

Devops Project Report
On
Deploying a 2-tier Application on AWS Cloud
Using Terraform and and Docker Containers

Submitted by

Name	:Biswa Prakash Rout
Reg no	:2241018146
Branch	:CSE
Sl no	:31

1. INTRODUCTION

In the current digital era, businesses demand fast, repeatable, and error-free deployment of their applications. Manual server setup and configuration often lead to inefficiencies and scalability issues. This project demonstrates the deployment of a 2-tier web application on AWS using Infrastructure as Code (IaC) with Terraform and containerization with Docker. By automating infrastructure provisioning and packaging applications into containers, this project provides a consistent and reliable deployment environment while reducing operational overhead.

2. PROBLEM STATEMENT

Using a Bash Scripting, create 3 stages. Each of these stages has a specific

job. The stages are named as such:

1. Create_Infra

Create a 2-tier application (preferably on git) using any language and tools, run and test the application. The application must have a frontend and a database connected to it in the backend. It must allow the user to enter some details in the frontend and store the same in a row in the database.

2. Deploy_Apps

Using terraform provisioners execute the scripts in respective systems: frontend.sh: Installs and Configures docker in the FRONTEND instance and runs the containerized frontend in it using the pull request command in previous slide. backend.sh: Installs and Configures docker in BACKEND instance and runs the containerized backend in it using the pull request command in previous slide. Use remote-exec provisioner to find out if docker has been installed and the application is running in the local system.

Stage 3: Test_Solution

Using terraform output save the public DNS or Public IP of the FRONTEND and display it as the stage is executed. Using terraform outputs and variables display the exact address with port number for the frontend form application. Curl the public DNS or IP to check if the frontend containerized application is working.

Manual Testing

Manually test if the application is running correctly. In the frontend enter some details for an user (Capture a screenshot of it) Now dive into the database and check if the line has been added to the database in the BACKEND instance or not (Capture a screenshot of it)

3. PROJECT OVERVIEW

This project focuses on building a 2-tier application deployment architecture on AWS. The architecture consists of:

- **Frontend Layer:** A web interface running in a Docker container that interacts with users.
- **Backend Layer:** A containerized API that connects to a database hosted on MongoDB Atlas for data management.

Terraform is used to provision AWS resources like VPC, subnets, security groups, and EC2 instances, while Docker ensures the applications run in isolated, portable environments. By combining Terraform and Docker, the project delivers an automated, cost-effective, and scalable solution suitable for modern cloud-based application deployments.

Devops Project

1.Terraform files

[main.tf](#)

```
provider "aws" {  
  region = "eu-north-1a"  
}
```

VPC

```
resource "aws_vpc" "my_vpc" {  
  cidr_block      = "10.0.0.0/16"  
  enable_dns_support = true  
  enable_dns_hostnames = true  
  tags = {  
    Name = "devops2tier-vpc"  
  }  
}
```

Public Subnet

```
resource "aws_subnet" "public_subnet" {  
  vpc_id      = aws_vpc.my_vpc.id  
  cidr_block   = "10.0.1.0/24"  
  map_public_ip_on_launch = true  
  availability_zone = "eu-north-1a"  
  
  tags = {  
    Name = "public-subnet"  
  }  
}
```

Internet Gateway

```
resource "aws_internet_gateway" "igw" {  
  vpc_id = aws_vpc.my_vpc.id  
  tags = {  
    Name = "devops2tier-igw"  
  }  
}
```

```
}  
}
```

Route Table for Public Subnet

```
resource "aws_route_table" "public_rt" {  
  vpc_id = aws_vpc.my_vpc.id  
  tags = {  
    Name = "public-rt"  
  }  
}
```

```
resource "aws_route" "public_internet_access" {  
  route_table_id      = aws_route_table.public_rt.id  
  destination_cidr_block = "0.0.0.0/0"  
  gateway_id          = aws_internet_gateway.igw.id  
}
```

```
resource "aws_route_table_association" "public_assoc" {  
  subnet_id      = aws_subnet.public_subnet.id  
  route_table_id = aws_route_table.public_rt.id  
}
```

