DATA-236 Sec 21 & 71 - Distributed Systems for Data Engineering HOMEWORK 1

Vimalanandhan Sivanandham
017596436

GitHub link for full code artifacts - https://github.com/Vimalanandhan/DATA-236---Distributed-Systems-for-Data-Engineering

Instructions:

- Please provide the code solution for each question along with its intended output.

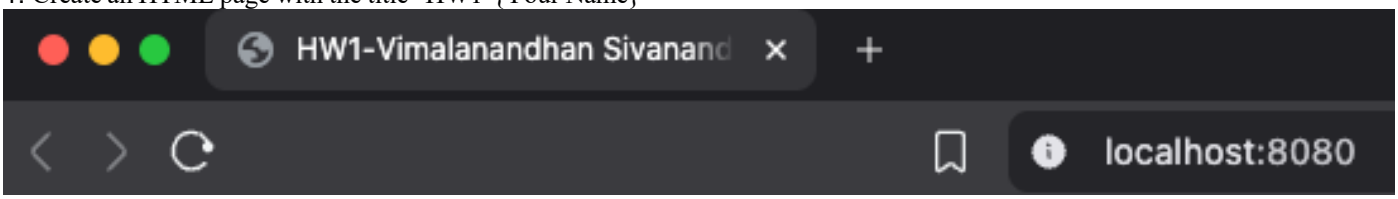
Ensure that the code and corresponding output screenshots are placed together, one below the other.

- Screenshots must be provided for the output of each question.
- Submission should be in PDF Format

Questions:

I. HTML

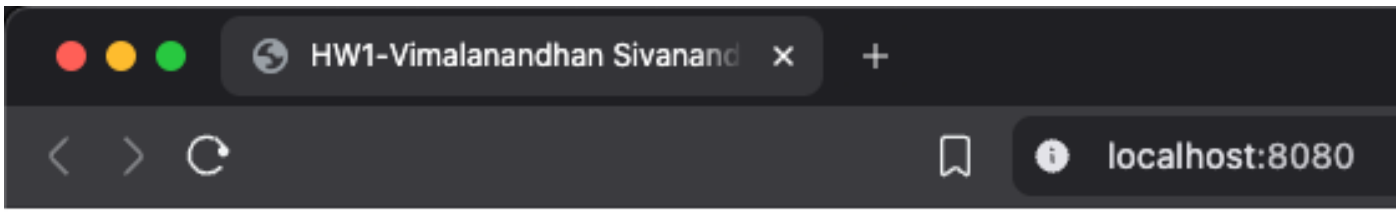
1. Create an HTML page with the title "HW1-{Your Name}"




```
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>HW1-Vimalanandhan Sivanandham</title>
```

2. Add a heading tag to name the title of the blog topic. (Note. you have to use the header tag which renders the biggest font size)

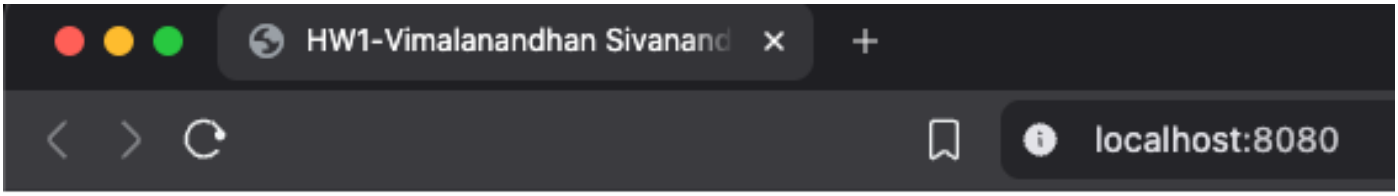


Vimal's Tech world blog Submission Form

```
<body>
    <h1>Vimal's Tech world blog Submission Form</h1>
```

3. Create a form for the blog. The form should include the following:

a. A text input for the blog title, placeholder text “Enter the title of your blog”. This field should be required and the cursor should automatically focus on this field when the page loads.

