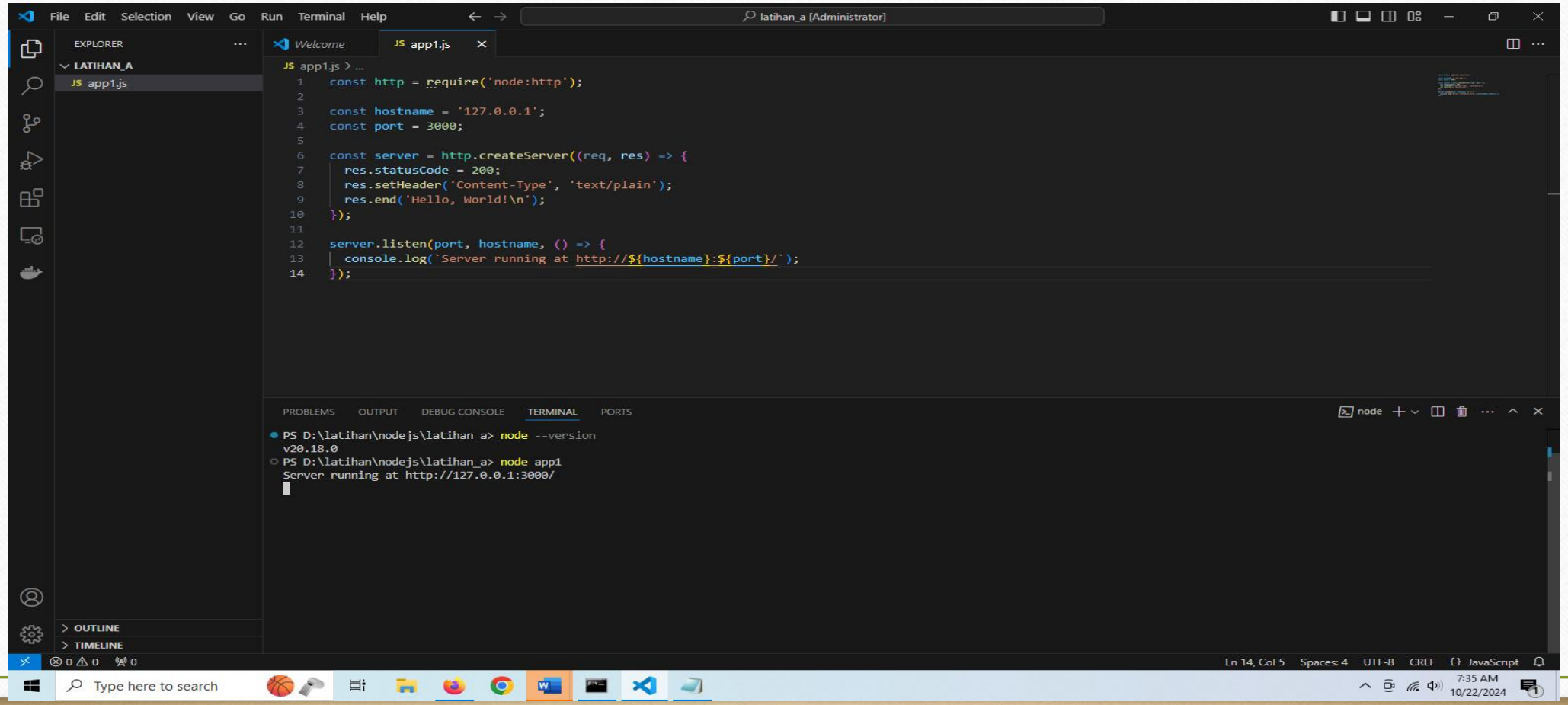


Local Module

- Module/Fungsi buatan sendiri



Membuat web server

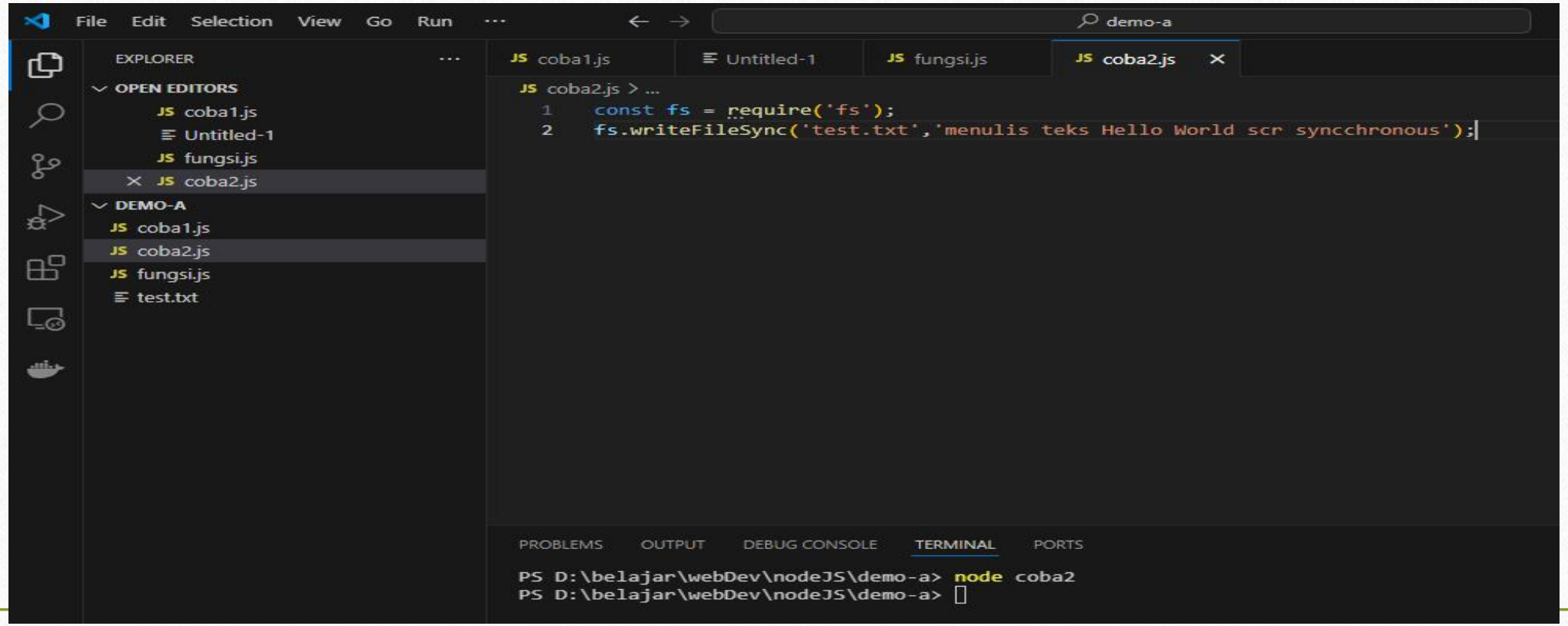


Sistem module node Js

- Module: sekumpulan code yang dapat digunakan kembail dengan interface yg terdefinisi
- Node Module : fungsi-fungsi dlm suatu file Javascript yg dpt digunakan kembali pada aplikasi nodejs
- Jenis Node Module :
  - Core modules
  - Local modules
  - Third party modules (npm modules)