Security Groups

```
resource "aws_security_group" "frontend_sg" {  
  name      = "frontend-sg"  
  description = "Allow HTTP and SSH"  
  vpc_id    = aws_vpc.my_vpc.id
```

```
  ingress {  
    from_port = 80  
    to_port   = 80  
    protocol  = "tcp"  
    cidr_blocks = ["0.0.0.0/0"]  
  }
```

```
  ingress {  
    from_port = 22  
    to_port   = 22  
    protocol  = "tcp"  
    cidr_blocks = ["0.0.0.0/0"]  
  }
```

```

    }

    egress {
      from_port = 0
      to_port   = 0
      protocol  = "-1"
      cidr_blocks = ["0.0.0.0/0"]
    }

    tags = {
      Name = "frontend-sg"
    }
  }

  resource "aws_security_group" "backend_sg" {
    name        = "backend-sg"
    description = "Allow backend API access"
    vpc_id      = aws_vpc.my_vpc.id

    ingress {
      from_port = 5000
      to_port   = 5000
      protocol  = "tcp"
      cidr_blocks = ["0.0.0.0/0"]
    }

    egress {
      from_port = 0
      to_port   = 0
      protocol  = "-1"
      cidr_blocks = ["0.0.0.0/0"]
    }

    tags = {
      Name = "backend-sg"
    }
  }
}

```

Frontend EC2

```

resource "aws_instance" "frontend" {
  ami           = var.ami_id
  instance_type = "t3.micro"
}

```

```

subnet_id      = aws_subnet.public_subnet.id
security_groups = [aws_security_group.frontend_sg.id]
key_name       = var.key_name

user_data = <<-EOF
#!/bin/bash
apt update -y
apt install -y docker.io
systemctl start docker

# Create index.html
cat <<EOT > /home/ubuntu/index.html
<!DOCTYPE html>
<html>
<head>
  <title>DevOps Login</title>
  <style>
    body { background-color: #282c34; color: #61dafb; font-family: Arial, sans-serif; text-align:
center; }
    form { margin-top: 30px; background: #333; padding: 25px; border-radius: 8px; display:
inline-block; text-align: left; width: 300px; }
    .form-header { font-size: 22px; font-weight: bold; text-align: center; margin-bottom: 15px; }
    label { display: block; margin-bottom: 5px; }
    input[type="email"], input[type="password"] { width: 100%; padding: 8px; border: 1px solid
#61dafb; border-radius: 4px; margin-bottom: 15px; background: #222; color: #61dafb; }
    input[type="submit"] { width: 100%; background: #61dafb; border: none; padding: 10px;
cursor: pointer; color: #000; font-weight: bold; margin-top: 5px; }
    .forgot { text-align: center; margin-top: 10px; font-size: 12px; color: #61dafb; cursor:
pointer; }
    .success { margin-top: 15px; text-align: center; color: limegreen; font-weight: bold; }
  </style>
</head>
<body>
  <h1>Welcome here ! Biswa this side</h1>
  <form id="loginForm">
    <div class="form-header">Login</div>
    <label for="email">Email:</label>
    <input type="email" id="email" name="email" required>
    <label for="password">Password:</label>
    <input type="password" id="password" name="password" required>
    <input type="submit" value="Submit">
    <div class="forgot">Forgot Password?</div>
    <div id="result" class="success"></div>
  </form>

```

```

<script>
  document.getElementById("loginForm").addEventListener("submit", async function(e) {
    e.preventDefault();
    const email = document.getElementById("email").value;
    const password = document.getElementById("password").value;
    const response = await fetch("http://${aws_instance.backend.public_ip}:5000/save", {
      method: "POST",
      headers: { "Content-Type": "application/json" },
      body: JSON.stringify({ email, password })
    });
    const result = await response.json();
    document.getElementById("result").innerText = result.message;
  });
</script>
</body>
</html>
EOT

```

```

docker run -d -p 80:80 --name frontend -v
/home/ubuntu/index.html:/usr/share/nginx/html/index.html nginx
EOF
}

