

## PROJECT DEVELOPMENT PHASE

### SPRINT 4

Date	19 November 2022
Team ID	PNT2022TMID54054
Project Name	Smart Fashion Recommender Application
Maximum Marks	20 Marks

#### **SPRINT 4:**

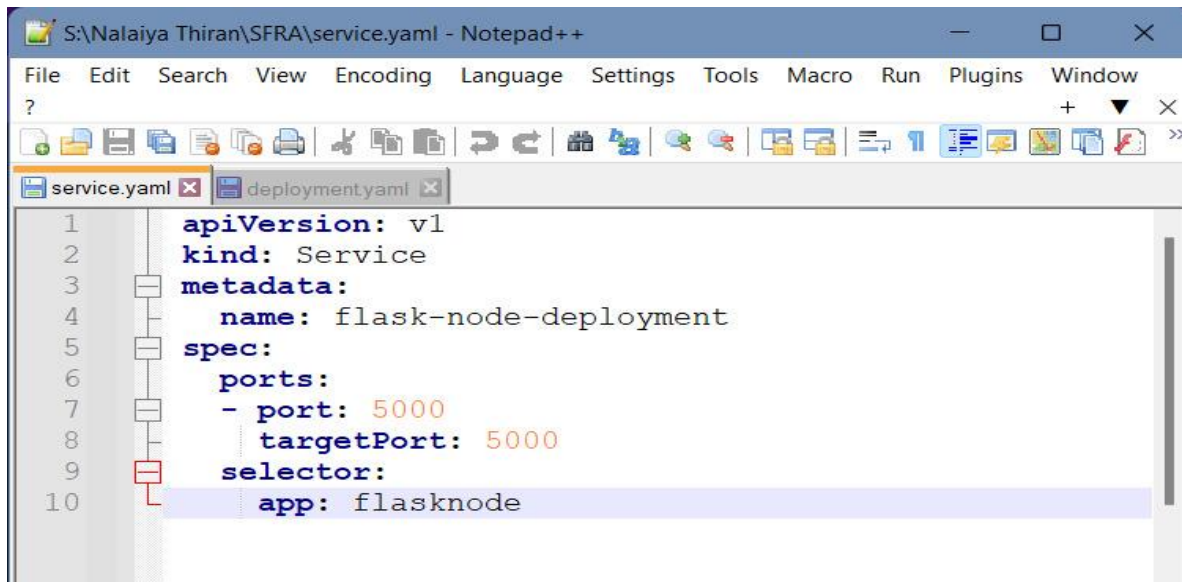
1. Containerize The Application
2. Deployment The Application