- Contoh:
  - const fs= require('fs');

Node core modules

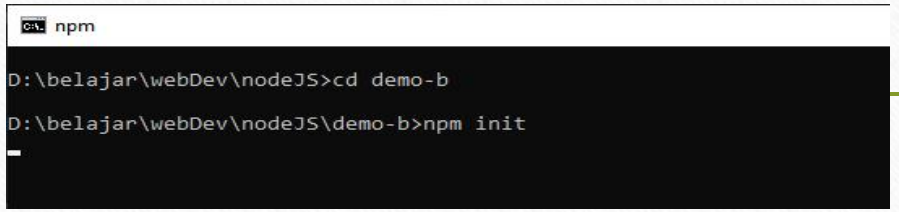


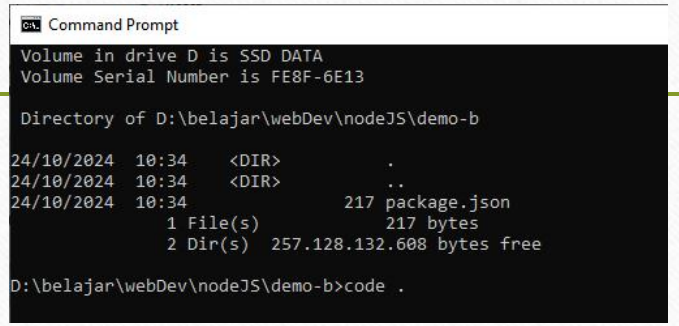
NPM

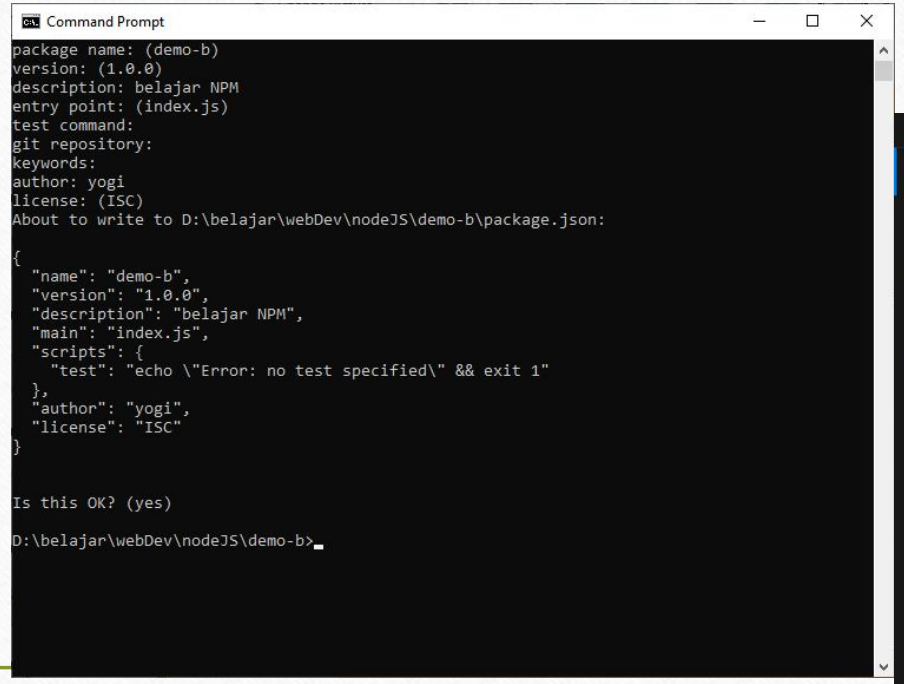
- Node Package Manager: berisi library atau modul-modul yang digunakan dlm pengembangan NodeJS.
- Npm: client CLI utk install/publish paket
- Dokumentasi: npmjs.com
- Contoh penggunaan NPM
  - Pada folder project:
    - npm init
  - ;menambahkan nodemon
    - npm install nodemon
    - nodemon app

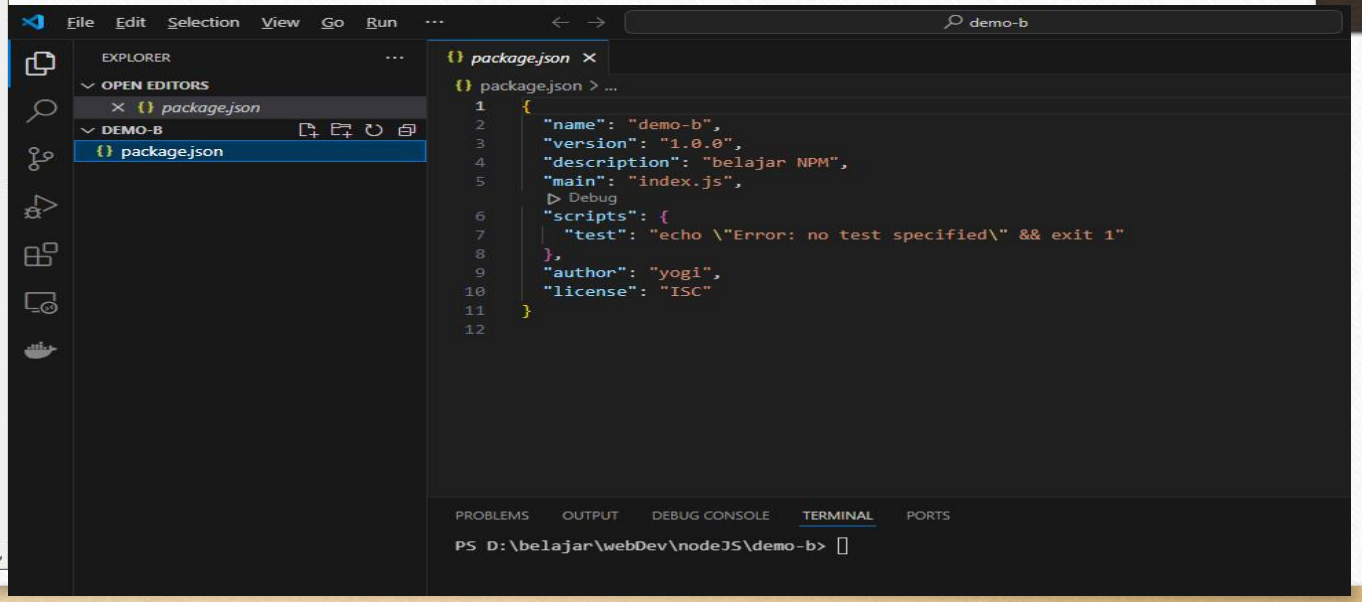
Jika nodemon tdk jalan di vscode-cli
1.First search and run PowerShell as administrator
2.Get-ExecutionPolicy
3.Set-ExecutionPolicy Unrestricted

