

Introduction to Cloud Computing Final Project - Guess the Capital



Estimated time needed: 30 minutes

In this final project, you will be deploying "Guess the Capital" on the cloud. It is a web application that asks you to guess the capital of a country from 4 choices.

You will use the source code and the steps provided to practice hands-on how an application can be developed and deployed on the cloud.

Objectives:

1. Clone the source code
2. Build Docker image
3. Deploy on Docker
4. Tag and Push image to IBM Cloud
5. Deploy on IBM Code Engine

Background

Docker

Containers are isolated environments that package applications and their dependencies. Each container runs as an isolated process on the host operating system.

[Docker](#) is an open-source platform that enables developers to automate the deployment and management of applications inside lightweight, isolated containers.

IBM Cloud

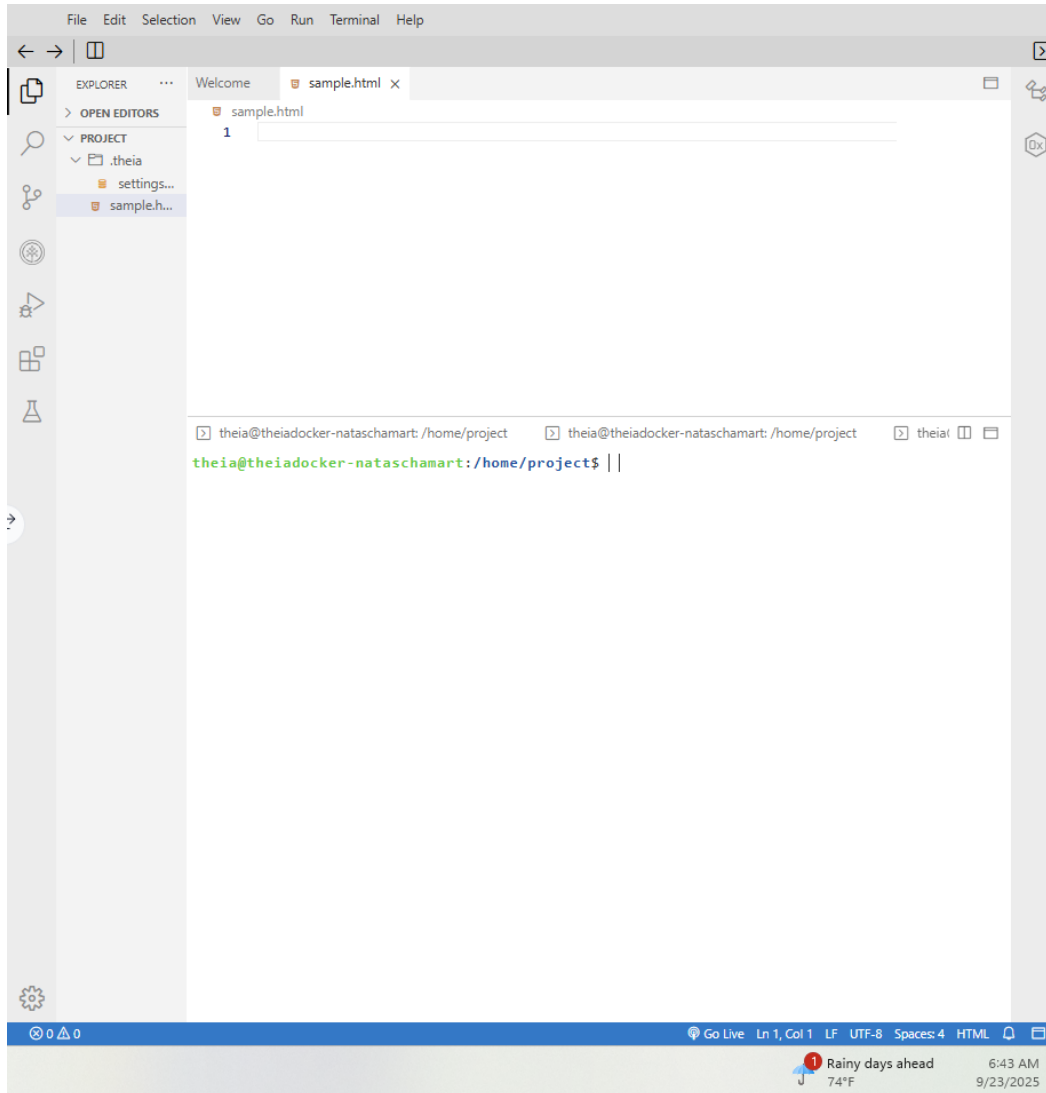
[IBM Cloud](#) is a cloud computing platform and suite of cloud-based services offered by IBM. It provides a range of infrastructure, platform, and software services to support the development, deployment, and management of various types of applications and workloads in the cloud.

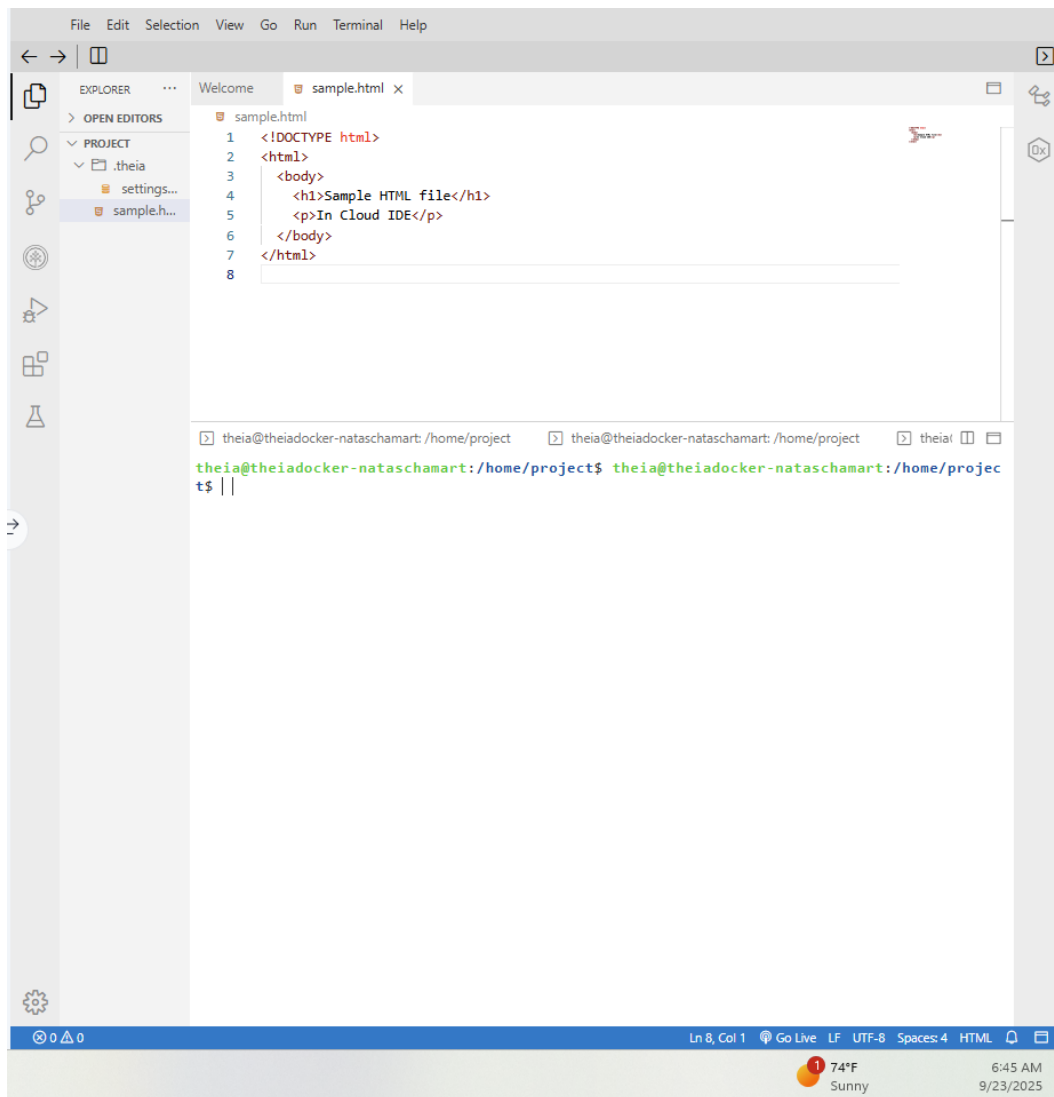
IBM Code Engine

[IBM Cloud Code Engine](#) is a serverless compute platform provided by IBM Cloud. It allows developers to deploy and run containerized applications without the need to manage the

underlying infrastructure. Abstracting away the complexities of server provisioning, scaling, and maintenance, enabling developers to focus on writing code and building applications.

