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
public class 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,iVBORw0KGgoAAAANSUhEUgAAALcAAACgCAMAAAB5Yw2OAAACNFBMVE
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```
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lKUClKUClKUClKUClKUClKUClKUClKUClKUClKUClKUClKUH/2Q=="));
          return listofProduct;
     }
}
```

Product.java :-

```
package com.bean;

public class Product {
private int pid;
private String pname;
private float price;
private String url;
public int getPid() {
     return pid;
}
public void setPid(int pid) {
     this.pid = pid;
}
public String getPname() {
     return pname;
}
public void setPname(String pname) {
     this.pname = pname;
}
public float getPrice() {
     return price;
}
public void setPrice(float price) {
     this.price = price;
}
public String getUrl() {
     return url;
}
public void 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   :-

```
export class Product {
    constructor(public pid:number,
        public pname:string,
        public price:number,
        public url: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'
})
export class ProductService {

  constructor(public http:HttpClient) { }

  loadAllProduct():Observable<Product[]>{
    return
this.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]
})
export class AppModule { }
```

}

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 :-

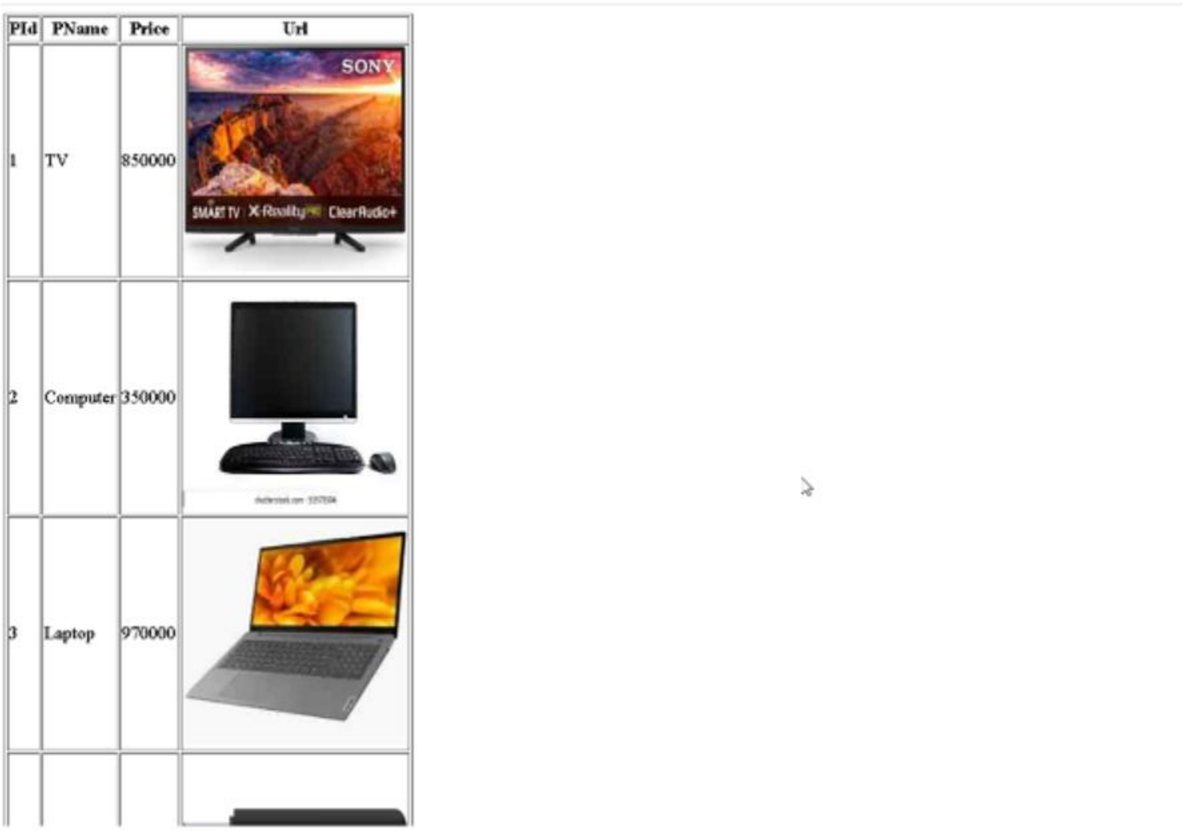
docker-compose.yml Code :-

```
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
```

SS:-



PId	PName	Price	Url
1	TV	850000	
2	Computer	350000	
3	Laptop	970000	