Install npm di folder project







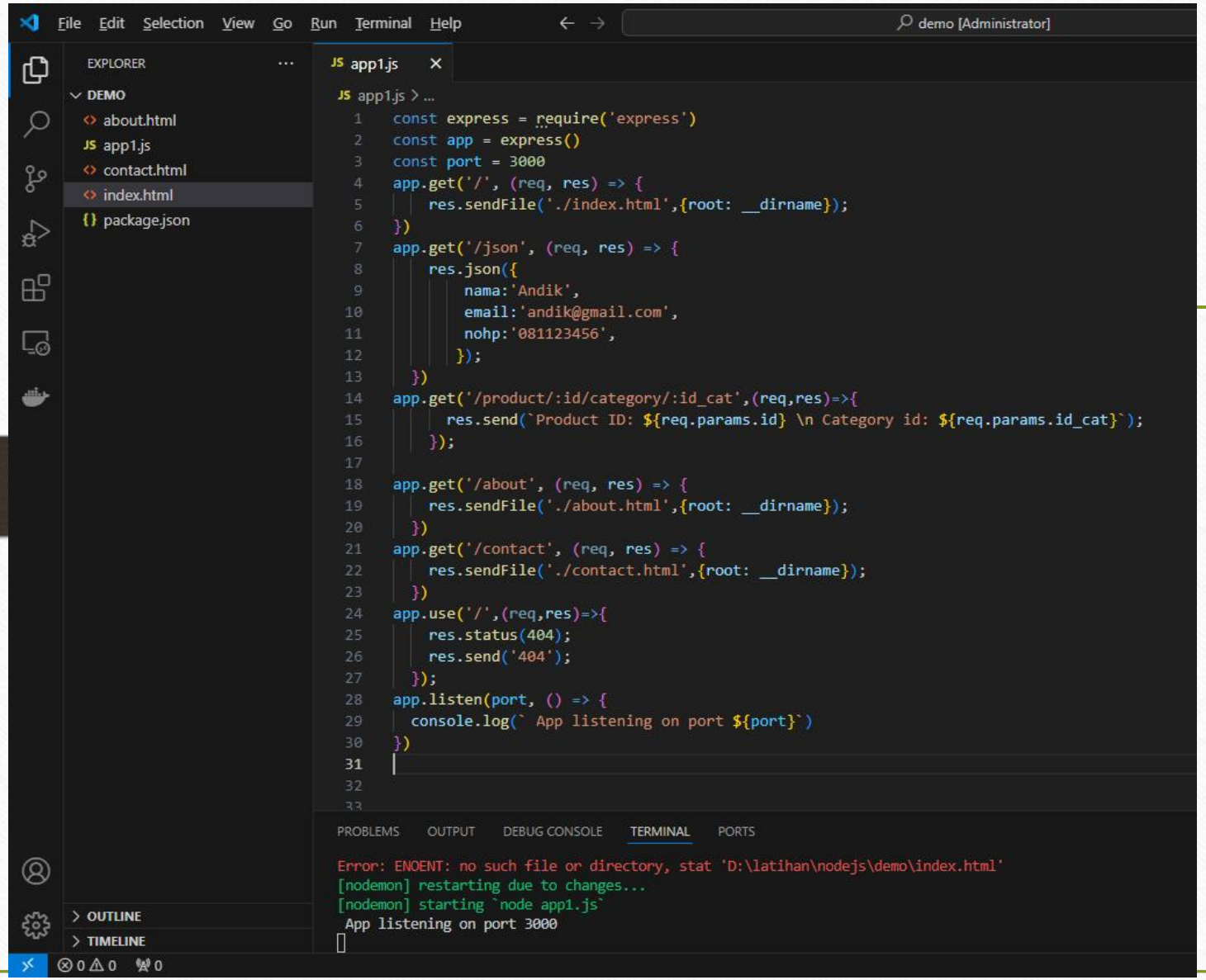


Express JS

- web App Framework yg dibuat di atas NodeJS
- menyediakan interface yg minimal utk tool yg diperlukan dlm membuat app web
- membantu pengelolaan aliran data dari server ke aplikasi
- support teknologi MERN,MEAN,MEVN
- Menangani request berbagai metode http dg mudah (routes)
- MVC
- terintgrasi dg view rendering engine, utk mengelola template
- Middleware
- database: cassandra,couchbase,LevelDB,MySQL,MongoDB,Nwo4j,Oracle,PostgreSQL,Redis,SQLServer,SQLLite,ElasticSearch

Express JS

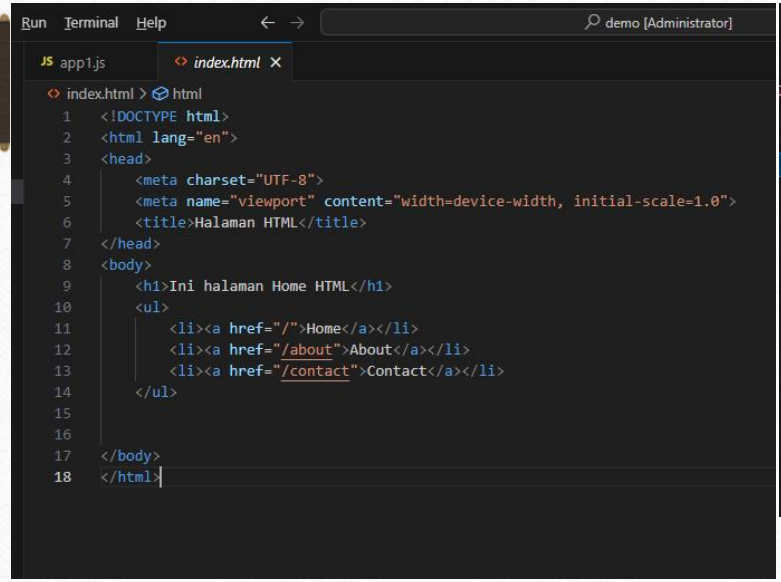
- install express
- npm install express –save
- ;Dokumentasi npmjs.com –expressjs.com