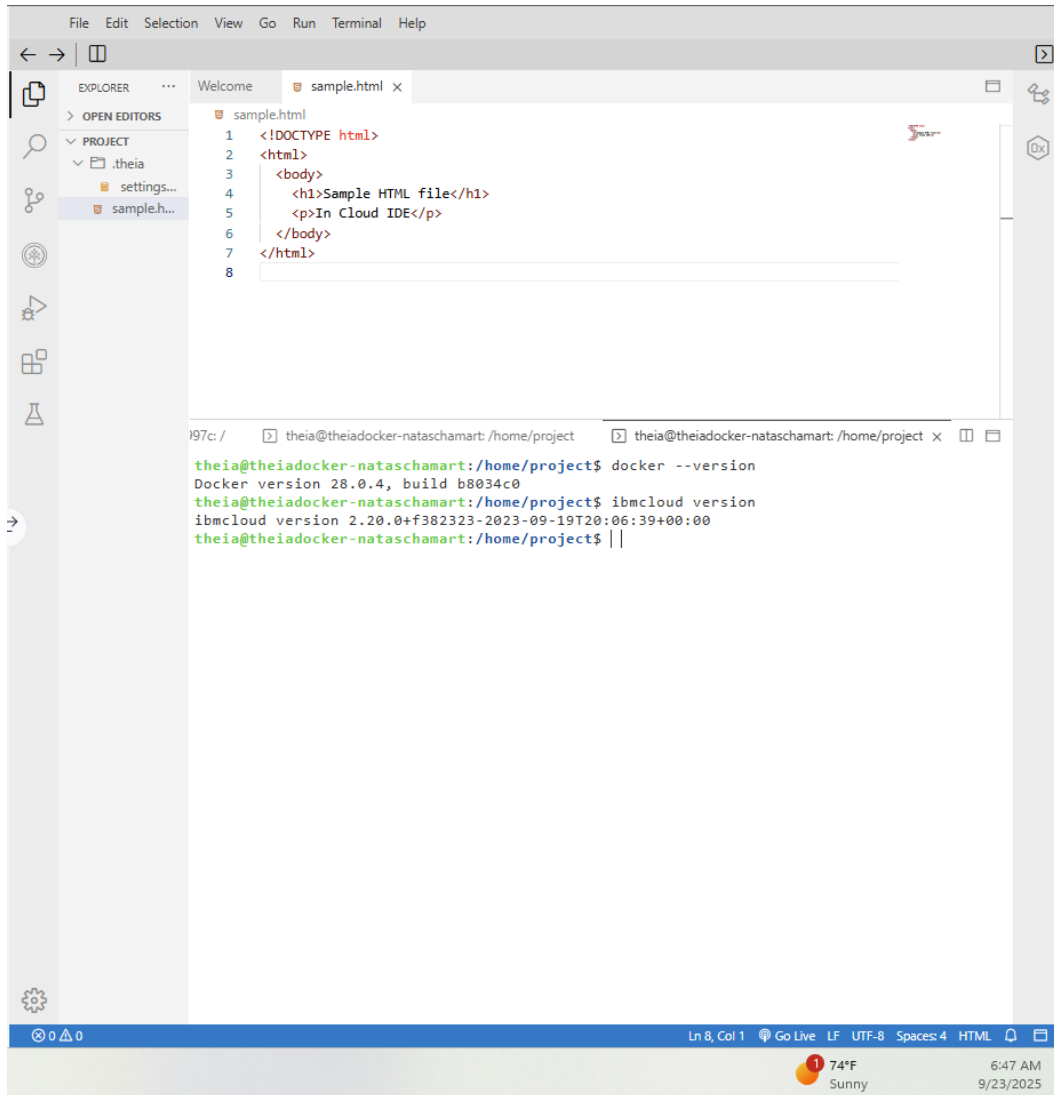
It will then prompt you to enter name of this new file. In the example below, we are creating sample.html.





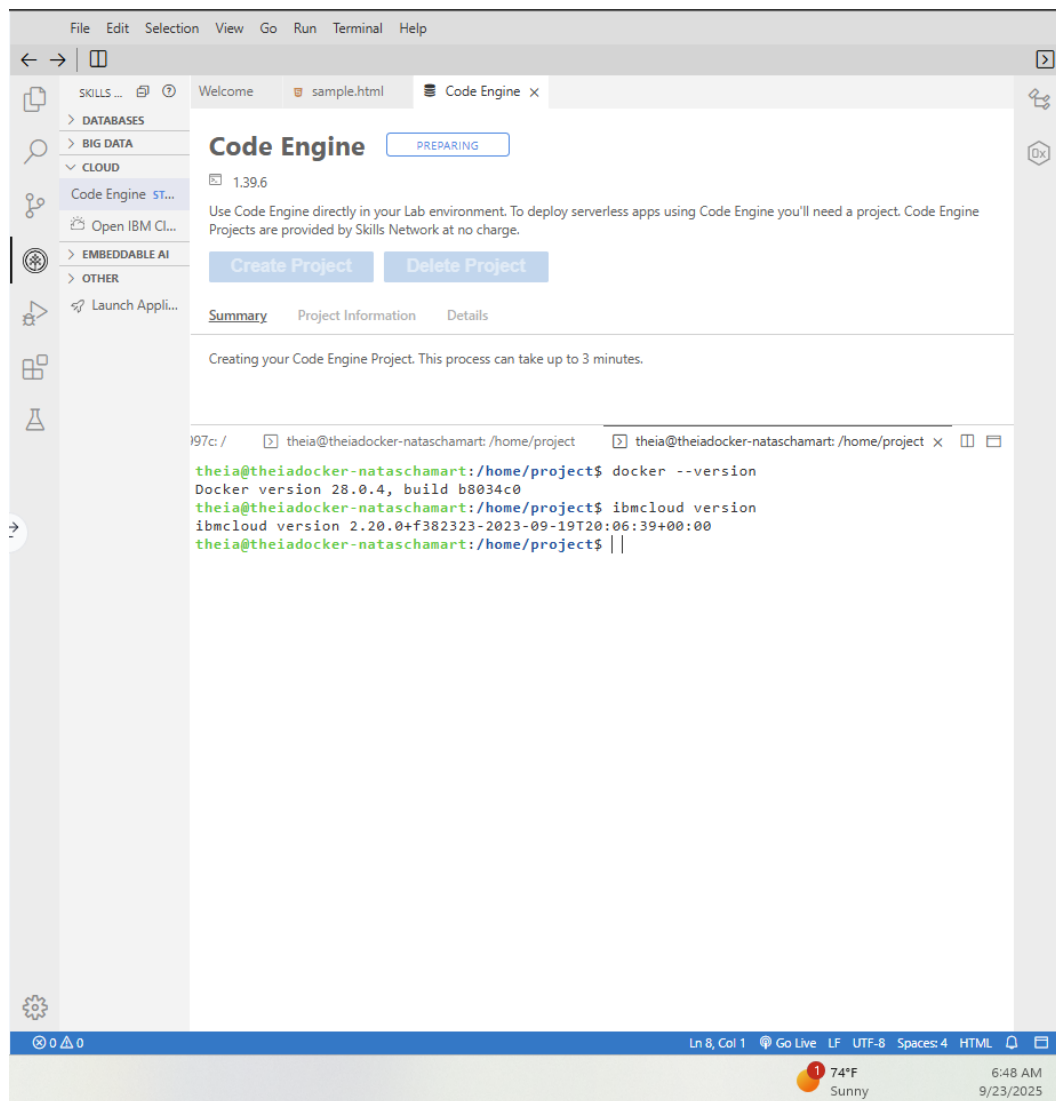
Verify the environment and command line tools

1. Open a terminal window by using the menu in the editor: Terminal > New Terminal
2. Verify that `docker` CLI is installed.
3. Verify that `ibmcloud` CLI is installed.