#### **CONTAINERIZE & DEPLOYMENT OF APPLICATION:**

1. IBM Cloud
2. Docker
3. Kubernetes

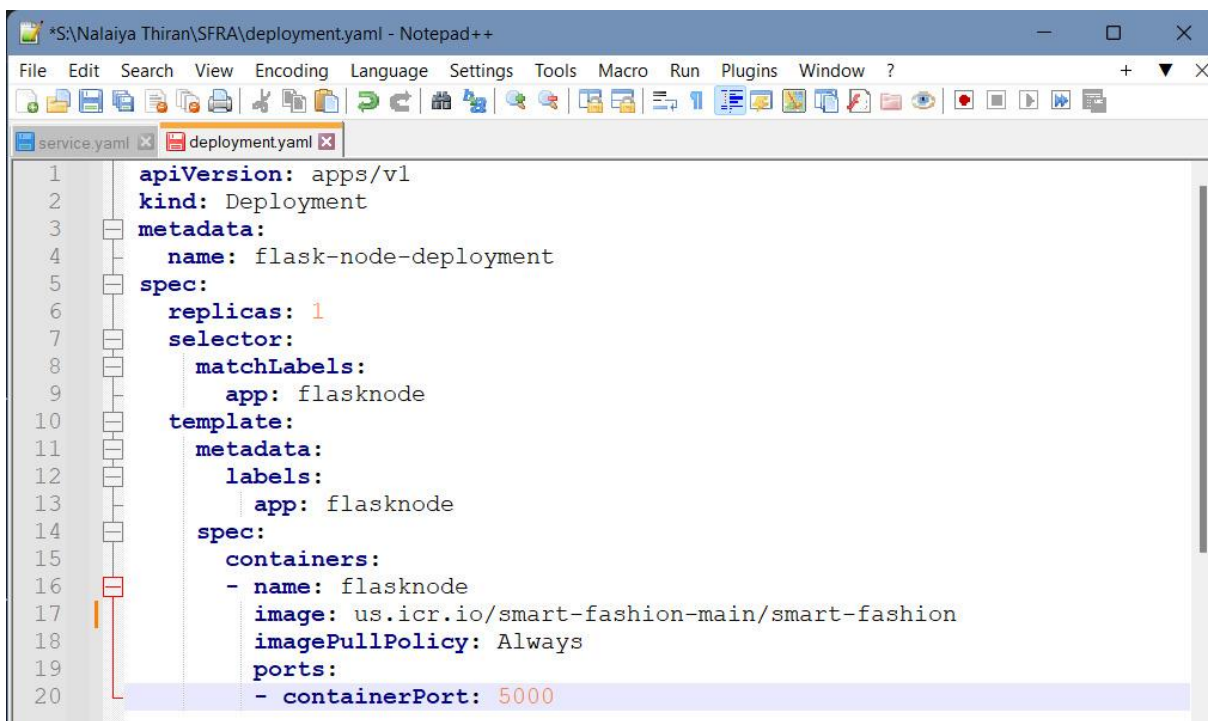
## CODE

### FILE 1: Service.yaml

A screenshot of a Notepad++ window titled "S:\Nalaiya Thiran\SFRA\service.yaml - Notepad++". The window shows the content of a YAML file named "service.yaml". The file has 10 lines of code. The first line is "apiVersion: v1". The second line is "kind: Service". The third line is "metadata:". The fourth line is "name: flask-node-deployment". The fifth line is "spec:". The sixth line is "ports:". The seventh line is "- port: 5000". The eighth line is "targetPort: 5000". The ninth line is "selector:". The tenth line is "app: flasknode". The file is saved in the "S:\Nalaiya Thiran\SFRA" directory. The window also shows a tab for "deployment.yaml" which is currently not active.