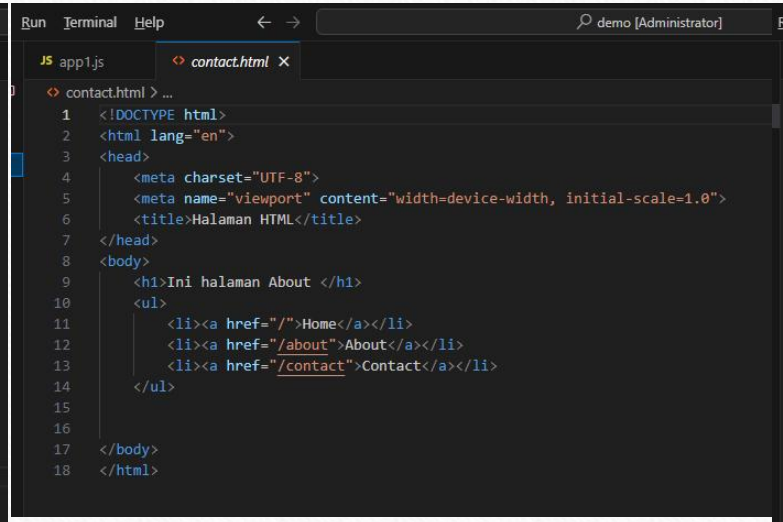


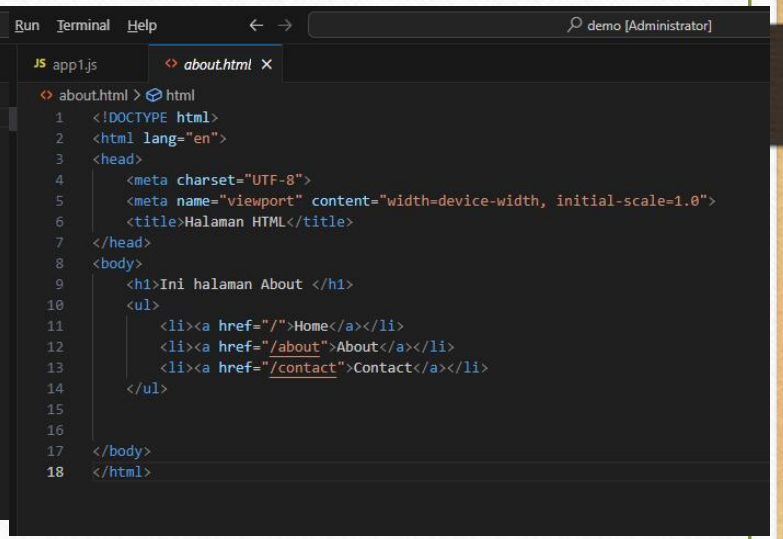
Jalankan perintah pada CLI:
node app
Buka browser :
http://localhost:3000
http://localhost:3000/about
http://localhost:3000/json
http://localhost:3000/product/1/category/

Latihan1
static web app

- File index.html,about.html,contact.html







EJS (Embedded Javascript Templates)

- simple ,speed,easy debug,active,pembuatnya sm dg express
- npm install ejs
- app.set('view engine','ejs')
- res.render('index')
- ;;extensi file hrs index.ejs

expres-ejs-layouts

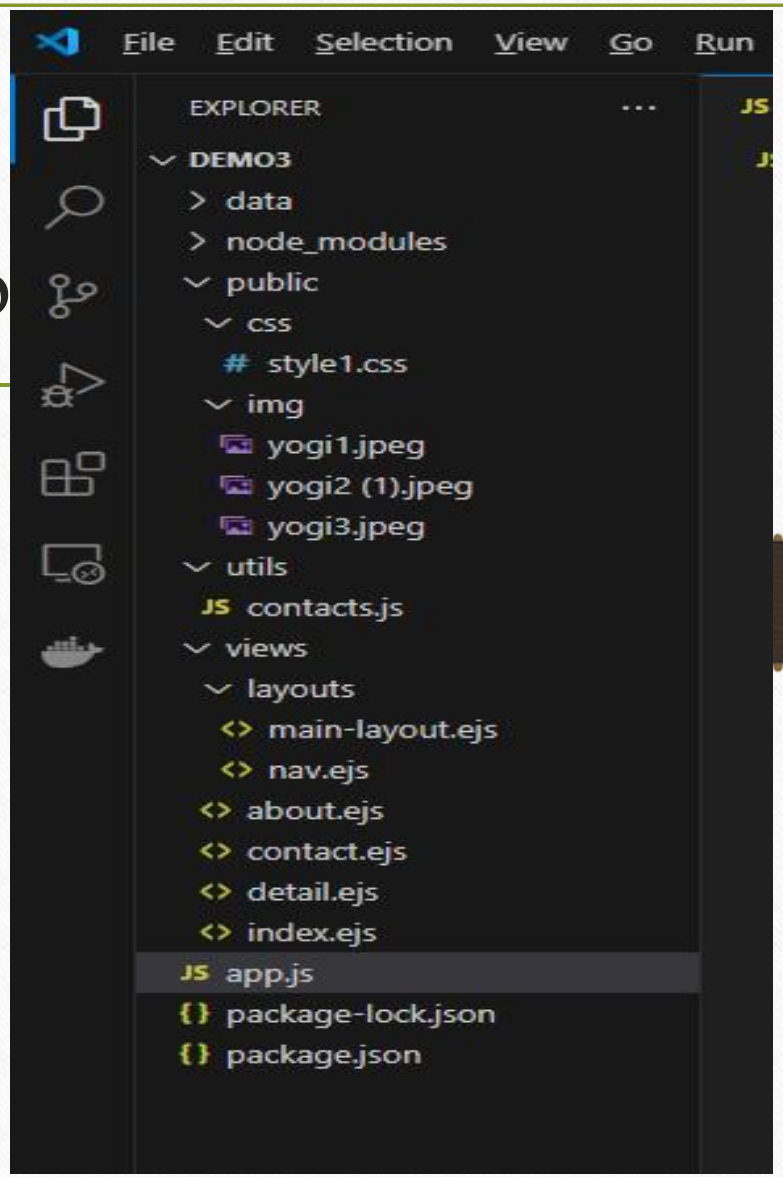
- npm install express-ejs-layouts@2.5.0
- ejsfor
- const expressLayouts = require('express-ejs-layouts')
- app.use(expressLayouts);

middleware

- ;;express.static
- //built ini middleware
- app.use(express.static('public')); //bikin /public