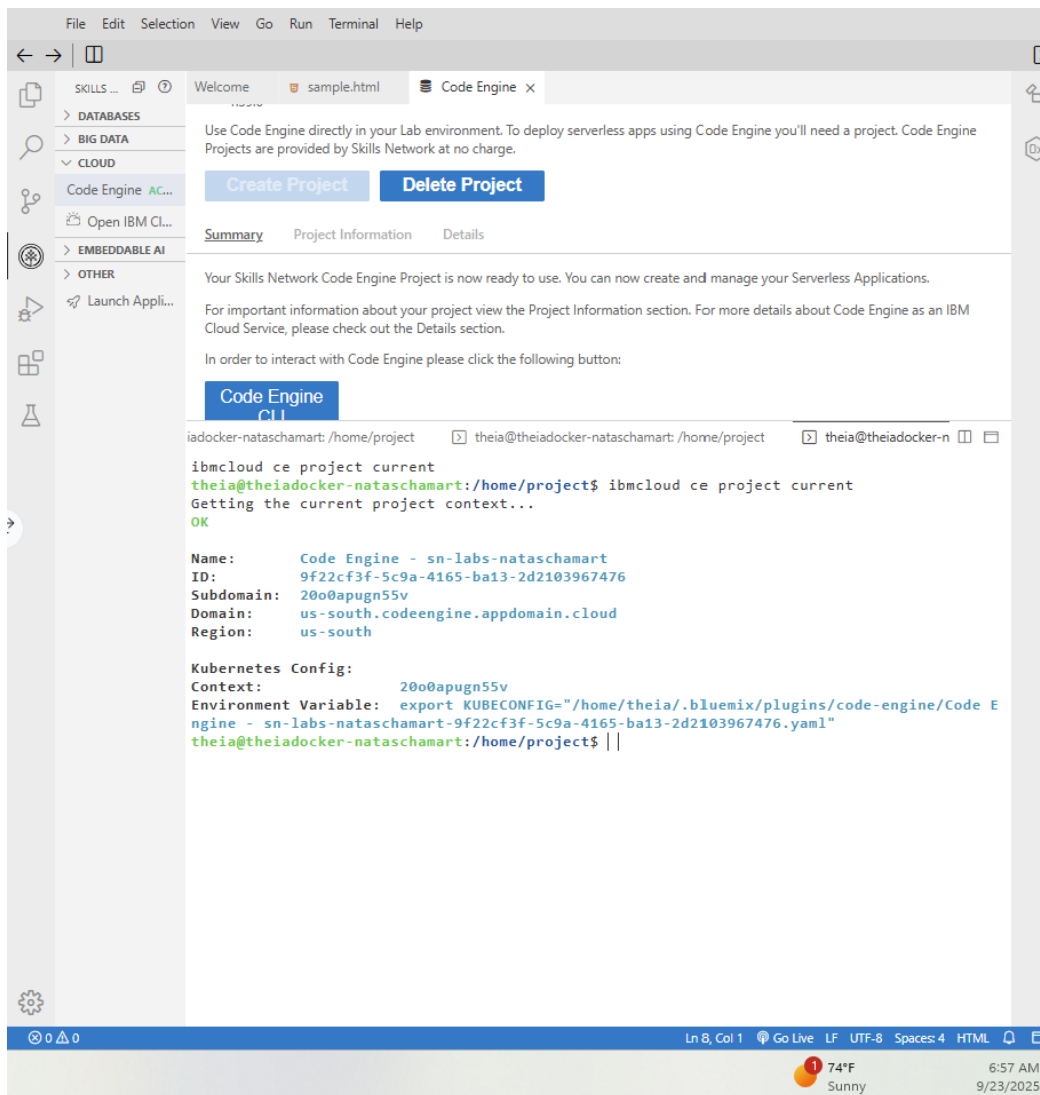


Start Code Engine

1. On the menu in your lab environment, Click on SN logo icon and then click the Cloud dropdown menu and select Code Engine. The code engine setup panel appears. Click Create Project to begin.



Once the code engine set up is complete, you can see that it is active. Click Code Engine CLI to begin the pre-configured CLI in the terminal as shown below.



Set-up : Create application

1. Open a terminal window by using the menu in the editor: **Terminal > New Terminal**.

FileEditSelectionViewGoRunTerminalHelp

←→

SKILLS ...

DATABASES

BIG DATA

CLOUD

Code Engine AC...

Open IBM Cl...

EMBEDDABLE AI

OTHER

Launch Appli...

sample.htmlCode Engine x

Welcome

Use Code Engine directly in your Lab environment. To deploy serverless apps using Code Engine you'll need a project. Code Engine Projects are provided by Skills Network at no charge.

Create ProjectDelete Project

SummaryProject InformationDetails

Your Skills Network Code Engine Project is now ready to use. You can now create and manage your Serverless Applications.

For important information about your project view the Project Information section. For more details about Code Engine as an IBM Cloud Service, please check out the Details section.

In order to interact with Code Engine please click the following button:

Code Engine CLI

s@theiadosker-nataschamart: /home/projecttheia@theiadosker-nataschamart: /home/projecttheia@theiadosker-nataschamart: /home/project