```

Backend EC2

```

resource "aws_instance" "backend" {
  ami            = var.ami_id
  instance_type  = "t3.micro"
  subnet_id      = aws_subnet.public_subnet.id
  associate_public_ip_address = true
  vpc_security_group_ids = [aws_security_group.backend_sg.id]
  key_name       = var.key_name

  user_data = <<-EOF
#!/bin/bash
exec > >(tee /var/log/user_data.log|logger -t user-data ) 2>&1
set -x

apt update -y
apt install -y docker.io
systemctl start docker

mkdir -p /home/ubuntu/backend

```



```
cd /home/ubuntu/backend
```

```
# Create Flask backend app
```

```
cat <<EOT > app.py
```

```
from flask import Flask, request, jsonify
```

```
from flask_cors import CORS
```

```
from pymongo import MongoClient
```

```
app = Flask(__name__)
```

```
CORS(app)
```

```
print("Starting Flask app and connecting to MongoDB Atlas...")
```

```
client =
```

```
MongoClient("mongodb+srv://dbuser:dbpass123@cluster0.i3gcqrs.mongodb.net/devopsdb?retr  
yWrites=true&w=majority")
```

```
db = client["devopsdb"]
```

```
users = db["users"]
```

```
@app.route('/save', methods=['POST'])
```

```
def save():
```

```
    data = request.json
```

```
    email = data.get("email")
```

```
    password = data.get("password")
```

```
    if not email or not password:
```

```
        return jsonify({"message": "Email and Password required"}), 400
```

```
    users.insert_one({"email": email, "password": password})
```

```
    print(f"Inserted user: {email}")
```

```
    return jsonify({"message": "Login data stored successfully!"})
```

```
if __name__ == '__main__':
```

```
    print("Flask backend running on port 5000")
```

```
    app.run(host='0.0.0.0', port=5000)
```

```
EOT
```

```
# Create Dockerfile
```

```
cat <<EOT > Dockerfile
```

```
FROM python:3.9
```

```
WORKDIR /app
```

```
COPY . .
```

```
RUN pip install flask flask-cors pymongo
```

```
CMD ["python", "app.py"]
```

```
EOT
```

```
docker build -t biswaa18/backend:1.0 .
docker run -d --name backend -p 5000:5000 biswaa18/backend:1.0
```

```
# Log container status
docker ps
docker logs -f backend > /var/log/backend.log 2>&1 &
EOF
}
```

Terraform.tfvars

```
key_name = "devops-key-1754072235"
private_key_path = "~/ssh/your-key.pem"
```

Terraform-outputs.txt

```
output "frontend_public_ip" {
  value = aws_instance.frontend.public_ip
}

output "frontend_url" {
  value = "http://${aws_instance.frontend.public_ip}:80"
}
```

[Variables.tf](#)

```
variable "aws_region" {
  default = "eu-north-1"
}
variable "ami_id" {
  description = "Ubuntu AMI ID"
  default    = "ami-07a0715df72e58928" # Ubuntu 22.04 in eu-north-1
}
variable "key_name" {
  description = "Name of your AWS key pair"
}

variable "private_key_path" {
  description = "Path to your private key file"
}
```

2. Containerized Application Link (provide your link from dockerhub)

<https://hub.docker.com/repository/docker/biswaa18/frontend/general>

<https://hub.docker.com/repository/docker/biswaa18/backend/general>

3. Frontend.sh

```
#!/bin/bash
sudo apt update -y
sudo apt install docker.io -y
sudo systemctl enable docker
sudo systemctl start docker
sudo usermod -aG docker ubuntu
```

Sudo docker run -d -p 80:80 biswaa18/frontend-app:latest

4. Backend.sh

```
#!/bin/bash
sudo apt update -y
sudo apt install docker.io -y
sudo systemctl enable docker
sudo systemctl start docker
sudo usermod -aG docker ubuntu
```