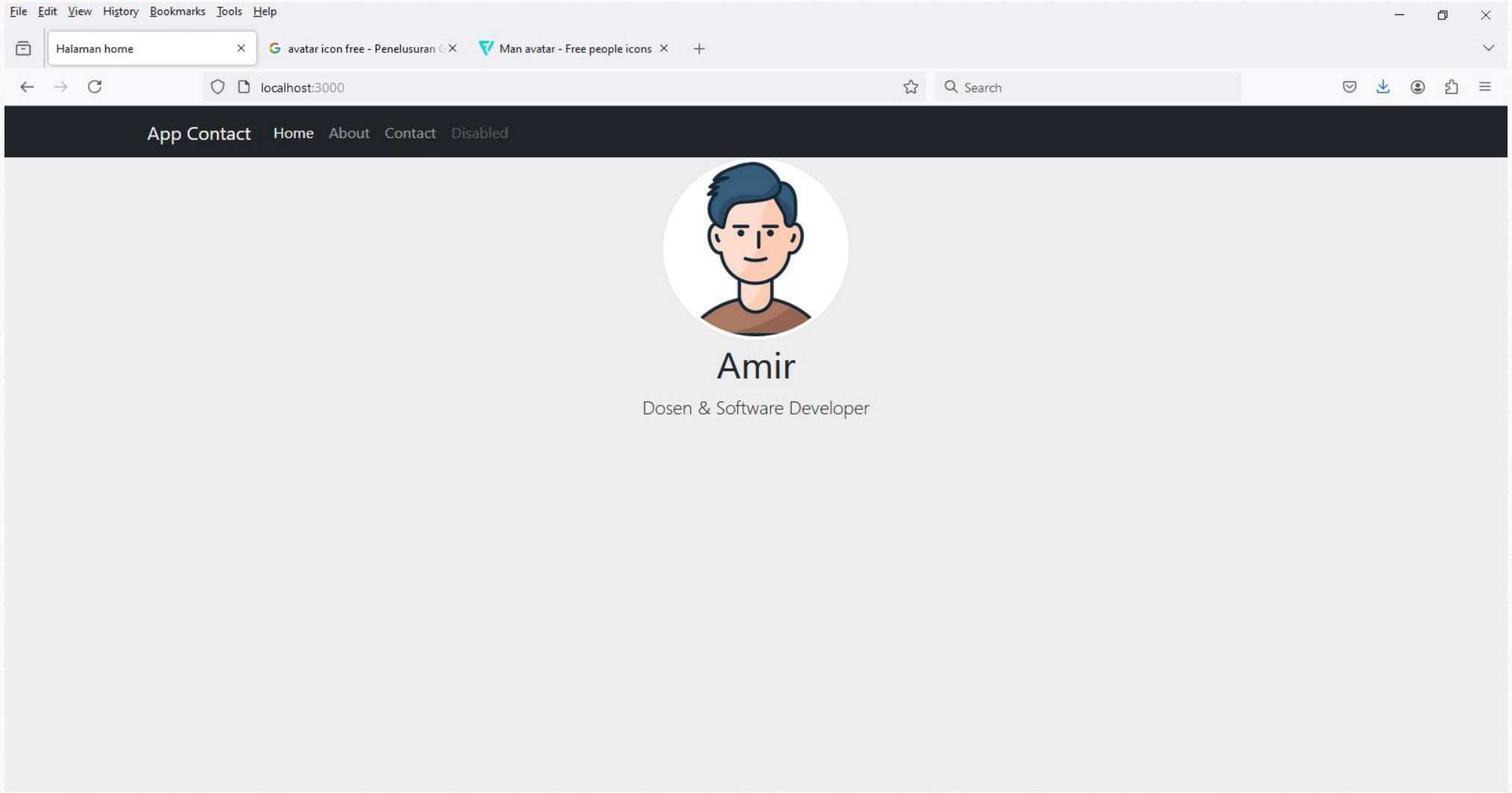
Latihan 2
dynamic web app

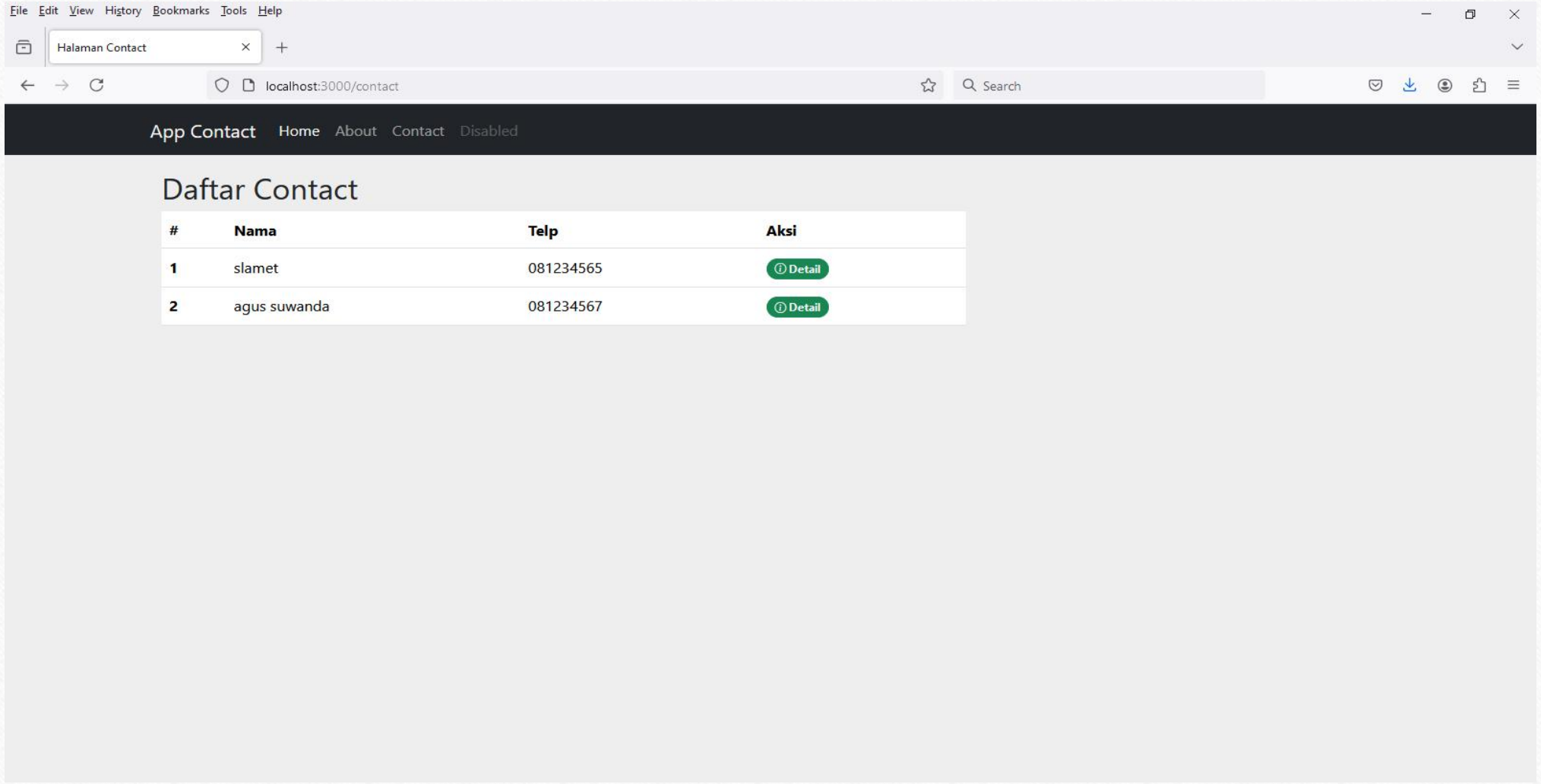
- Struktur project
- Source code ada di file latihan1_nodejs.pdf