theia@theiadosker-nataschamart: /home/project\$ |

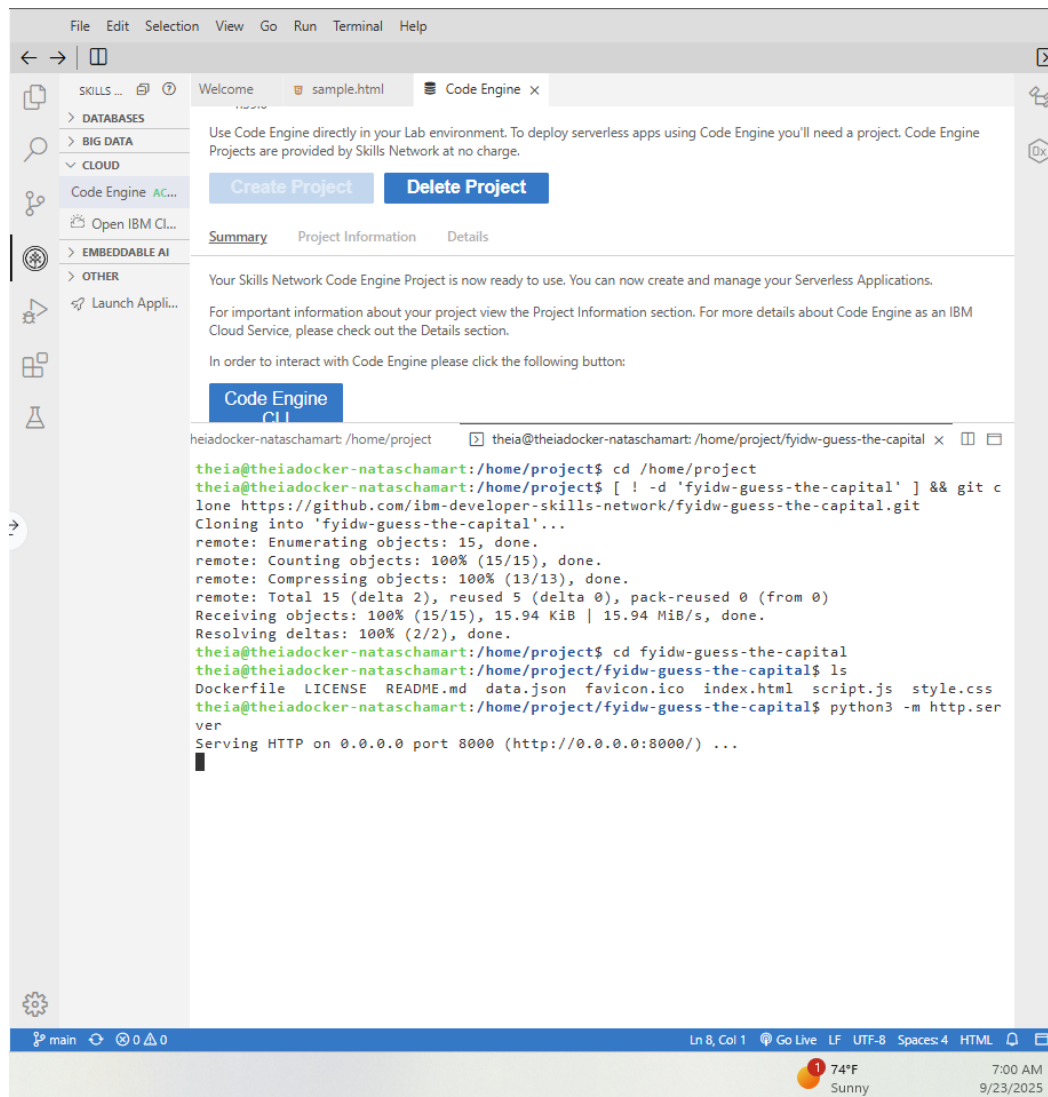
000

Ln 8, Col 1Go LiveLFUTF-8Spaces: 4HTML


74°F

Sunny

6:58 AM9/23/2025



To test your application in your browser, run the application first. To view your application, click the Skills Network icon on the left panel (refer to number 1). This action will open the **SKILLS NETWORK TOOLBOX**. Next, click **Launch Application** (refer to number 2).

Enter port number **8000** in **Application Port** (refer to number 3) and click . You can also click on the button given below to launch your application.

File Edit Selection View Go Run Terminal Help

← →

sample.html x Code Engine

Explorer

DATABASES

BIG DATA

CLOUD

Code Engine AC...

Open IBM Cl...

EMBEDDABLE AI

OTHER

Launch Appli...

sample.html

1 <!DOCTYPE html>

2 <html>

3 <body>

4 <h1>Sample HTML file</h1>

5 <p>In Cloud IDE</p>

6 </body>

7 </html>

8

theiadocker-nataschamart: /home/project

theia@theiadocker-nataschamart: /home/project/fyidw-guess-the-capital x

Receiving objects: 100% (15/15), 15.94 KiB | 15.94 MiB/s, done.

Resolving deltas: 100% (2/2), done.

theia@theiadocker-nataschamart: /home/project\$ cd fyidw-guess-the-capital

theia@theiadocker-nataschamart: /home/project/fyidw-guess-the-capital\$ ls

theia@theiadocker-nataschamart: /home/project/fyidw-guess-the-capital\$ python3 -m http.server

Serving HTTP on 0.0.0.0 port 8000 (http://0.0.0.0:8000/) ...

theia@theiadocker-nataschamart: /home/project\$ cd /home/project

theia@theiadocker-nataschamart: /home/project\$ [! -d 'fyidw-guess-the-capital'] && git clone https://github.com/ibm-developer-skills-network/fyidw-guess-the-capital.git

Cloning into 'fyidw-guess-the-capital'...

remote: Enumerating objects: 15, done.

remote: Counting objects: 100% (15/15), done.

remote: Compressing objects: 100% (13/13), done.

remote: Total 15 (delta 2), reused 5 (delta 0), pack-reused 0 (from 0)

Receiving objects: 100% (15/15), 15.94 KiB | 15.94 MiB/s, done.

Resolving deltas: 100% (2/2), done.

theia@theiadocker-nataschamart: /home/project\$ cd fyidw-guess-the-capital

theia@theiadocker-nataschamart: /home/project/fyidw-guess-the-capital\$ ls

theia@theiadocker-nataschamart: /home/project/fyidw-guess-the-capital\$ python3 -m http.server

Serving HTTP on 0.0.0.0 port 8000 (http://0.0.0.0:8000/) ...

127.0.0.1 - - [23/Sep/2025 10:01:40] "GET / HTTP/1.1" 200 -

127.0.0.1 - - [23/Sep/2025 10:01:40] "GET /style.css HTTP/1.1" 200 -

127.0.0.1 - - [23/Sep/2025 10:01:41] "GET /script.js HTTP/1.1" 200 -

127.0.0.1 - - [23/Sep/2025 10:01:42] "GET /data.json HTTP/1.1" 200 -

127.0.0.1 - - [23/Sep/2025 10:01:42] "GET /favicon.ico HTTP/1.1" 200 -

main

Go Live

LF

UTF-8

Spaces: 4

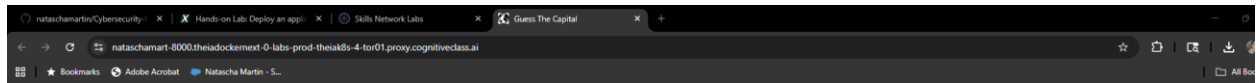
HTML

74°F

Sunny

7:01 AM

9/23/2025



Guess the Capital?

What is the capital of
Tristan da Cunha?

Task 1: Containerise the application

Let's start modernising our application. The first step towards it is to containerise it using Docker.

Create Dockerfile

Your tasks:

1. Paste the following content in

Open **Dockerfile** in IDE

The screenshot shows a code editor with a menu bar (File, Edit, Selection, View, Go, Run, Terminal, Help) and a sidebar on the left with icons for SKILLS, DATABASES, BIG DATA, CLOUD, Code Engine, Open IBM CL..., EMBEDDABLE AI, and OTHER. The main editor area has tabs for 'Welcome', 'sample.html', 'Dockerfile M x', and 'Code Engine'. The 'Dockerfile M x' tab is active, showing a Dockerfile with the following content:

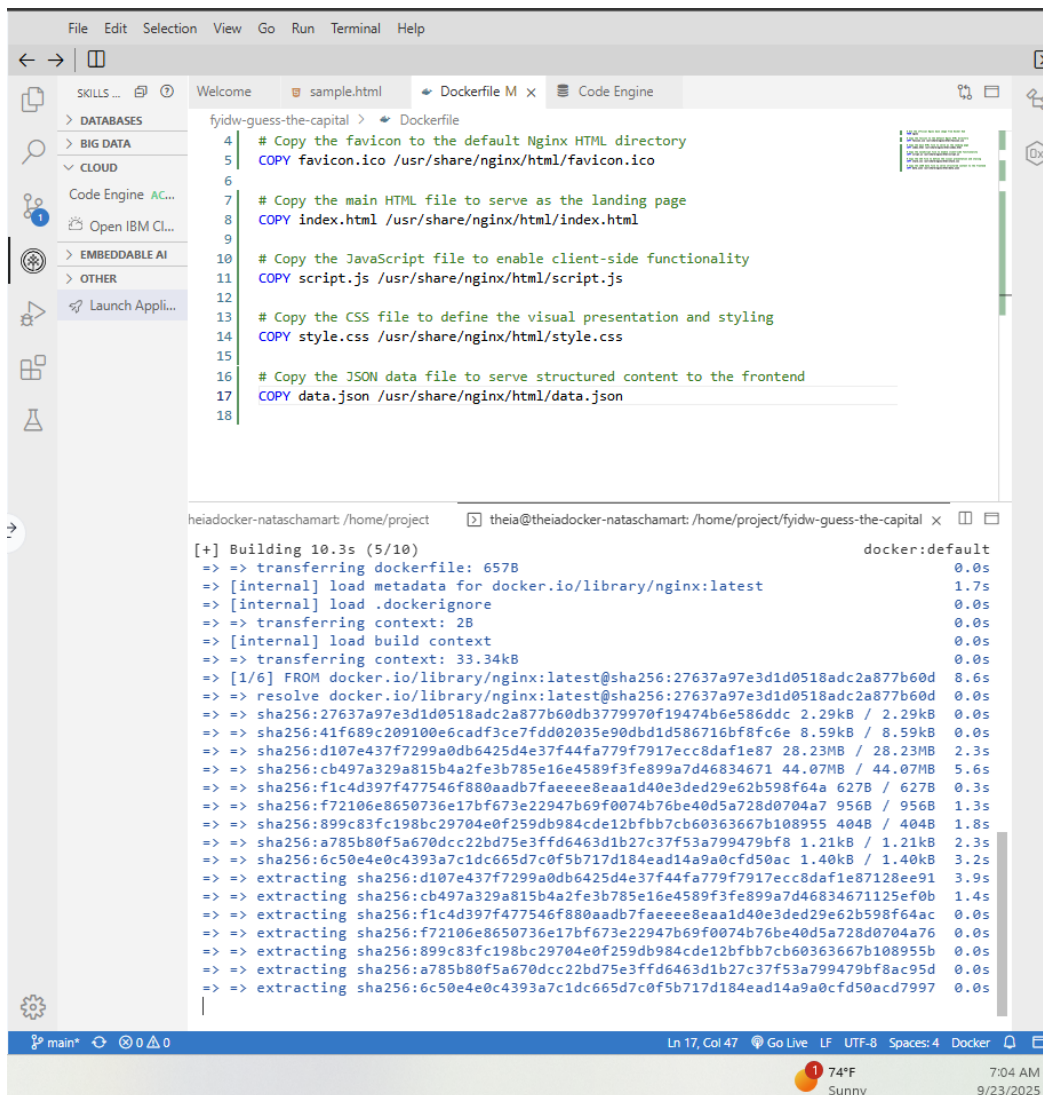
```
fyidw-guess-the-capital > Dockerfile
4 # Copy the favicon to the default Nginx HTML directory
5 COPY favicon.ico /usr/share/nginx/html/favicon.ico
6
7 # Copy the main HTML file to serve as the landing page
8 COPY index.html /usr/share/nginx/html/index.html
9
10 # Copy the JavaScript file to enable client-side functionality
11 COPY script.js /usr/share/nginx/html/script.js
12
13 # Copy the CSS file to define the visual presentation and styling
14 COPY style.css /usr/share/nginx/html/style.css
15
16 # Copy the JSON data file to serve structured content to the frontend
17 COPY data.json /usr/share/nginx/html/data.json
18
```

Below the editor is a terminal window showing the execution of the Dockerfile. The terminal output is as follows:

```
heiadocker-nataschamart:/home/project theia@theadocker-nataschamart: /home/project/fyidw-guess-the-capital x
ver
Serving HTTP on 0.0.0.0 port 8000 (http://0.0.0.0:8000/) ...
theia@theadocker-nataschamart:/home/project$ cd /home/project
theia@theadocker-nataschamart:/home/project$ [ ! -d 'fyidw-guess-the-capital' ] && git c
clone https://github.com/ibm-developer-skills-network/fyidw-guess-the-capital.git
Cloning into 'fyidw-guess-the-capital'...
remote: Enumerating objects: 15, done.
remote: Counting objects: 100% (15/15), done.
remote: Compressing objects: 100% (13/13), done.
remote: Total 15 (delta 2), reused 5 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (15/15), 15.94 KiB | 15.94 MiB/s, done.
Resolving deltas: 100% (2/2), done.
theia@theadocker-nataschamart:/home/project$ cd fyidw-guess-the-capital
theia@theadocker-nataschamart:/home/project/fyidw-guess-the-capital$ ls
Dockerfile LICENSE README.md data.json favicon.ico index.html script.js style.css
theia@theadocker-nataschamart:/home/project/fyidw-guess-the-capital$ python3 -m http.ser
ver
Serving HTTP on 0.0.0.0 port 8000 (http://0.0.0.0:8000/) ...
127.0.0.1 - - [23/Sep/2025 10:01:40] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [23/Sep/2025 10:01:40] "GET /style.css HTTP/1.1" 200 -
127.0.0.1 - - [23/Sep/2025 10:01:41] "GET /script.js HTTP/1.1" 200 -
127.0.0.1 - - [23/Sep/2025 10:01:42] "GET /data.json HTTP/1.1" 200 -
127.0.0.1 - - [23/Sep/2025 10:01:42] "GET /favicon.ico HTTP/1.1" 200 -
^C
Keyboard interrupt received, exiting.
theia@theadocker-nataschamart:/home/project/fyidw-guess-the-capital$ ||
```

The bottom status bar shows 'main*' with icons for a refresh, a warning, and a success, along with 'Ln 17, Col 47', 'Go Live', 'LF', 'UTF-8', 'Spaces: 4', 'Docker', and a weather icon showing 74°F Sunny on 9/23/2025 at 7:03 AM.

2. Build an image from a Dockerfile



3. List built images

The screenshot shows the Docker Desktop application. The top menu bar includes File, Edit, Selection, View, Go, Run, Terminal, and Help. The left sidebar contains navigation icons for SKILLS, DATABASES, BIG DATA, CLOUD, Code Engine, Open IBM Cl..., EMBEDDABLE AI, OTHER, and Launch Appli... The main editor area displays a Dockerfile for a project named 'fyidw-guess-the-capital'. The Dockerfile contains the following instructions:

```
4 # Copy the favicon to the default Nginx HTML directory
5 COPY favicon.ico /usr/share/nginx/html/favicon.ico
6
7 # Copy the main HTML file to serve as the landing page
8 COPY index.html /usr/share/nginx/html/index.html
9
10 # Copy the JavaScript file to enable client-side functionality
11 COPY script.js /usr/share/nginx/html/script.js
12
13 # Copy the CSS file to define the visual presentation and styling
14 COPY style.css /usr/share/nginx/html/style.css
15
16 # Copy the JSON data file to serve structured content to the frontend
17 COPY data.json /usr/share/nginx/html/data.json
18
```

The terminal window at the bottom shows the output of the 'docker build' command. It displays the progress of copying files, extracting layers, and exporting the image. The final output is a table of images:

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
guess-the-capital	latest	e1baa73e7352	22 seconds ago	192MB

The status bar at the bottom indicates the current file is 'main*' at line 17, column 47. It also shows the weather as 74°F Sunny and the time as 7:04 AM on 9/23/2025.