Sudo docker run -d -p 3306:3306 biswaa18/backend-app:latest

5. A Textfile containing terraform outputs.

```
Initializing the backend...
Initializing provider plugins...
- Reusing previous version of hashicorp/aws from the dependency lock file
- Using previously-installed hashicorp/aws v6.7.0

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
vyper@vyper-MS-7C95:~/Desktop/2241018146_bisu/devops-2tier$

vyper@vyper-MS-7C95:~/Desktop/2241018146_bisu/devops-2tier$ terraform apply -auto-approve
vpc.vpc: Refreshing state... [id=vpc-08fd466551750e1c9]
internet_gateway.igw: Refreshing state... [id=igw-021daa9e2efe0c9ee]
route_table.public_rt: Refreshing state... [id=rtb-02cb12ed3f0bb31d0]
subnet.public_subnet: Refreshing state... [id=subnet-0a82047a45d199cb6]
security_group.backend_sg: Refreshing state... [id=sg-0ac092445a571cbb8]
security_group.frontend_sg: Refreshing state... [id=sg-034907e791f7e27a3]
internet_internet_access: Refreshing state... [id=rtb-02cb12ed3f0bb31d01080289494]
route_table_association.public_assoc: Refreshing state... [id=rtbassoc-00f437312cfaf1959]
instance.backend: Refreshing state... [id=i-047269e719b650c0b]
instance.frontend: Refreshing state... [id=i-032d3252cc9ab13e4]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
update in-place
destroy and then create replacement

Terraform will perform the following actions:

aws_instance.backend will be updated in-place
resource "aws_instance" "backend" {
  id              = "i-047269e719b650c0b"
  - public_dns     = "ec2-16-170-163-36.eu-north-1.compute.amazonaws.com" -> (known after apply)
  - public_ip      = "16.170.163.36" -> (known after apply)
  tags            = {}
  - user_data      = <<-EOT
    #!/bin/bash
    apt update -y
    apt install -y docker,lo
    systemctl start docker

    mkdir -p /home/ubuntu/backend
    cd /home/ubuntu/backend

    # Create Flask backend app
    cat <<-EOT > app.py
    from flask import Flask, request, jsonify
    from flask_cors import CORS
    from pymongo import MongoClient
    + import sys

    app = Flask(__name__)
  - root_block_device {
    - delete_on_termination = true -> null
    - device_name           = "/dev/sda1" -> null
    - encrypted             = false -> null
    - iops                  = 100 -> null
    - tags                  = {} -> null
    - tags_all              = {} -> null
    - throughput            = 0 -> null
    - volume_id             = "vol-0c0b025519c9f632c" -> null
    - volume_size           = 8 -> null
    - volume_type           = "gp2" -> null
    # (1 unchanged attribute hidden)
  }
}

Plan: 1 to add, 1 to change, 1 to destroy.

Changes to Outputs:
- frontend_public_ip = "51.20.78.46" -> (known after apply)
- frontend_url       = "http://51.20.78.46:80" -> (known after apply)
aws_instance.frontend: Destroying... [id=i-032d3252cc9ab13e4]
aws_instance.frontend: Still destroying... [id=i-032d3252cc9ab13e4, 00m10s elapsed]
aws_instance.frontend: Still destroying... [id=i-032d3252cc9ab13e4, 00m20s elapsed]
aws_instance.frontend: Still destroying... [id=i-032d3252cc9ab13e4, 00m30s elapsed]
aws_instance.frontend: Destruction complete after 32s
aws_instance.backend: Modifying... [id=i-047269e719b650c0b]
aws_instance.backend: Still modifying... [id=i-047269e719b650c0b, 00m10s elapsed]
aws_instance.backend: Still modifying... [id=i-047269e719b650c0b, 00m20s elapsed]
aws_instance.backend: Still modifying... [id=i-047269e719b650c0b, 00m30s elapsed]
aws_instance.backend: Modifications complete after 36s [id=i-047269e719b650c0b]
aws_instance.frontend: Creating...
aws_instance.frontend: Still creating... [00m10s elapsed]
aws_instance.frontend: Creation complete after 15s [id=i-0e62a8e063e45694c]

Apply complete! Resources: 1 added, 1 changed, 1 destroyed.

Outputs:
frontend_public_ip = "13.60.224.55"
frontend_url       = "http://13.60.224.55:80"
```