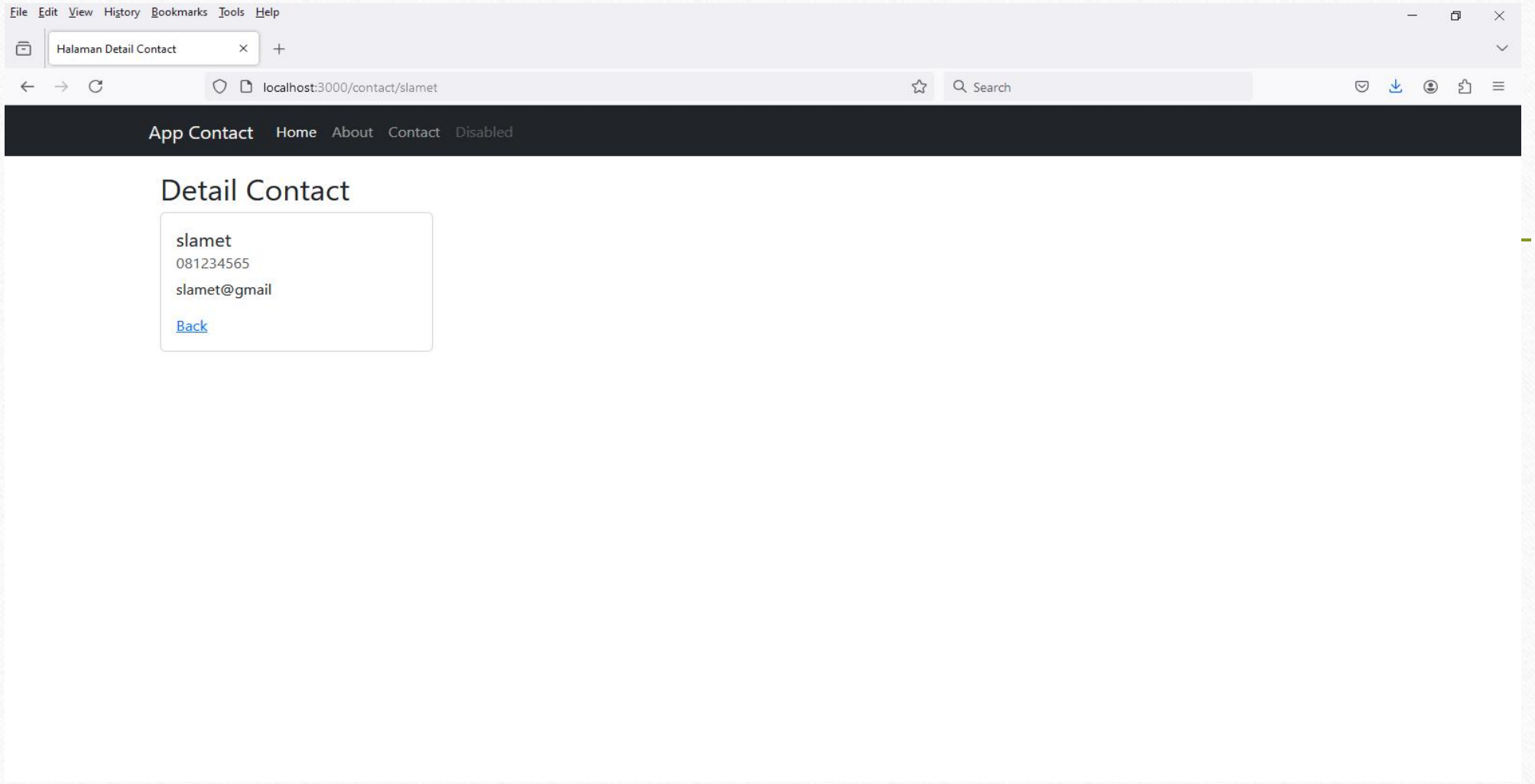


Run Program

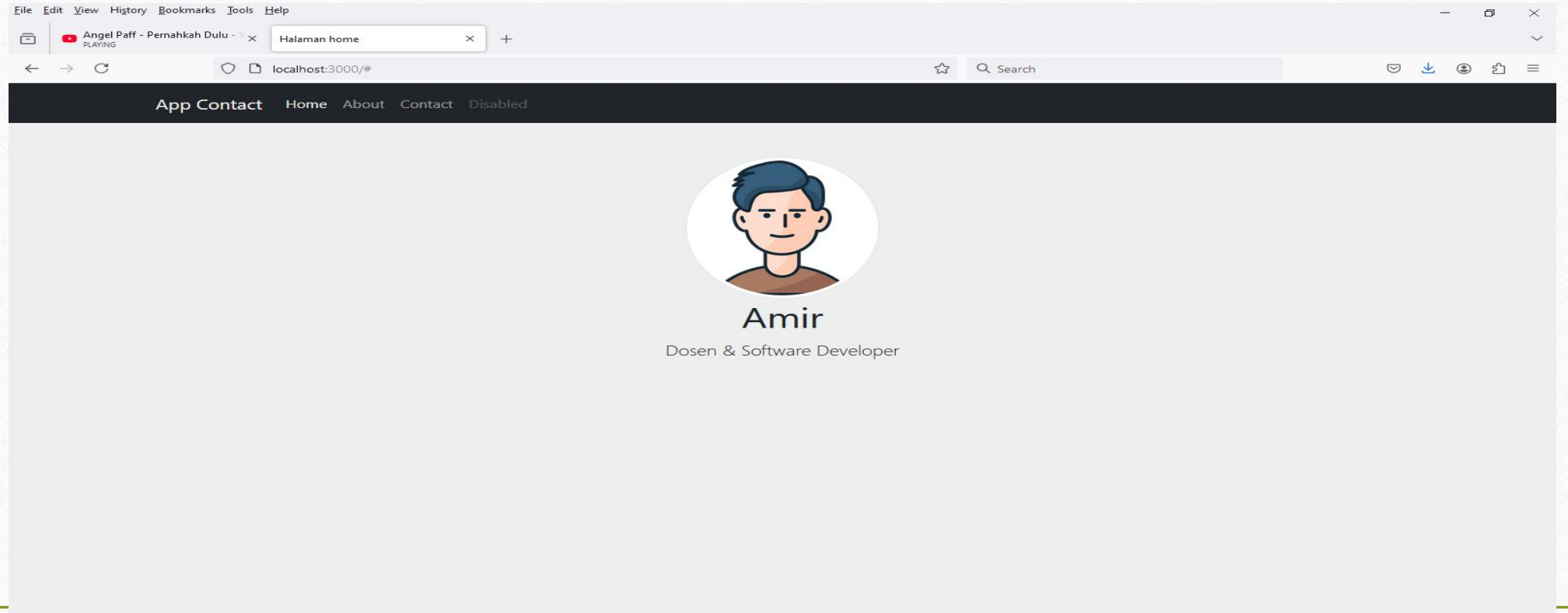
- Buat folder project dan masuk ke folder tsb:
- Pada commandline ketikkan:
- npm install -g nodemon
- npm install express –save
- npm install ejs
- npm install express-ejs-layouts