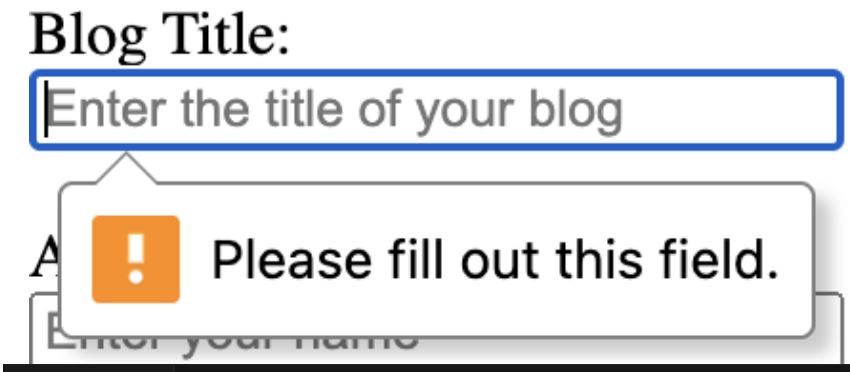


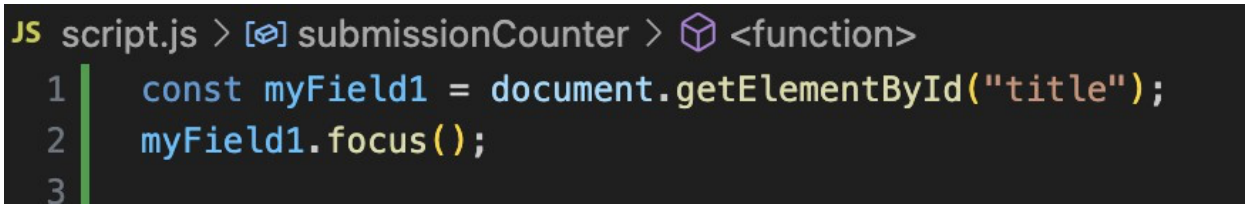
Vimal's Tech world blog Submission Form

Blog Title:

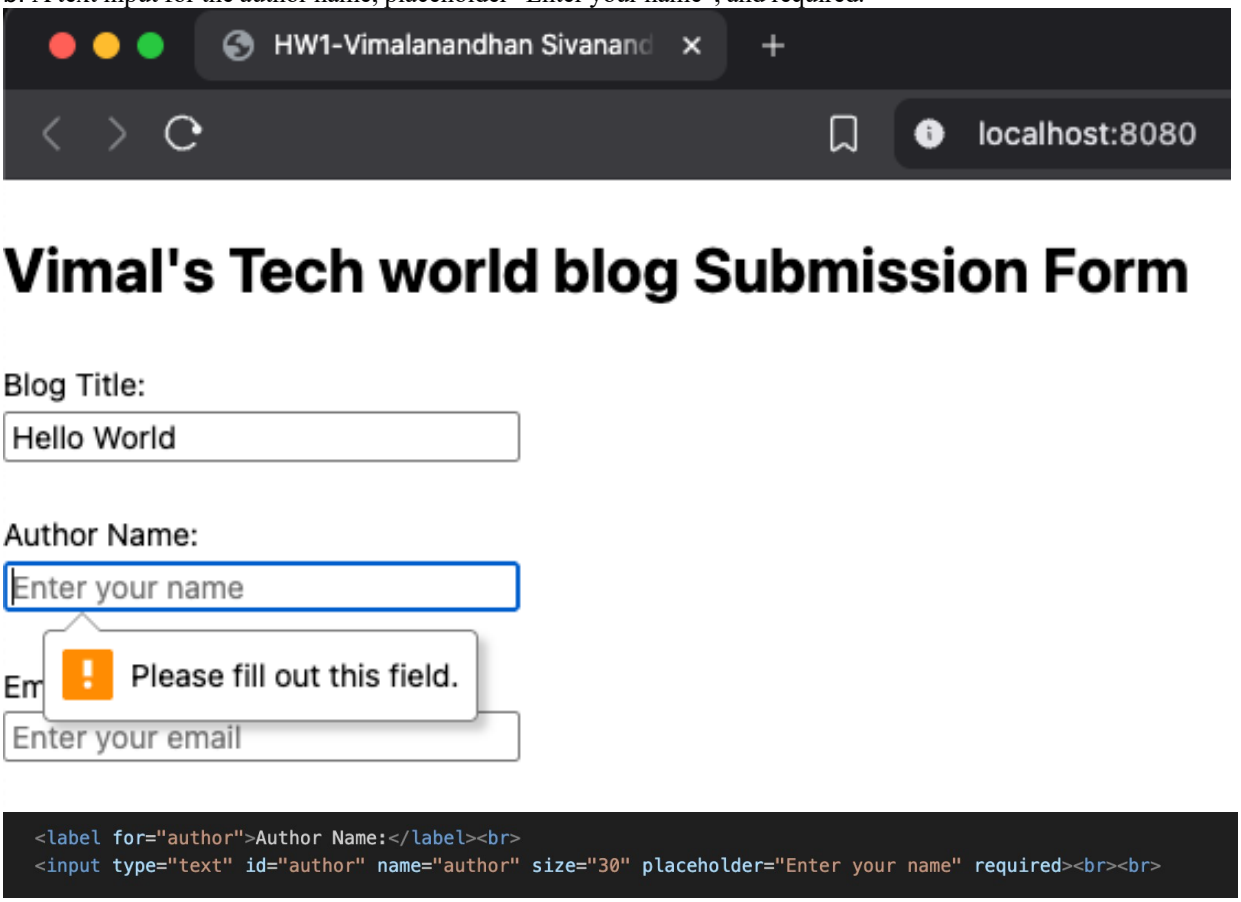
Enter the title of your blog

Required field:



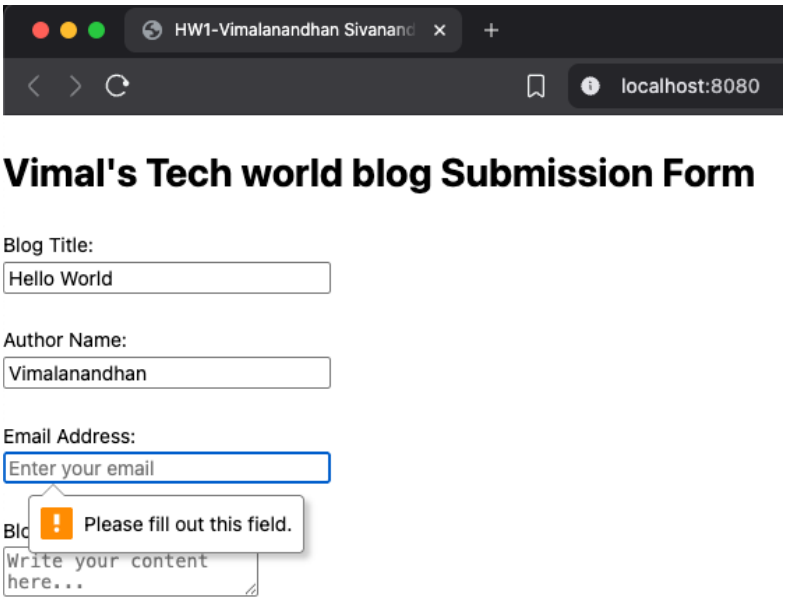


b. A text input for the author name, placeholder "Enter your name", and required.



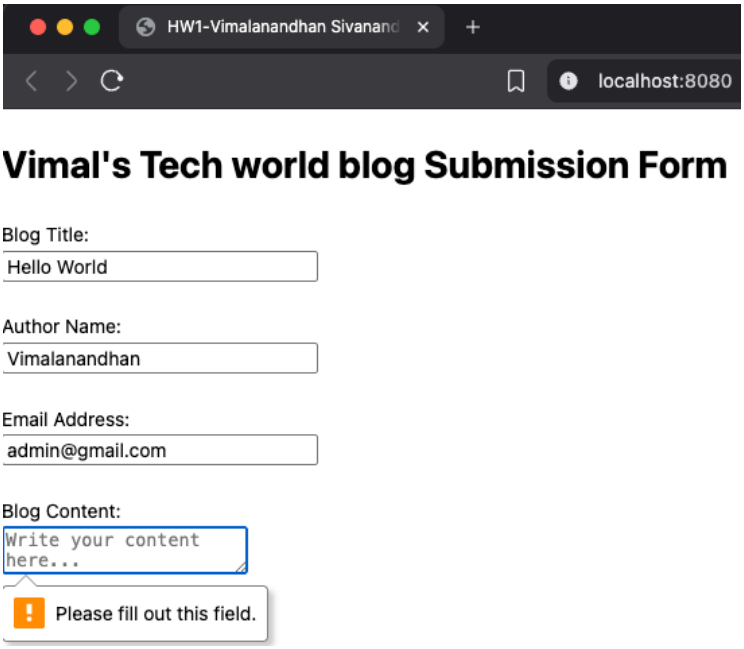

```
<label for="author">Author Name:</label><br>
<input type="text" id="author" name="author" size="30" placeholder="Enter your name" required><br><br>
```

c. An email input for the email address, placeholder “Enter your email”, and required.