EC2 > Instances

Dashboard

EC2 Global View

Events

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Capacity Reservations

Images

AMIs

AMI Catalog

Elastic Block Store

Volumes

Snapshots

Lifecycle Manager

Network & Security

Security Groups

Elastic IPs

Placement Groups

Key Pairs

Network Interfaces

Load Balancing

Load Balancers

Target Groups

Trust Stores

Auto Scaling

eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#instances:

Search

[Alt+S]

Europe (Stockholm)

Browse @ 0238-0958-2353

Instances (1/14) Info

Find instance by attribute or tag (case-sensitive)

All states

Last updated less than a minute ago

Connect

Instance state

Actions

Launch instances

Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4	Elastic IP	IPv6 IPs	Monitoring	Security group name	Key name
InstanceState	t3.micro	–	View alarms +	eu-north-1a	–	–	–	–	disabled	–	devops-i
InstanceState	t3.micro	–	View alarms +	eu-north-1a	–	–	–	–	disabled	–	devops-i
InstanceState	t3.micro	3/3 checks passed	View alarms +	eu-north-1a	ec2-13-61-152-88.eu-n...	13.61.152.88	–	–	disabled	frontend-sg	devops-i
InstanceState	t3.micro	–	View alarms +	eu-north-1a	–	–	–	–	disabled	–	devops-i
InstanceState	t3.micro	–	View alarms +	eu-north-1a	–	–	–	–	disabled	–	devops-i
InstanceState	t3.micro	–	View alarms +	eu-north-1a	–	–	–	–	disabled	–	devops-i
InstanceState	t3.micro	3/3 checks passed	View alarms +	eu-north-1a	ec2-16-171-235-194.eu...	16.171.235.194	–	–	disabled	backend-sg	devops-i
InstanceState	t3.micro	–	View alarms +	eu-north-1a	–	–	–	–	disabled	–	devops-i
InstanceState	t3.micro	3/3 checks passed	View alarms +	eu-north-1b	–	–	–	–	disabled	allow_http	auto-ger

I-0d9bced14dc463c4b

Details

Status and alarms

Monitoring

Security

Networking

Storage

Tags

Instance summary Info

Instance ID I-0d9bced14dc463c4b

IPV4 address 16.171.235.194 | open address

Instance state Running

Private IPV4 addresses 10.0.1.186

Public DNS ec2-16-171-235-194.eu-north-1.compute.amazonaws.com | open address

Hostname type IP name: ip-10-0-1-186.eu-north-1.compute.internal

Private IP DNS name (IPv4 only) ip-10-0-1-186.eu-north-1.compute.internal

Instance type t3.micro

VPC ID vpc-08f4666551750e1c9 (devops2tier-vpc)

Answer private resource DNS name –

Auto-assigned IP address 16.171.235.194 (Public IP)

Elastic IP addresses –

AWS Compute Optimizer finding

User: arn:aws:iam::023809582353:user/Browse is not authorized to perform: compute-optimizer:GetEnrollmentStatus on resource: * because no identity-based policy allows the co

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EC2 > Instances

Search

[Alt+S]

Europe (Stockholm)

Browse @ 0238-0958-2353

Instances (14) Info

Find instance by attribute or tag (case-sensitive)

All states

Last updated less than a minute ago

Connect

Instance state

Actions

Launch instances

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4	Elastic IP	IPv6 IPs
	I-0ea27da0012a80df	Terminated	t3.micro	–	View alarms +	eu-north-1a	–	–	–	–
	I-032432523c9ab13e4	Terminated	t3.micro	–	View alarms +	eu-north-1a	–	–	–	–
	I-05490e2c0812d6828	Running	t3.micro	3/3 checks passed	View alarms +	eu-north-1a	ec2-13-61-152-88.eu-n...	13.61.152.88	–	–
	I-0297c56254b2d28e41	Terminated	t3.micro	–	View alarms +	eu-north-1a	–	–	–	–
	I-00b571e8e63a42171	Terminated	t3.micro	–	View alarms +	eu-north-1a	–	–	–	–
	I-047269e719b650c0b	Terminated	t3.micro	–	View alarms +	eu-north-1a	–	–	–	–
	I-0d9bced14dc463c4b	Running	t3.micro	3/3 checks passed	View alarms +	eu-north-1a	ec2-16-171-235-194.eu...	16.171.235.194	–	–
	I-0e62a8e063e45694c	Terminated	t3.micro	–	View alarms +	eu-north-1a	–	–	–	–
	I-0ee33ca04a4efe10f	Running	t3.micro	3/3 checks passed	View alarms +	eu-north-1b	–	–	–	–