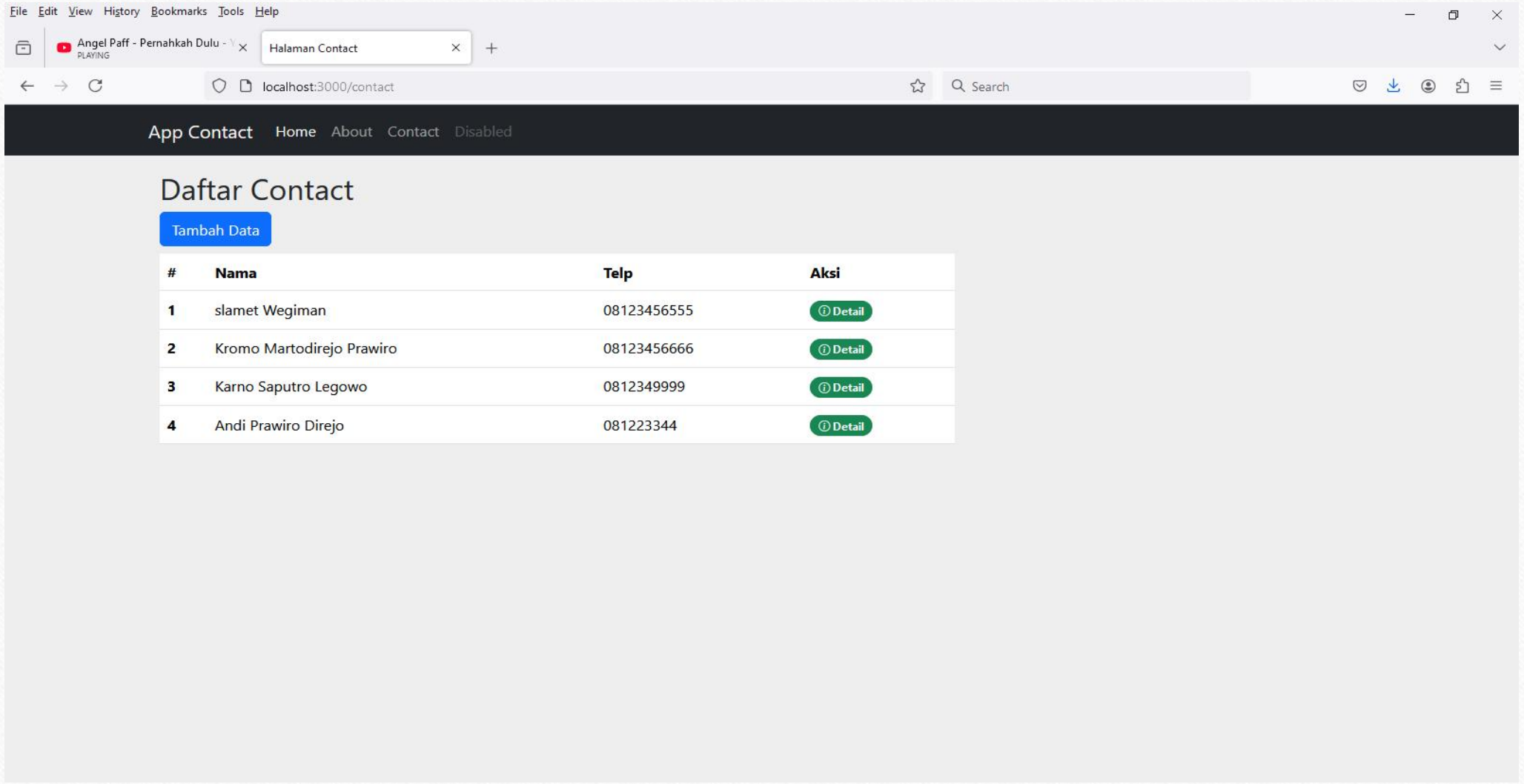

File Edit View History Bookmarks Tools Help
Halaman home
avatar icon free - Penelusuran
Man avatar - Free people icons
localhost:3000
Search
App Contact
Home
About
Contact
Disabled
Amir
Dosen & Software Developer