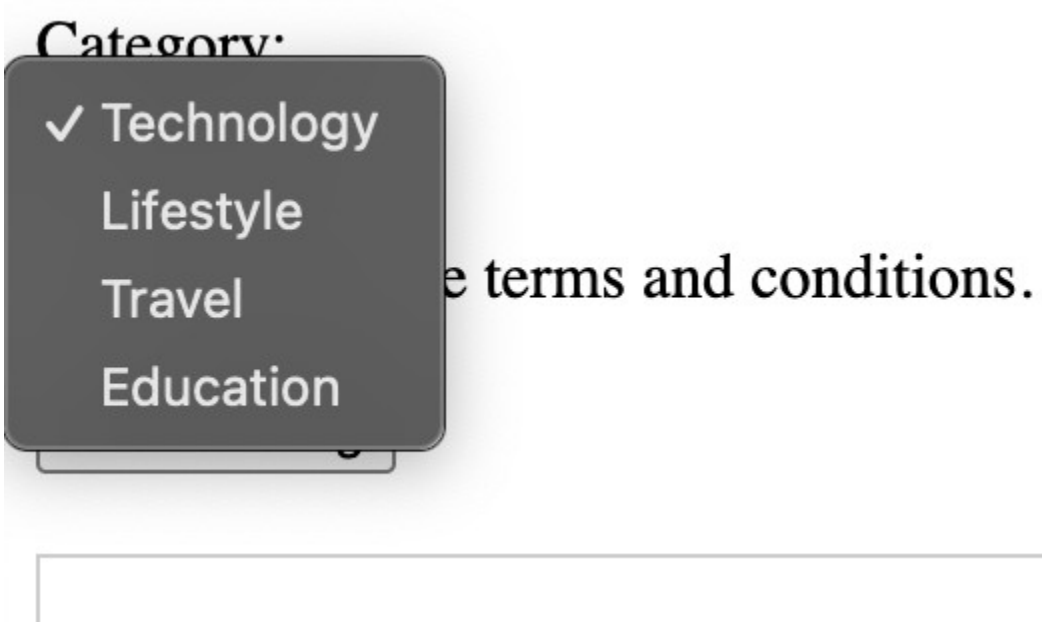
```
<label for="email">Email Address:</label><br>
<input type="email" id="email" name="email" size="30" placeholder="Enter your email" required><br><br>
```

d. A text area for the blog content, placeholder “Write your content here...”, and required.



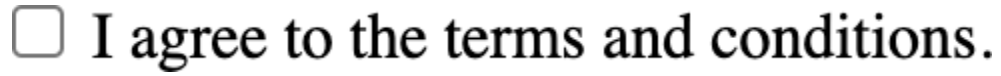

```
<label for="content">Blog Content:</label><br>
<textarea id="content" name="content" size="30" placeholder="Write your content here..." required></textarea><br><br>
```

e. A dropdown for category selection, and options "Technology," "Lifestyle," "Travel," and "Education."

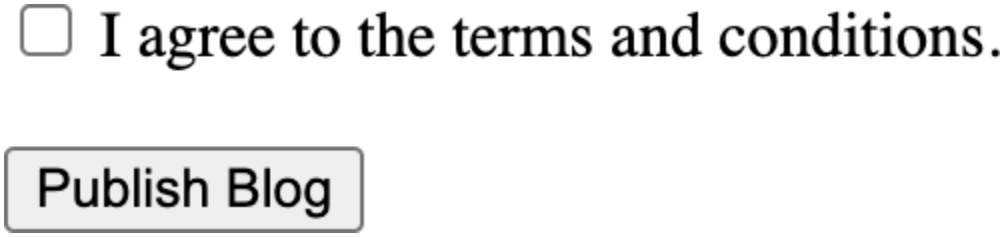



```
<label for="category">Category:</label><br>
<select id="category" name="category">
    <option value="Technology">Technology</option>
    <option value="Lifestyle">Lifestyle</option>
    <option value="Travel">Travel</option>
    <option value="Education">Education</option>
</select><br><br>
```