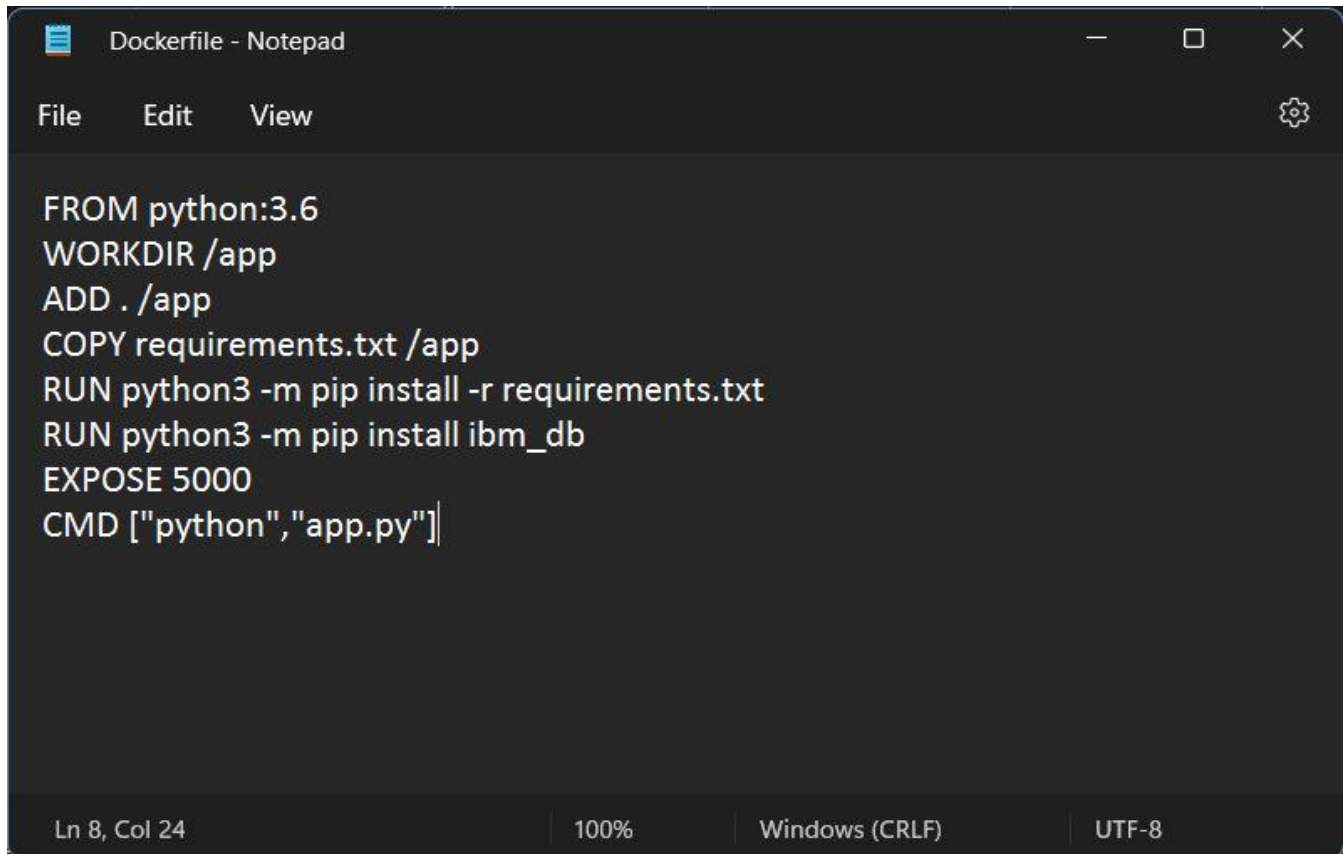
```
1 apiVersion: v1
2 kind: Service
3 metadata:
4   name: flask-node-deployment
5 spec:
6   ports:
7     - port: 5000
8     targetPort: 5000
9   selector:
10    app: flasknode
```

### FILE 2: Deployment.yaml

A screenshot of a Notepad++ window titled "\*S:\Nalaiya Thiran\SFRA\deployment.yaml - Notepad++". The window shows the content of a YAML file named "deployment.yaml". The file has 20 lines of code. The first line is "apiVersion: apps/v1". The second line is "kind: Deployment". The third line is "metadata:". The fourth line is "name: flask-node-deployment". The fifth line is "spec:". The sixth line is "replicas: 1". The seventh line is "selector:". The eighth line is "matchLabels:". The ninth line is "app: flasknode". The tenth line is "template:". The eleventh line is "metadata:". The twelfth line is "labels:". The thirteenth line is "app: flasknode". The fourteenth line is "spec:". The fifteenth line is "containers:". The sixteenth line is "- name: flasknode". The seventeenth line is "image: us.icr.io/smart-fashion-main/smart-fashion". The eighteenth line is "imagePullPolicy: Always". The nineteenth line is "ports:". The twentieth line is "- containerPort: 5000". The file is saved in the "S:\Nalaiya Thiran\SFRA" directory. The window also shows a tab for "service.yaml" which is currently not active.

```
1 apiVersion: apps/v1
2 kind: Deployment
3 metadata:
4   name: flask-node-deployment
5 spec:
6   replicas: 1
7   selector:
8     matchLabels:
9       app: flasknode
10  template:
11    metadata:
12      labels:
13        app: flasknode
14    spec:
15      containers:
16        - name: flasknode
17          image: us.icr.io/smart-fashion-main/smart-fashion
18          imagePullPolicy: Always
19        ports:
20          - containerPort: 5000
```