Select an instance

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Docker-frontend

Dockerfiles (frontend)

```
FROM nginx:alpine
COPY index.html /usr/share/nginx/html/index.html
EXPOSE 80
```

Index.html

```
<!DOCTYPE html>
<html>
<head>
  <title>DevOps Login</title>
  <style>
    body {
      background-color: #282c34;
      color: #61dafb;
      font-family: Arial, sans-serif;
      text-align: center;
      margin: 0;
      padding: 0;
    }
    h1 {
      color: #61dafb;
      margin-top: 30px;
    }
    form {
      margin-top: 30px;
      background: #333;
      padding: 25px;
      border-radius: 8px;
      display: inline-block;
      text-align: left;
      width: 300px;
    }
    .form-header {
      font-size: 22px;
      font-weight: bold;
      text-align: center;
      margin-bottom: 15px;
    }
  </style>
</head>
<body>
  <h1>DevOps Login</h1>
  <form>
    <div class="form-header">
      <h2>DevOps Login</h2>
    </div>
    <input type="text" value="Username" />
    <input type="password" value="Password" />
    <input type="submit" value="Login" />
  </form>
</body>
</html>
```

```

label {
    display: block;
    margin-bottom: 5px;
}
input[type="email"], input[type="password"] {
    width: 100%;
    padding: 8px;
    border: 1px solid #61dafb;
    border-radius: 4px;
    margin-bottom: 15px;
    background: #222;
    color: #61dafb;
}
input[type="submit"] {
    width: 100%;
    background: #61dafb;
    border: none;
    padding: 10px;
    cursor: pointer;
    color: #000;
    font-weight: bold;
    margin-top: 5px;
}
.forgot {
    text-align: center;
    margin-top: 10px;
    font-size: 12px;
    color: #61dafb;
    cursor: pointer;
}
.success {
    margin-top: 15px;
    text-align: center;
    color: limegreen;
    font-weight: bold;
}
</style>
</head>
<body>
<h1>Welcome here ! Biswa this side</h1>
<form id="loginForm">
    <div class="form-header">Login</div>

    <label for="email">Email:</label>

```

```

<input type="email" id="email" name="email" required>

<label for="password">Password:</label>
<input type="password" id="password" name="password" required>

<input type="submit" value="Submit">
<div class="forgot">Forgot Password?</div>
<div id="result" class="success"></div>
</form>

<script>
document.getElementById("loginForm").addEventListener("submit", async function(e) {
  e.preventDefault();
  const email = document.getElementById("email").value;
  const password = document.getElementById("password").value;

  const response = await fetch("http://13.61.181.216:5000/save", {
    method: "POST",
    headers: { "Content-Type": "application/json" },
    body: JSON.stringify({ email, password })
  });

  const result = await response.json();
  document.getElementById("result").innerText = result.message;
});
</script>
</body>
</html>

```

docker-backend

- [app.py](#)

```

from flask import Flask, request, jsonify
from flask_cors import CORS
from pymongo import MongoClient

app = Flask(__name__)
CORS(app)

# MongoDB Atlas Connection
try:

```



```

client =
MongoClient("mongodb+srv://dbuser:dbpass123@cluster0.i3gcqrs.mongodb.net/devopsdb?retr
yWrites=true&w=majority&appName=Cluster0")
db = client["devopsdb"]
users = db["users"]
print("Connected to MongoDB Atlas successfully")
except Exception as e:
    print("MongoDB Connection Failed:", e)

@app.route('/save', methods=['POST'])
def save():
    data = request.json
    email = data.get("email")
    password = data.get("password")

    if not email or not password:
        return jsonify({"message": "Email and Password required"}), 400

    users.insert_one({"email": email, "password": password})
    return jsonify({"message": "Login data stored successfully!"})

if __name__ == '__main__':
    app.run(host='0.0.0.0', port=5000)