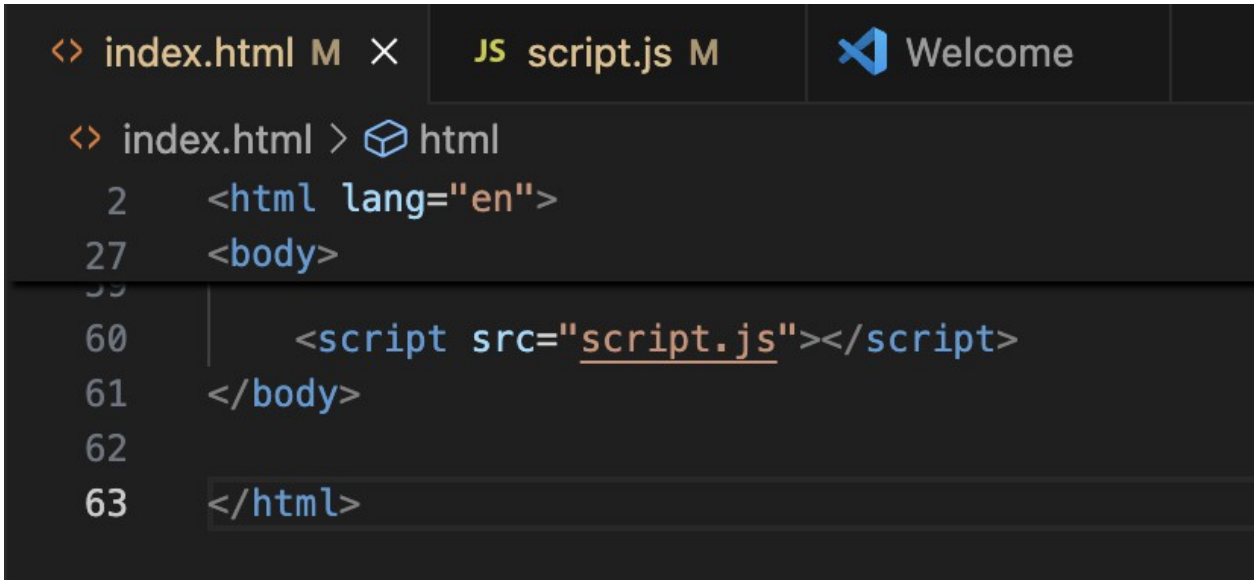
f. A checkbox and a label with the text “I agree to the terms and conditions.”



g. A submit button with the text “Publish Blog”.



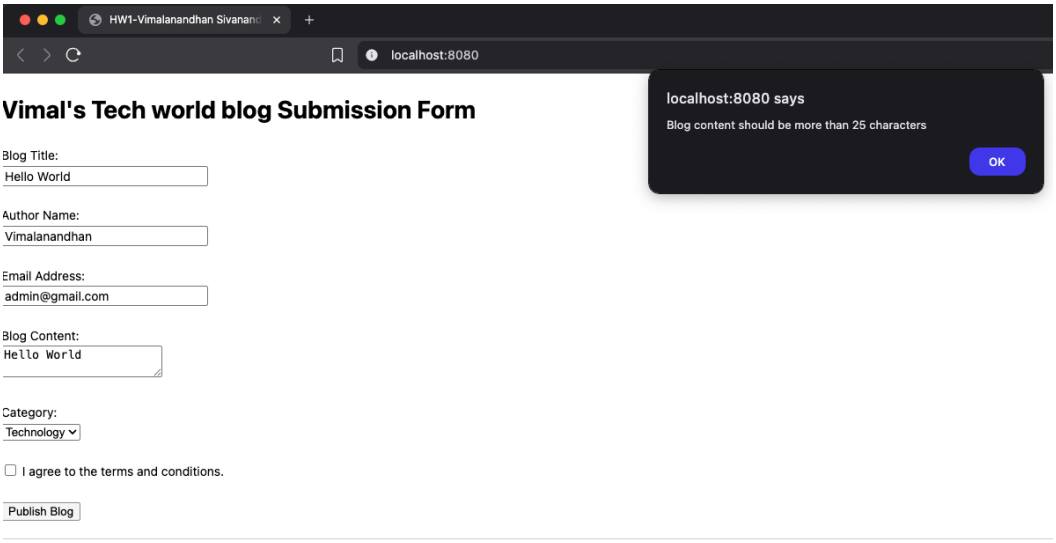
4. Add a script tag to link your javascript code for part II at the end of your HTML file.