### FILE 3: Docker File

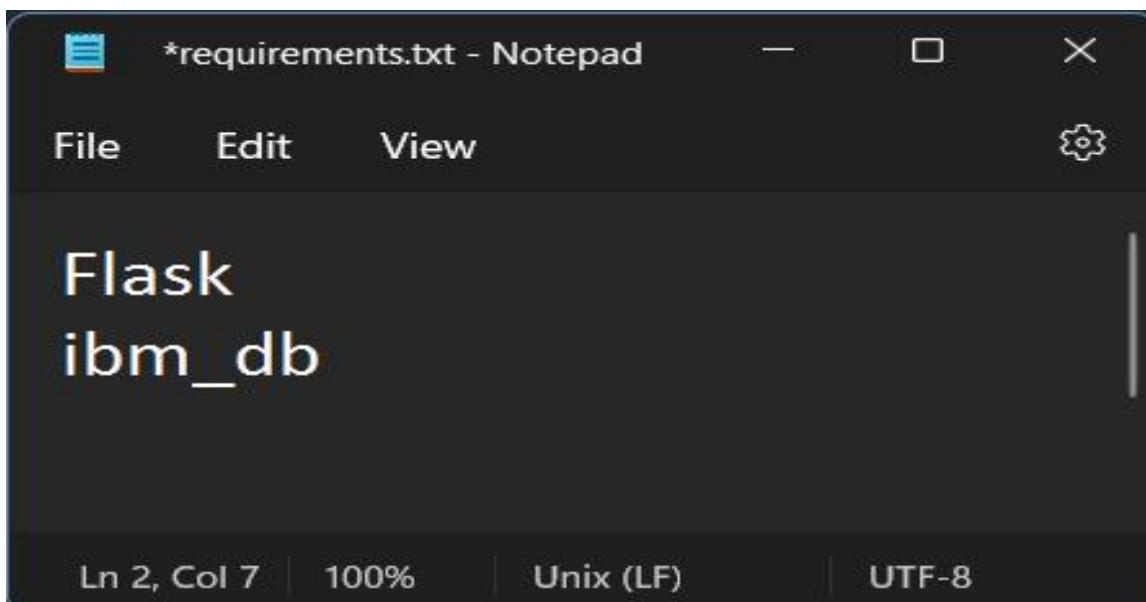


A screenshot of a Notepad window titled "Dockerfile - Notepad". The window has a menu bar with "File", "Edit", and "View". The text content is as follows:

```
FROM python:3.6
WORKDIR /app
ADD . /app
COPY requirements.txt /app
RUN python3 -m pip install -r requirements.txt
RUN python3 -m pip install ibm_db
EXPOSE 5000
CMD ["python","app.py"]
```

The status bar at the bottom shows "Ln 8, Col 24", "100%", "Windows (CRLF)", and "UTF-8".

### FILE 4: Requirements.txt



A screenshot of a Notepad window titled "\*requirements.txt - Notepad". The window has a menu bar with "File", "Edit", and "View". The text content is as follows:

```
Flask
ibm_db
```

The status bar at the bottom shows "Ln 2, Col 7", "100%", "Unix (LF)", and "UTF-8".

# TEST SCENARIOS: CONTAINERIZE & DEPLOYMENT OF APPLICATION

## 1. IBM Cloud Login

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.22000.1281]
(c) Microsoft Corporation. All rights reserved.

S:\Nalaiya Thiran\SFRA>ibmcloud login
API endpoint: https://cloud.ibm.com
Region: us-south

Email> joselouieshereenk.ug19.it@francixavier.ac.in

Password>
Authenticating...
OK

Targeted account Jose Louie Shereen K's Account (cf6eb87f28f44a448eea06d7ae0894bd)

API endpoint:      https://cloud.ibm.com
Region:            us-south
User:              joselouieshereenk.ug19.it@francixavier.ac.in
Account:           Jose Louie Shereen K's Account (cf6eb87f28f44a448eea06d7ae0894bd)
Resource group:    No resource group targeted, use 'ibmcloud target -g RESOURCE_GROUP'
CF API endpoint:
Org:
Space:
```

## 2. Docker Login

```
S:\Nalaiya Thiran\SFRA>docker login
Authenticating with existing credentials...
Login Succeeded

Logging in with your password grants your terminal complete access to your account.
For better security, log in with a limited-privilege personal access token. Learn more at https://docs.docker.com/go/access-tokens/

S:\Nalaiya Thiran\SFRA>ibmcloud cr login
Logging 'docker' in to 'us.icr.io'...
Logged in to 'us.icr.io'.