```

Requirements.txt

```

flask
Pymongo

```

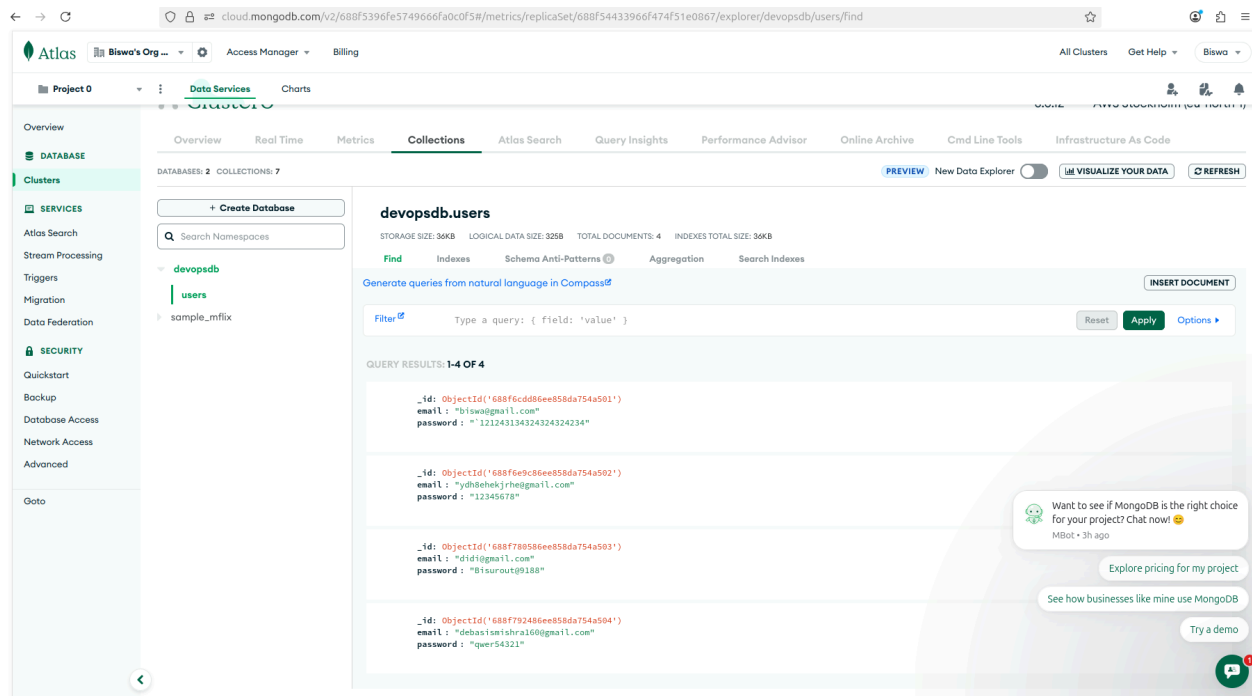
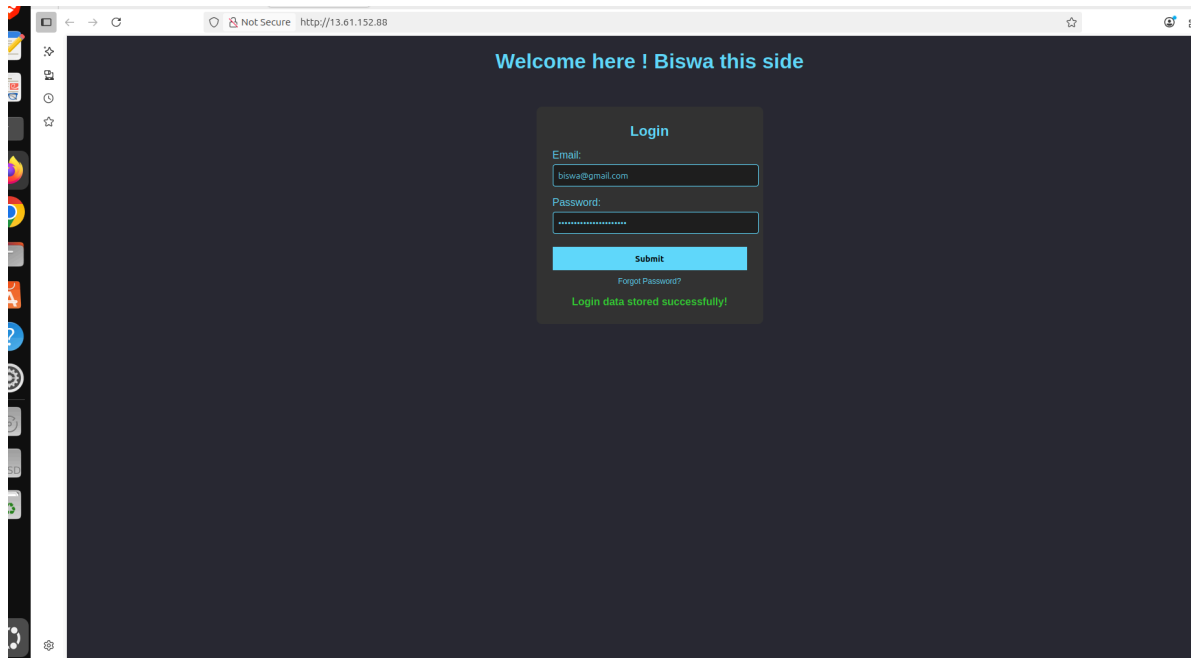
Dockerfiles (backend)

```

FROM python:3.9
WORKDIR /app
COPY requirements.txt .
RUN pip install -r requirements.txt
RUN pip install flask pymongo flask-cors
COPY . .
CMD ["python", "app.py"]