4. Run the image

The screenshot shows a web IDE interface with a menu bar (File, Edit, Selection, View, Go, Run, Terminal, Help) and a sidebar on the left containing icons for SKILLS, DATABASES, BIG DATA, CLOUD, Code Engine, EMBEDDABLE AI, and OTHER. The main editor displays a Dockerfile for a project named 'fyidw-guess-the-capital'. The Dockerfile contains instructions to copy static assets (favicon, index.html, script.js, style.css, data.json) into the container's filesystem.

```

4 # Copy the favicon to the default Nginx HTML directory
5 COPY favicon.ico /usr/share/nginx/html/favicon.ico
6
7 # Copy the main HTML file to serve as the landing page
8 COPY index.html /usr/share/nginx/html/index.html
9
10 # Copy the JavaScript file to enable client-side functionality
11 COPY script.js /usr/share/nginx/html/script.js
12
13 # Copy the CSS file to define the visual presentation and styling
14 COPY style.css /usr/share/nginx/html/style.css
15
16 # Copy the JSON data file to serve structured content to the frontend
17 COPY data.json /usr/share/nginx/html/data.json
18

```

Below the editor, a terminal window shows the execution of Docker commands. It lists the SHA256 hashes and sizes of the files being copied, followed by the successful building of the 'guess-the-capital' Docker image. The terminal output includes:

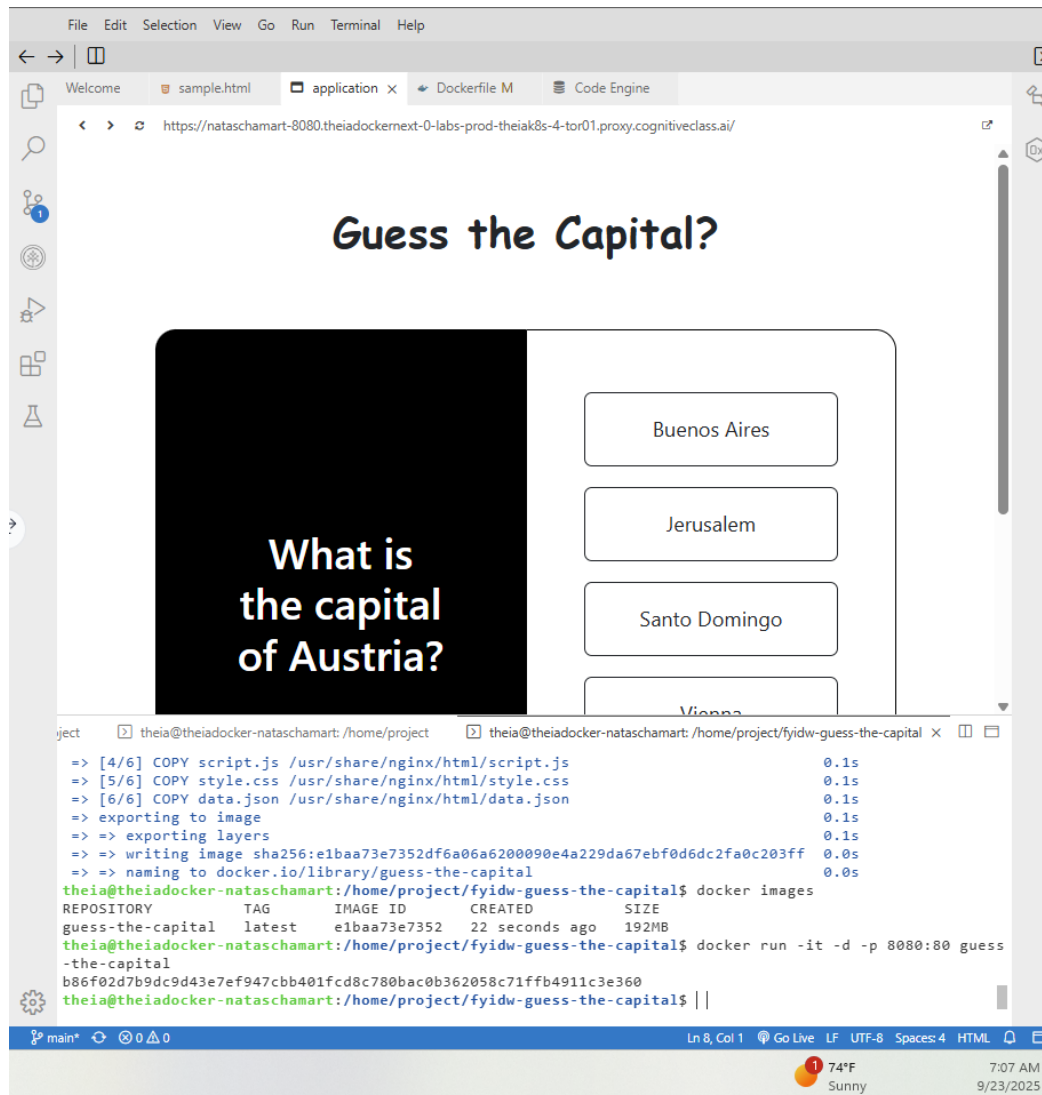
```

=> sha256:899c83fc198bc29704e0f259db984cde12bfb7cb60363667b108955 404B / 404B 1.8s
=> sha256:a785b80f5a670dcc22bd75e3ffd6463d1b27c37f53a799479bf8 1.21kB / 1.21kB 2.3s
=> sha256:6c50e4e0c4393a7c1dc665d7c0f5b717d184ead14a9a0cfd50ac 1.40kB / 1.40kB 3.2s
=> extracting sha256:d107e437f7299a0db6425d4e37f44fa779f7917ecc8daf1e87128ee91 3.9s
=> extracting sha256:cb497a329a815b4a2fe3b785e16e4589f3fe899a7d46834671125ef0b 1.4s
=> extracting sha256:f1c4d397f477546f880aadb7fae8ee8eaa1d40e3ded29e62b598f64ac 0.0s
=> extracting sha256:f72106e8650736e17bf673e22947b69f0074b76be40d5a728d0704a76 0.0s
=> extracting sha256:899c83fc198bc29704e0f259db984cde12bfb7cb60363667b108955b 0.0s
=> extracting sha256:a785b80f5a670dcc22bd75e3ffd6463d1b27c37f53a799479bf8ac95d 0.0s
=> extracting sha256:6c50e4e0c4393a7c1dc665d7c0f5b717d184ead14a9a0cfd50acd7997 0.0s
=> [2/6] COPY favicon.ico /usr/share/nginx/html/favicon.ico 4.7s
=> [3/6] COPY index.html /usr/share/nginx/html/index.html 0.2s
=> [4/6] COPY script.js /usr/share/nginx/html/script.js 0.1s
=> [5/6] COPY style.css /usr/share/nginx/html/style.css 0.1s
=> [6/6] COPY data.json /usr/share/nginx/html/data.json 0.1s
=> exporting to image 0.1s
=> exporting layers 0.1s
=> writing image sha256:e1baa73e7352df6a06a6200090e4a229da67ebf0d6dc2fa0c203ff 0.0s
=> naming to docker.io/library/guess-the-capital 0.0s
theia@theiadosker-nataschamart:/home/project/fyidw-guess-the-capital$ docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
guess-the-capital latest e1baa73e7352 22 seconds ago 192MB
theia@theiadosker-nataschamart:/home/project/fyidw-guess-the-capital$ docker run -it -d -p 8080:80 guess-the-capital
b86f02d7b9dc9d43e7ef947cbb401fcd8c780bac0b362058c71ffb4911c3e360
theia@theiadosker-nataschamart:/home/project/fyidw-guess-the-capital$

```

The bottom status bar shows 'main' with icons for undo, redo, and search, along with 'Ln 17, Col 47', 'Go Live', 'UTF-8', 'Spaces: 4', 'Docker', and a weather widget indicating 74°F and Sunny weather on 9/23/2025.

5. Verify in browser



Task 2: Deploy on IBM Cloud

Let's start with launching Code Engine CLI.

File Edit Selection View Go Run Terminal Help

Welcome sample.html application Dockerfile M Code Engine x

Code Engine

READY TO USE

1.39.6

Use Code Engine directly in your Lab environment. To deploy serverless apps using Code Engine you'll need a project. Code Engine Projects are provided by Skills Network at no charge.

Create Project Delete Project

Summary Project Information Details

Your Skills Network Code Engine Project is now ready to use. You can now create and manage your Serverless Applications.

For important information about your project view the Project Information section. For more details about Code Engine as an IBM Cloud Service, please check out the Details section.