OK
```

### 3. Namespace of Container Registry

The screenshot shows the IBM Cloud Container Registry interface. The left sidebar has a 'Namespaces' link highlighted. The main content area is titled 'Namespaces' and shows a table with one namespace: 'smart-fashion-main'. The table columns are Name, Resource group, Repository count, Image count, and Retention policy. The 'smart-fashion-main' namespace has a 'Default' resource group, 1 repository, 1 image, and a retention policy of 'Retain all images'.

Name	Resource group	Repository count	Image count	Retention policy
smart-fashion-main	Default	1	1	Retain all images

### 4. Repositories of Container Registry

The screenshot shows the IBM Cloud Container Registry interface. The left sidebar has a 'Repositories' link highlighted. The main content area is titled 'Repositories' and shows a table with one repository: 'smart-fashion'. The table columns are Name, Image count, Namespace, and Last updated. The 'smart-fashion' repository has 1 image, is in the 'smart-fashion-main' namespace, and was last updated '3 hours ago'.

Name	Image count	Namespace	Last updated
smart-fashion us.icr.io/smart-fashion-main/smart-fashion	1	smart-fashion-main	3 hours ago

## 5. Docker on Command Prompt

```
C:\Windows\System32\cmd.exe

S:\Nalaiya Thiran\SFRA>docker

Usage:  docker [OPTIONS] COMMAND

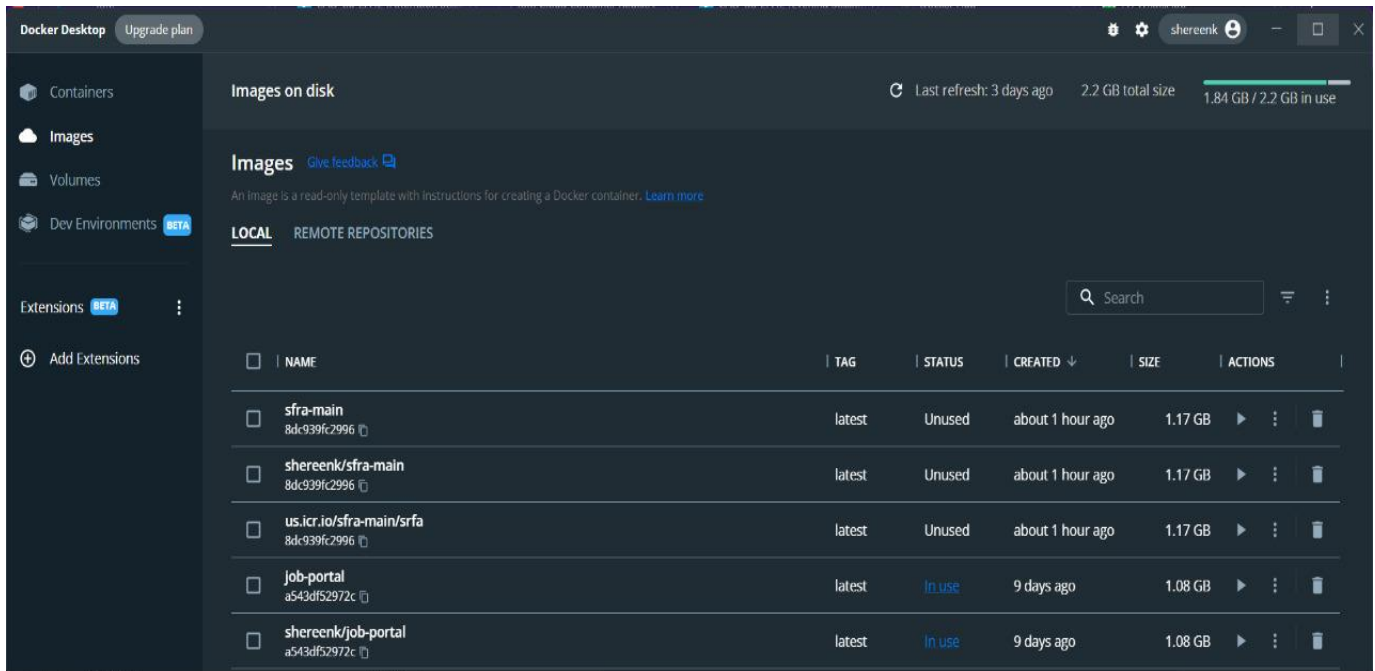
A self-sufficient runtime for containers

