Docker Swarm :-

Code :-

Maven Spring Code :- {backend]

application.properties :-

server.port=9090

ProductBackendApplication.java :-

package com;

import org.springframework.boot.SpringApplication;

import org.springframework.boot.autoconfigure.SpringBootApplication;

@SpringBootApplication(scanBasePackages = "com")

public class ProductBackendApplication {

public static void main(String[] args) {

SpringApplication.run(ProductBackendApplication.class, args);

System.out.println("Server Started ....");

}

}

ProductController.java :-

**package**com.controller;

**import**java.util.ArrayList;

**import**java.util.List;

**import**org.springframework.http.MediaType;

**import**org.springframework.web.bind.annotation.CrossOrigin;

**import**org.springframework.web.bind.annotation.GetMapping;

**import**org.springframework.web.bind.annotation.RequestMapping;

**import**org.springframework.web.bind.annotation.RestController;

**import**com.bean.Product;

@RestController

@RequestMapping("product")

@CrossOrigin //It help to enable the resources

**publicclass**ProductController {

@GetMapping(value = "allProduct",produces = MediaType.***APPLICATION\_JSON\_VALUE***)

**public** List<Product>getAllProduct(){

List<Product>listofProduct = **new**ArrayList<Product>();

listofProduct.add(**new** Product(1, "TV", 20000, "data:image/png;base64,"));

listofProduct.add(**new** Product(1, "Computer", 10000, "https://encrypted-tbn1.gstatic.com/shopping?q=tbn:ANd9GcThlAjfwekVFuVXxPlqGVflSMQczaLfpEtxqpIPbOpJePdXVBksGswRI8HPdeb6T1UtWJSCBRuBcQ&usqp=CAc"));

listofProduct.add(**new** Product(1, "Laptop", 100000, "https://encrypted-tbn3.gstatic.com/shopping?q=tbn:ANd9GcStyUqmRZj9nV--4CUeggkEaxPF60K\_1GxmrZVqyq0H1Smdy15bzLd13-E8sB9Yrb3SlzBeQWQ-Tg&usqp=CAc"));

listofProduct.add(**new** Product(1, "Hard Drive", 2000, "data:image/jpeg;base64,"));

**return**listofProduct;

}

}

Product.java :-

**package**com.bean;

**publicclass** Product {

**privateint**pid;

**private** String pname;

**privatefloat**price;

**private** String url;

**publicint**getPid() {

**return**pid;

}

**publicvoid**setPid(**int**pid) {

**this**.pid = pid;

}

**public** String getPname() {

**return**pname;

}

**publicvoid**setPname(String pname) {

**this**.pname = pname;

}

**publicfloat**getPrice() {

**return**price;

}

**publicvoid**setPrice(**float**price) {

**this**.price = price;

}

**public** String getUrl() {

**return**url;

}

**publicvoid**setUrl(String url) {

**this**.url = url;

}

@Override

**public** String toString() {

**return**"Product [pid=" + pid + ", pname=" + pname + ", price=" + price + ", url=" + url + "]";

}

**public** Product(**int**pid, String pname, **float**price, String url) {

**super**();

**this**.pid = pid;

**this**.pname = pname;

**this**.price = price;

**this**.url = url;

}

}

Mvn package

Create a Spring Maven Docker Image command :-

And add a Dockerfile code :-

sudo docker build -t product-backend-app . -f Dockerfile //ubuntu command

docker build -t product-backend-app . -f Dockerfile

Angular Code :- {Frontend]

ng create a

app.component.html :-

<app-product></app-product>

product.component.ts :-

import { Component, OnInit } from '@angular/core';

import { Product } from '../product';

import { ProductService } from '../product.service';

@Component({

selector: 'app-product',

templateUrl: './product.component.html',

styleUrls: ['./product.component.css']

})

export class ProductComponent implements OnInit {

products:Array<Product>=[];

constructor(public ps:ProductService) { }

ngOnInit(): void {

this.loadAllProduct();

}

loadAllProduct(){

this.ps.loadAllProduct().subscribe({

next:(result:any)=>this.products = result,

error:(error:any)=>console.log(error),

complete:()=>console.log("completed"),

})

}

}

product.component.html :-

import { Component, OnInit } from '@angular/core';

import { Product } from '../product';

import { ProductService } from '../product.service';

@Component({

selector: 'app-product',

templateUrl: './product.component.html',

styleUrls: ['./product.component.css']

})

export class ProductComponent implements OnInit {

products:Array<Product>=[];

constructor(public ps:ProductService) { }

ngOnInit(): void {

this.loadAllProduct();

}

loadAllProduct(){

this.ps.loadAllProduct().subscribe({

next:(result:any)=>this.products = result,

error:(error:any)=>console.log(error),

complete:()=>console.log("completed"),

})

}

Product.ts :-

exportclassProduct {

    constructor(publicpid:number,

        publicpname:string,

        publicprice:number,

        publicurl:string

        ){}

}

Product.service.ts :-

import { HttpClient, HttpClientModule } from'@angular/common/http';

import { Injectable } from'@angular/core';

import { Observable } from'rxjs';

import { Product } from'./product';

@Injectable({

  providedIn:'root'

})

exportclassProductService {

  constructor(publichttp:HttpClient) { }

  loadAllProduct():Observable<Product[]>{

    returnthis.http.get<Product[]>("http://localhost:9090/product/allProduct");

  }

}

App.module.ts :-

import { NgModule } from'@angular/core';

import { BrowserModule } from'@angular/platform-browser';

import { AppRoutingModule } from'./app-routing.module';

import { AppComponent } from'./app.component';

import { ProductComponent } from'./product/product.component';

import { HttpClientModule } from'@angular/common/http'

@NgModule({

  declarations: [

    AppComponent,

    ProductComponent

  ],

  imports: [

    BrowserModule,

    AppRoutingModule,HttpClientModule

  ],

  providers: [],

  bootstrap: [AppComponent]

})

exportclassAppModule { }

}

ng build

Command to create a image :-

Dockerfile code :-

FROM nginx

COPY dist/product-frontend/ /usr/share/nginx/html

docker build -t product-frontend-app . -f Dockerfile

Create a Docker compose to create a Docker Swarm ,and docker interconnected :-

docker-compose.yml Code :-

version: "3"

services:

product-backend:

image: product-backend-app

ports:

- "9191:9191"

networks:

- product-management-system

product-frontend:

image: product-frontend-app

ports:

- "80:80"

depends\_on:

- product-backend

networks:

- product-management-system

networks:

product-management-system

Start Docker -compose :-

docker-compose up