In order to interact with Code Engine please click the following button:

Code Engine

theia@theiadocker-nataschamart: /home/project
theia@theiadocker-nataschamart: /home/project/fyidw-guess-the-capital x

```

guess-the-capital latest e1baa73e7352 22 seconds ago 192MB
theia@theiadocker-nataschamart: /home/project/fyidw-guess-the-capital$ docker run -it -d -p 8080:80 guess-the-capital
b86f02d7b9dc9d43e7ef947cbb401fcd8c780bac0b362058c71ffb4911c3e360
theia@theiadocker-nataschamart: /home/project/fyidw-guess-the-capital$ cd /home/project/fyidw-guess-the-capital
theia@theiadocker-nataschamart: /home/project/fyidw-guess-the-capital$ docker build -t us.icr.io/${SN_ICR_NAMESPACE}/guess-the-capital
[+] Building 0.4s (11/11) FINISHED
=> [internal] load build definition from Dockerfile 0.0s
=> => transferring dockerfile: 657B 0.0s
=> [internal] load metadata for docker.io/library/nginx:latest 0.3s
=> [internal] load .dockerignore 0.0s
=> => transferring context: 2B 0.0s
=> [1/6] FROM docker.io/library/nginx:latest@sha256:27637a97e3d1d0518adc2a877b60db3779970f19474b 0.0s
=> [internal] load build context 0.0s
=> => transferring context: 150B 0.0s
=> CACHED [2/6] COPY favicon.ico /usr/share/nginx/html/favicon.ico 0.0s
=> CACHED [3/6] COPY index.html /usr/share/nginx/html/index.html 0.0s
=> CACHED [4/6] COPY script.js /usr/share/nginx/html/script.js 0.0s
=> CACHED [5/6] COPY style.css /usr/share/nginx/html/style.css 0.0s
=> CACHED [6/6] COPY data.json /usr/share/nginx/html/data.json 0.0s
=> exporting to image 0.0s
=> => exporting layers 0.0s
=> => writing image sha256:e1baa73e7352df6a06a620090e4a229da67ebf0d6dc2fa0c203ffb88fa9d144 0.0s
=> naming to us.icr.io/sn-labs-nataschamart/guess-the-capital 0.0s
theia@theiadocker-nataschamart: /home/project/fyidw-guess-the-capital$

```

main* 0 0 0 0
Ln 8, Col 1 Go Live LF UTF-8 Spaces: 4 HTML
74°F Sunny 7:08 AM 9/23/2025

Push the image to IBM Cloud

File Edit Selection View Go Run Terminal Help

← →

Welcome sample.html application Dockerfile M Code Engine X

Code Engine

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In order to interact with Code Engine please click the following button:

Code Engine

```
theia@theiadocker-nataschamart: /home/project
=> CACHED [3/6] COPY index.html /usr/share/nginx/html/index.html 0.0s
=> CACHED [4/6] COPY script.js /usr/share/nginx/html/script.js 0.0s
=> CACHED [5/6] COPY style.css /usr/share/nginx/html/style.css 0.0s
=> CACHED [6/6] COPY data.json /usr/share/nginx/html/data.json 0.0s
=> exporting to image 0.0s
=> exporting layers 0.0s
=> writing image sha256:e1baa73e7352df6a06a620090e4a229da67ebf0d6dc2fa0c203ffb88fa9d144 0.0s
=> naming to us.icr.io/sn-labs-nataschamart/guess-the-capital 0.0s
theia@theiadocker-nataschamart:/home/project/fyidw-guess-the-capital$ docker push us.icr.io/${SN_ICR_NAME}/guess-the-capital
Using default tag: latest
The push refers to repository [us.icr.io/sn-labs-nataschamart/guess-the-capital]
29b3aa4f5243: Pushed
f328a435f005: Pushed
8b585d0ac12c: Pushed
d3f2de5e4aaf: Pushed
9430116eccd1: Pushed
3ce214e9ebc5: Pushed
7d95a4a72e11: Pushed
72fa904a482c: Pushed
50da593f6222: Pushed
8e7d6b511078: Pushed
c855abf10cdc: Pushed
36f5f951f60a: Pushed
latest: digest: sha256:1edfe83c9d48cc1d51a0fa2e8a2601e0ceb10a0a7f925882e321a06ccc66766b size: 2817
theia@theiadocker-nataschamart:/home/project/fyidw-guess-the-capital$
```

main* 0 0 0 0 Ln 8, Col 1 Go Live LF UTF-8 Spaces: 4 HTML 7:09 AM 74°F Sunny 9/23/2025

Deploy the image on IBM CE

FileEditSelectionViewGoRunTerminalHelp

←→

sample.htmlapplicationDockerfile MCode Engine x

Code Engine

READY TO USE

1.39.6

Use Code Engine directly in your Lab environment. To deploy serverless apps using Code Engine you'll need a project. Code Engine Projects are provided by Skills Network at no charge.

Create ProjectDelete Project

SummaryProject InformationDetails

Your Skills Network Code Engine Project is now ready to use. You can now create and manage your Serverless Applications.

For important information about your project view the Project Information section. For more details about Code Engine as an IBM Cloud Service, please check out the Details section.

In order to interact with Code Engine please click the following button:

Code Engine

jecttheia@theiadocker-nataschamart:/home/projecttheia@theiadocker-nataschamart:/home/project/fyidw-guess-the-capital x

29b3aa4f5243: Pushed
f328a435f005: Pushed
8b585d0ac12c: Pushed
d3f2de5e4aaf: Pushed
9430116eccd1: Pushed
3ce214e9ebc5: Pushed
7d95a4a72e11: Pushed
72fa904a482c: Pushed
50da593f6222: Pushed
8e7d6b511078: Pushed
c855abf10cdc: Pushed
36f5f951f60a: Pushed
latest: digest: sha256:1edfe83c9d48cc1d51a0fa2e8a2601e0ceb10a0a7f925882e321a06ccc66766b size: 2817
theia@theiadocker-nataschamart:/home/project/fyidw-guess-the-capital\$ ibmcloud ce application create --name guess-the-capital --image us.icr.io/\${SN_ICR_NAMESPACE}/guess-the-capital --registry-secret icr-secret --port 80
Creating application 'guess-the-capital'...
The Route is still working to reflect the latest desired specification.
Configuration 'guess-the-capital' is waiting for a Revision to become ready.
Ingress has not yet been reconciled.
Waiting for load balancer to be ready.
Run 'ibmcloud ce application get -n guess-the-capital' to check the application status.
OK

https://guess-the-capital.20o0apugn55v.us-south.codeengine.appdomain.cloud
theia@theiadocker-nataschamart:/home/project/fyidw-guess-the-capital\$ |

main*

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Sunny

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FileEditSelectionViewGoRunTerminalHelp

←→

Code Engine x

Code Engine

READY TO USE

1.39.6

Use Code Engine directly in your Lab environment. To deploy container apps using Code Engine you'll need a project. Code Engine Projects are provided by...

ject theia@theiadocker-nataschamart:/home/project theia@theiadocker-nataschamart:/home/project/fyidw-guess-the-capital x

https://guess-the-capital.20o0apugn55v.us-south.codeengine.appdomain.cloud

theia@theiadocker-nataschamart:/home/project/fyidw-guess-the-capital\$ ibmcloud ce application get --name guess-the-capital

OK

Name: guess-the-capital

ID: 5cd9d298-421a-4600-8d57-ed93204f1965

Project Name: Code Engine - sn-labs-nataschamart

Project ID: 9f22cf3f-5c9a-4165-ba13-2d2103967476

Age: 101s

Created: 2025-09-23T10:10:15-04:00

URL: https://guess-the-capital.20o0apugn55v.us-south.codeengine.appdomain.cloud

Cluster Local URL: http://guess-the-capital.20o0apugn55v.svc.cluster.local

Console URL: https://cloud.ibm.com/codeengine/project/us-south/9f22cf3f-5c9a-4165-ba13-2d2103967476/application/guess-the-capital/configuration

Status Summary: Application deployed successfully

Environment Variables:

Type	Name	Value
Literal	CE_API_BASE_URL	https://api.private.us-south.codeengine.cloud.ibm.com
Literal	CE_APP	guess-the-capital
Literal	CE_DOMAIN	us-south.codeengine.appdomain.cloud
Literal	CE_PROJECT_ID	9f22cf3f-5c9a-4165-ba13-2d2103967476
Literal	CE_REGION	us-south
Literal	CE_SUBDOMAIN	20o0apugn55v

Image: us.icr.io/sn-labs-nataschamart/guess-the-capital

Resource Allocation:

CPU:	1
Ephemeral Storage:	400M
Memory:	4G

Registry Secrets:

icr-secret	
------------	--

Port: 80

Revisions:

guess-the-capital-00001:	
Age:	101s
Latest:	true
Traffic:	100%
Image:	us.icr.io/sn-labs-nataschamart/guess-the-capital (pinned to 1edfe8)

main*

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Go Live

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←→

sample.htmlapplicationDockerfile MCode Engine x

Code Engine

READY TO USE

1,39.6

Use Code Engine directly in your Lab environment. To deploy container apps using Code Engine you'll need a project. Code Engine Projects are provided by:

jecttheia@theiadocker-nataschamart:/home/projecttheia@theiadocker-nataschamart:/home/project/fyidw-guess-the-capital x

icr-secret

Port:80

Revisions:

guess-the-capital-00001:

Age:101s

Latest:true

Traffic:100%

Image:us.icr.io/sn-labs-nataschamart/guess-the-capital (pinned to 1edfe8)

Running Instances:1

Runtime:

Concurrency:100

Maximum Scale:10

Minimum Scale:0

Scale Down Delay:0

Timeout:300

Trusted profiles:disabled

Readiness Probe:

Type:tcp

Port:0 (use listening port)

Conditions:

Type	OK	Age	Reason
ConfigurationsReady	true	92s	
Ready	true	55s	
RoutesReady	true	55s	

Events:

Type	Reason	Age	Source	Messages
Normal	Created	102s	service-controller	Created Configuration "guess-the-capital"
Normal	Created	102s	service-controller	Created Route "guess-the-capital"

Instances:

Name	Revision	Running	Status	Re
guess-the-capital-00001-deployment-85dfb677b5-6djm	guess-the-capital-00001	2/3	Terminating	0

For troubleshooting information visit: <https://cloud.ibm.com/docs/codeengine?topic=codeengine-troublesho>

main*

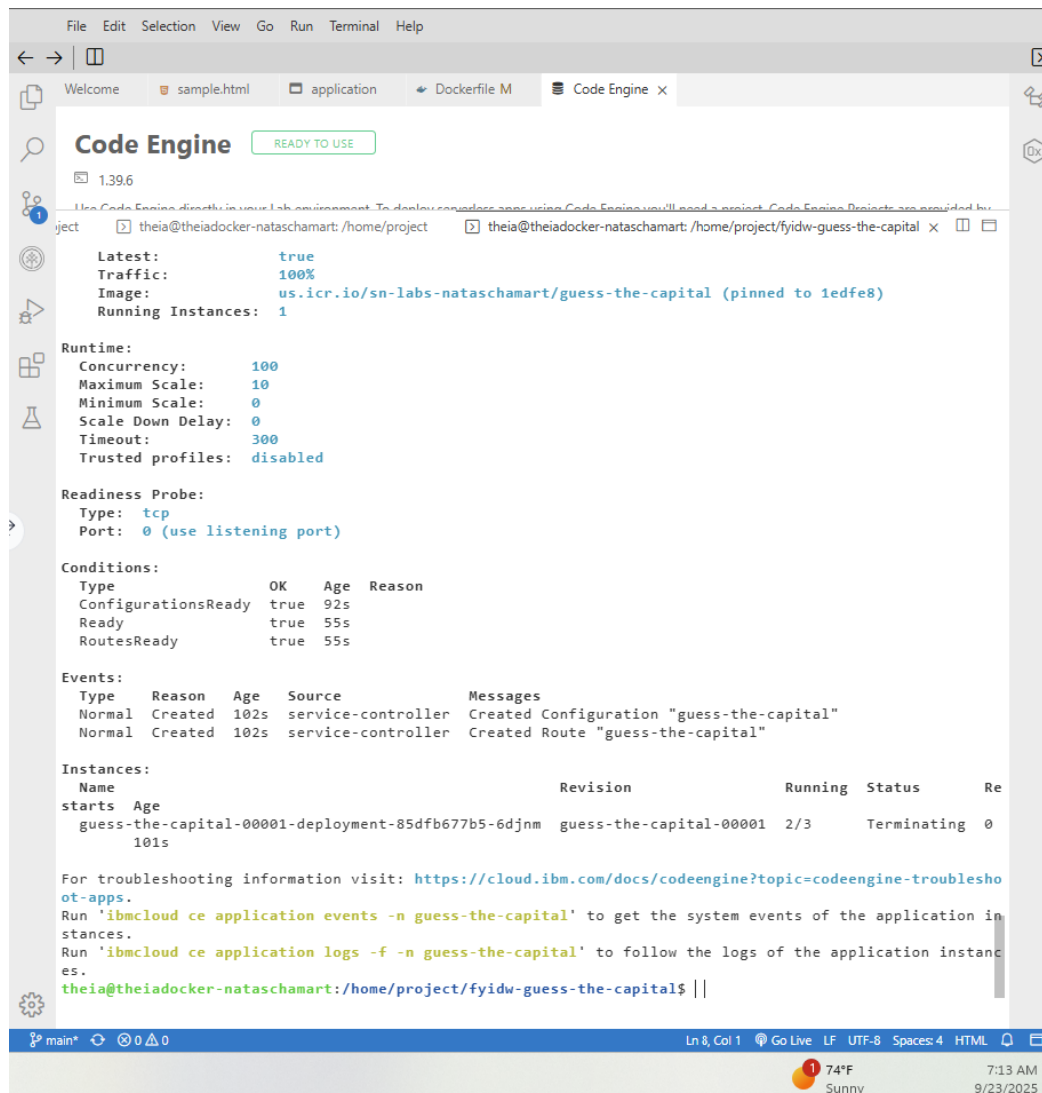
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Lab Summary – Final Project: Guess the Capital

Objective

Deploy a sample web application (“Guess the Capital”) to the IBM Cloud using Docker and IBM Code Engine. The project demonstrated how to containerize an app, push it to the IBM Cloud Container Registry, and run it in a serverless environment.

Steps Completed

Environment Verification

- Opened terminal in the Cloud IDE.
- Verified docker CLI was installed and working (docker --version).
- Verified ibmcloud CLI was installed and working (ibmcloud version).

Local Application Setup

- Cloned the application source code from GitHub (fyi-guess-the-capital).
- Confirmed app files were available (index.html, script.js, style.css).
- Ran a local server (python3 -m http.server) to test functionality at port 8000.

Task 1: Containerization with Docker

- Created a Dockerfile defining the app environment.
- Built a Docker image locally from the Dockerfile.
- Verified the image was created by listing Docker images.
- Ran the container locally to confirm the app was accessible in a browser.

Task 2: Deploy to IBM Cloud

- Targeted the correct resource group in IBM Cloud (ibmcloud target -g Default).
- Created a new Code Engine project (ibmcloud ce project create).
- Tagged the local Docker image for IBM Cloud Container Registry (us.icr.io/<namespace>/guess-the-capital:v1).
- Pushed the image to IBM Cloud.
- Deployed the containerized application to Code Engine (ibmcloud ce app create).
- Verified deployment status using ibmcloud ce app get.

Reflection

This final project tied together all course concepts into a complete workflow: starting from local development, containerization with Docker, and deployment using IBM Code Engine. Challenges included adapting when the Code Engine GUI panel was missing and using CLI commands instead, as well as targeting the correct IBM Cloud resource group before creating projects. Successfully resolving these issues reinforced troubleshooting and cloud deployment skills.