Options:
  --config string      Location of client config files (default
                        "C:\\Users\\Dell\\.docker")
  -c, --context string  Name of the context to use to connect to the
                        daemon (overrides DOCKER_HOST env var and
                        default context set with "docker context use")
  -D, --debug           Enable debug mode
  -H, --host list       Daemon socket(s) to connect to
  -l, --log-level string Set the logging level
                        ("debug"|"info"|"warn"|"error"|"fatal")
                        (default "info")
  --tls                Use TLS; implied by --tlsverify
  --tlscacert string    Trust certs signed only by this CA (default
                        "C:\\Users\\Dell\\.docker\\ca.pem")
  --tlscert string      Path to TLS certificate file (default
                        "C:\\Users\\Dell\\.docker\\cert.pem")
  --tlskey string       Path to TLS key file (default
                        "C:\\Users\\Dell\\.docker\\key.pem")
  --tlsverify           Use TLS and verify the remote
  -v, --version         Print version information and quit

Management Commands:
  builder      Manage builds
  buildx*      Docker Buildx (Docker Inc., v0.9.1)
  compose*     Docker Compose (Docker Inc., v2.12.1)
  config       Manage Docker configs
  container    Manage containers
  context       Manage contexts
  dev*         Docker Dev Environments (Docker Inc., v0.0.3)
  extension*   Manages Docker extensions (Docker Inc., v0.2.13)
  image        Manage images
  manifest     Manage Docker image manifests and manifest lists
  network      Manage networks
  node         Manage Swarm nodes
  plugin       Manage plugins
  sbom*        View the packaged-based Software Bill Of Materials (SBOM) for an image (Anchore Inc., 0.6.0)
  scan*        Docker Scan (Docker Inc., v0.21.0)
  secret       Manage Docker secrets
  service      Manage services
  stack        Manage Docker stacks
  swarm        Manage Swarm
  system       Manage Docker
```



## 6. Docker Desktop



## 7. Docker Build Function of Application

```
C:\ Select C:\Windows\System32\cmd.exe

S:\Nalaiya Thiran\SFRA>docker build -t sfra-main .
[+] Building 685.6s (12/12) FINISHED
=> [internal] load build definition from Dockerfile                                0.8s
=> => transferring dockerfile: 32B                                              0.3s
=> [internal] load .dockerignore                                                0.7s
=> => transferring context: 2B                                                  0.3s
=> [internal] load metadata for docker.io/library/python:3.6                  6.2s
=> [auth] library/python:pull token for registry-1.docker.io                  0.0s
=> [internal] load build context                                              32.5s
=> => transferring context: 91.31MB                                           32.0s
=> [1/6] FROM docker.io/library/python:3.6@sha256:f8652afaf88c25f0d22354d547d892591067aa4026a7fa9a6819df9f300af6  0.0s
=> CACHED [2/6] WORKDIR /app                                                  0.0s
=> [3/6] ADD . /app                                                           62.5s
=> [4/6] COPY requirements.txt /app                                           2.4s
=> [5/6] RUN python3 -m pip install -r requirements.txt                      426.6s
=> [6/6] RUN python3 -m pip install ibm_db                                   53.6s
=> exporting to image                                                         96.4s
=> => exporting layers                                                         96.1s
=> => writing image sha256:8dc939fc2996315bd6bb1d63b078c483bc7219992843069d449afb4d8c8cbef3  0.0s
=> => naming to docker.io/library/sfra-main                                   0.0s