```

6.Screenshots of Manual Testing



biswaa18
Docker Personal

Repositories

Collaborations

Settings

Default privacy

Notifications

Billing

Usage

Pulls

Storage

Repositories / frontend / General

biswaa18/frontend

Last pushed about 4 hours ago · Repository size: 21.4 MB

Add a description

Add a category

General

Tags

Image Management

Collaborators

Webhooks

Settings

Using 0 of 1 private repositories. [Get more](#)

Docker commands

To push a new tag to this repository:

docker push biswaa18/frontend:tagname

Public view

Tags

DOCKER SCOUT INACTIVE

Activate

This repository contains 2 tag(s).

Tag	OS	Type	Pulled	Pushed
1.0		Image	less than 1 day	about 4 hours
1.1		Image	less than 1 day	about 8 hours

See all

buildcloud

Build with Docker Build Cloud

Accelerate image build times with access to cloud-based builders and shared cache.

Docker Build Cloud executes builds on optimally-dimensioned cloud infrastructure with dedicated per-organization isolation.

Get faster builds through shared caching across your team, native multi-platform support, and encrypted data transfer - all without managing infrastructure.

Go to Docker Build Cloud

Repository overview

INCOMPLETE

An overview describes what your image does and how to run it. It displays in the public view of your repository once you have pushed some content.

Add overview

biswaa18
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Collaborations

Settings

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Notifications

Billing

Usage

Pulls

Storage

Repositories / backend / General

biswaa18/backend

Last pushed about 4 hours ago · Repository size: 488.4 MB

Add a description

Add a category

General

Tags

Image Management

Collaborators

Webhooks

Settings

Using 0 of 1 private repositories. [Get more](#)

Docker commands

To push a new tag to this repository:

docker push biswaa18/backend:tagname

Public view

Tags

DOCKER SCOUT INACTIVE

Activate

This repository contains 1 tag(s).

Tag	OS	Type	Pulled	Pushed
1.0		Image	less than 1 day	about 4 hours

See all

buildcloud

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Add overview