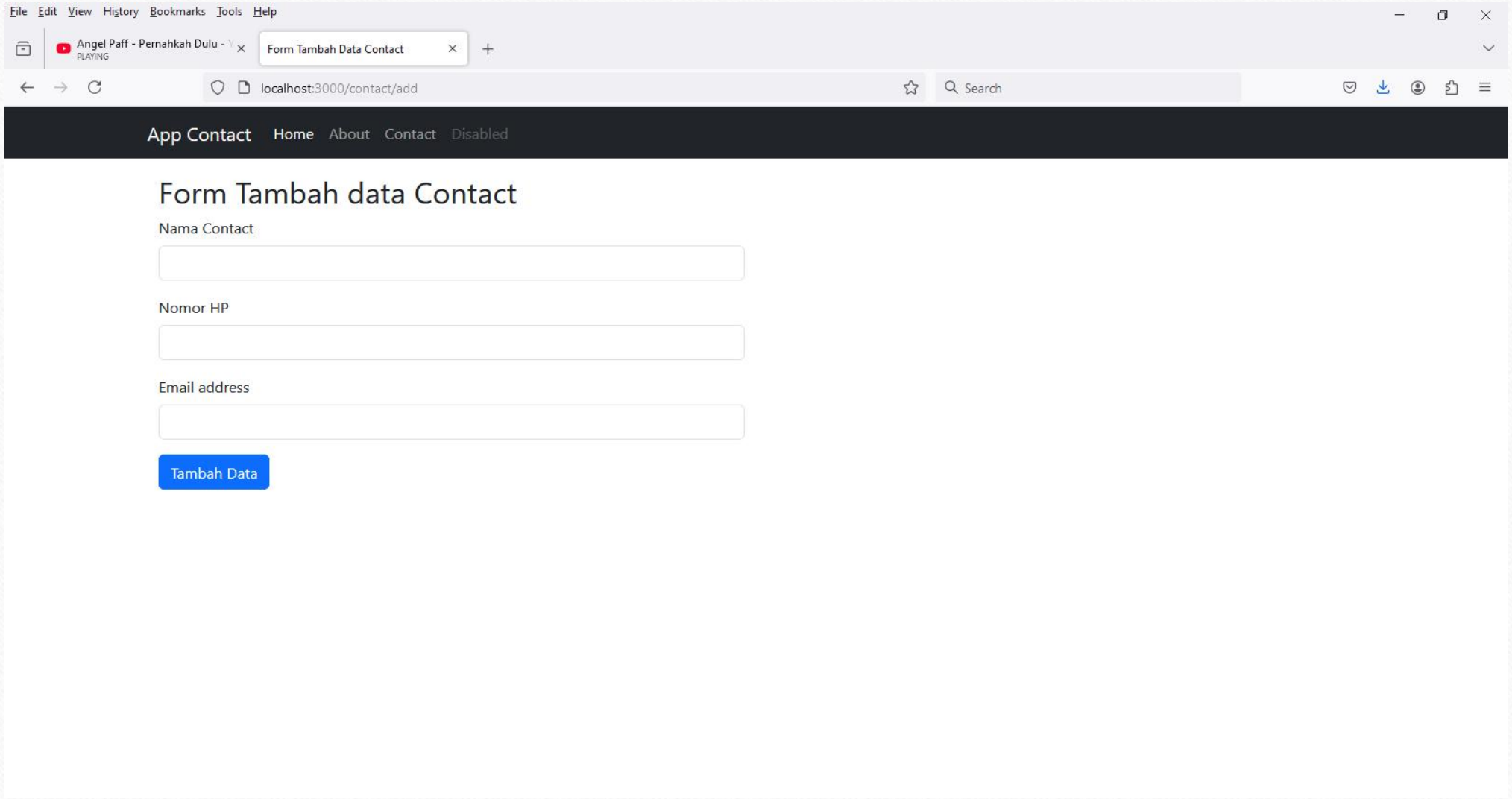

File Edit View History Bookmarks Tools Help
Halaman Contact
localhost:3000/contact
Search
App Contact
Home
About
Contact
Disabled
Daftar Contact
Nama Telp Aksi
1 slamet 081234565 Detail
2 agus suwanda 081234567 Detail

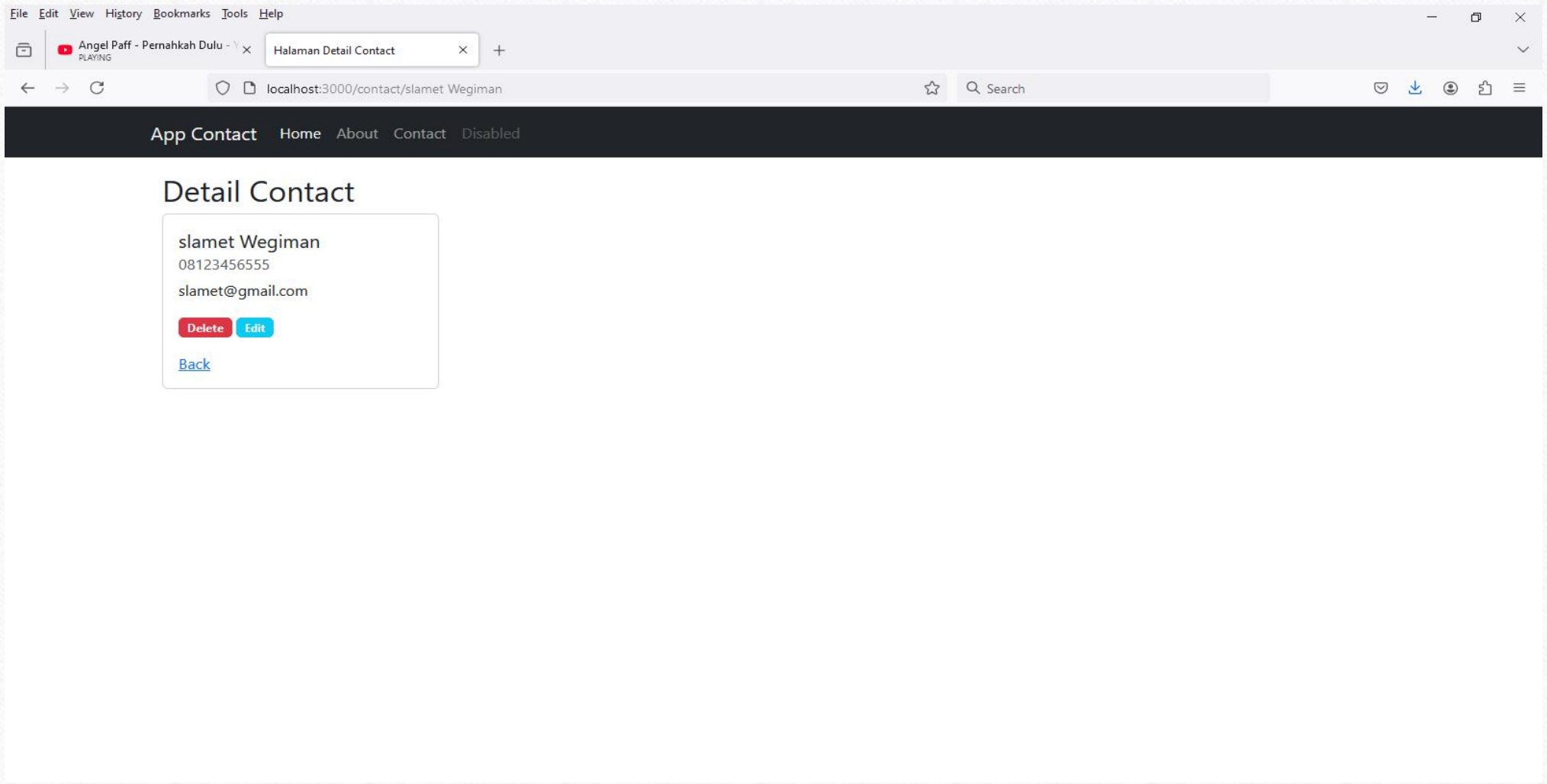

File Edit View History Bookmarks Tools Help
Halaman Detail Contact
localhost:3000/contact/slamet
Search
App Contact
Home
About
Contact
Disabled
Detail Contact
slamet
081234565
slamet@gmail
Back

Latihan 3
CRUD web app




File Edit View History Bookmarks Tools Help
Angel Paff - Pernahkah Dulu -
PLAYING
Halaman Contact
localhost:3000/contact
Search
App Contact
Home
About
Contact
Disabled
Daftar Contact
Tambah Data
Nama Telp Aksi
1 slamet Wegiman 08123456555 Detail
2 Kromo Martodirejo Prawiro 08123456666 Detail
3 Karno Saputro Legowo 0812349999 Detail
4 Andi Prawiro Direjo 081223344 Detail


File Edit View History Bookmarks Tools Help
Angel Paff - Pernahkah Dulu -
PLAYING
Form Tambah Data Contact
localhost:3000/contact/add
Search
App Contact
Home
About
Contact
Disabled
Form Tambah data Contact
Nama Contact
Nomor HP
Email address
Tambah Data


File Edit View History Bookmarks Tools Help
Angel Paff - Pernahkah Dulu -
PLAYING
Halaman Detail Contact
localhost:3000/contact/slamet Wegiman
Search
App Contact
Home
About
Contact
Disabled
Detail Contact
slamet Wegiman
08123456555
slamet@gmail.com
Delete
Edit
Back