S:\Nalaiya Thiran\SFRA>docker images
REPOSITORY          IMAGE ID            CREATED             SIZE              TAG
sfra-main           8dc939fc2996       5 minutes ago      1.17GB            latest
job-portal          a543df52972c       8 days ago         1.08GB            latest
shereenk/job-portal a543df52972c       8 days ago         1.08GB            latest
```

## 8. Docker Push Function of Application

```
C:\Windows\System32\cmd.exe

S:\Nalaiya Thiran\SFRA>docker tag smart-fashion-main us.icr.io/smart-fashion-main/smart-fashion

S:\Nalaiya Thiran\SFRA>docker push us.icr.io/smart-fashion-main/smart-fashion
Using default tag: latest
The push refers to repository [us.icr.io/smart-fashion-main/smart-fashion]
fffd1213cee: Pushed
45ba523ae21a: Pushed
38473b22b3cd: Pushed
a704c02a442e: Pushed
6c89d4c97249: Pushed
aa4c808c19f6: Pushed
8ba9f690e8ba: Pushed
3e607d59ef9f: Pushed
1e18e7e1fcc2: Pushed
c3a0d593ed24: Pushed
26a504e63be4: Pushed
8bf42db0de72: Pushed
31892cc314cb: Pushed
11936051f93b: Pushed
latest: digest: sha256:6e99672f577f2dfb3a30db173ac0861678545a02420b3fa513c92fcac44b1e41 size: 3263

S:\Nalaiya Thiran\SFRA>ibmcloud cr image-list
Listing images...

Repository                                     Tag      Digest                                Namespace      Created      Size      Security status
us.icr.io/smart-fashion-main/smart-fashion    latest   6e99672f577f                          smart-fashion-main  2 hours ago  519 MB   -

OK

S:\Nalaiya Thiran\SFRA>
```

## 9. Docker Pull Function of Application

```
C:\Windows\System32\cmd.exe

S:\Nalaiya Thiran\SFRA>docker tag smart-fashion-main us.icr.io/smart-fashion-main/smart-fashion

S:\Nalaiya Thiran\SFRA>docker push us.icr.io/smart-fashion-main/smart-fashion
Using default tag: latest
The push refers to repository [us.icr.io/smart-fashion-main/smart-fashion]
fffd1213cee: Pushed
45ba523ae21a: Pushed
38473b22b3cd: Pushed
a704c02a442e: Pushed
6c89d4c97249: Pushed
aa4c808c19f6: Pushed
8ba9f690e8ba: Pushed
3e607d59ef9f: Pushed
1e18e7e1fcc2: Pushed
c3a0d593ed24: Pushed
26a504e63be4: Pushed
8bf42db0de72: Pushed
31892cc314cb: Pushed
11936051f93b: Pushed
latest: digest: sha256:6e99672f577f2dfb3a30db173ac0861678545a02420b3fa513c92fcac44b1e41 size: 3263

S:\Nalaiya Thiran\SFRA>ibmcloud cr image-list
Listing images...

Repository                                     Tag      Digest                                Namespace      Created      Size      Security status
us.icr.io/smart-fashion-main/smart-fashion    latest   6e99672f577f                          smart-fashion-main  2 hours ago  519 MB   -

OK

S:\Nalaiya Thiran\SFRA>docker pull us.icr.io/smart-fashion-main/smart-fashion
Using default tag: latest
latest: Pulling from smart-fashion-main/smart-fashion
Digest: sha256:6e99672f577f2dfb3a30db173ac0861678545a02420b3fa513c92fcac44b1e41
Status: Image is up to date for us.icr.io/smart-fashion-main/smart-fashion:latest
us.icr.io/smart-fashion-main/smart-fashion:latest
```