II. Javascript

1. Write a javascript function using an arrow function to validate:

a. Verify if the blog content is more than 25 characters. If the validation fails, display an alert with the message “Blog content should be more than 25 characters”.



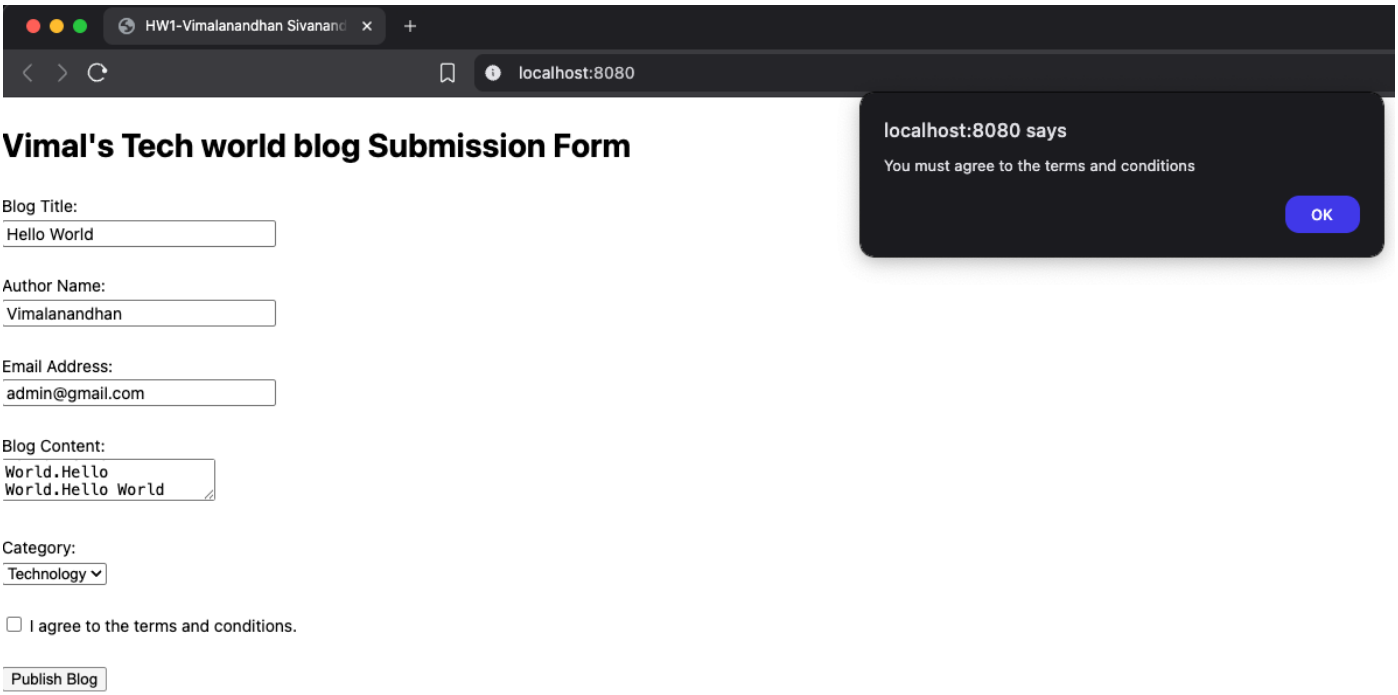
```
const validateForm = (event) => {
    event.preventDefault();

    const contentText = document.getElementById('content').value;

    const terms = document.getElementById('terms').checked;

    if (contentText.length <= 25) { // Use contentText here
        alert("Blog content should be more than 25 characters");
        return;
    }
```

b. Verify if the terms and conditions checkbox is checked. If the validation fails, display an alert with the message “You must agree to the terms and conditions”.

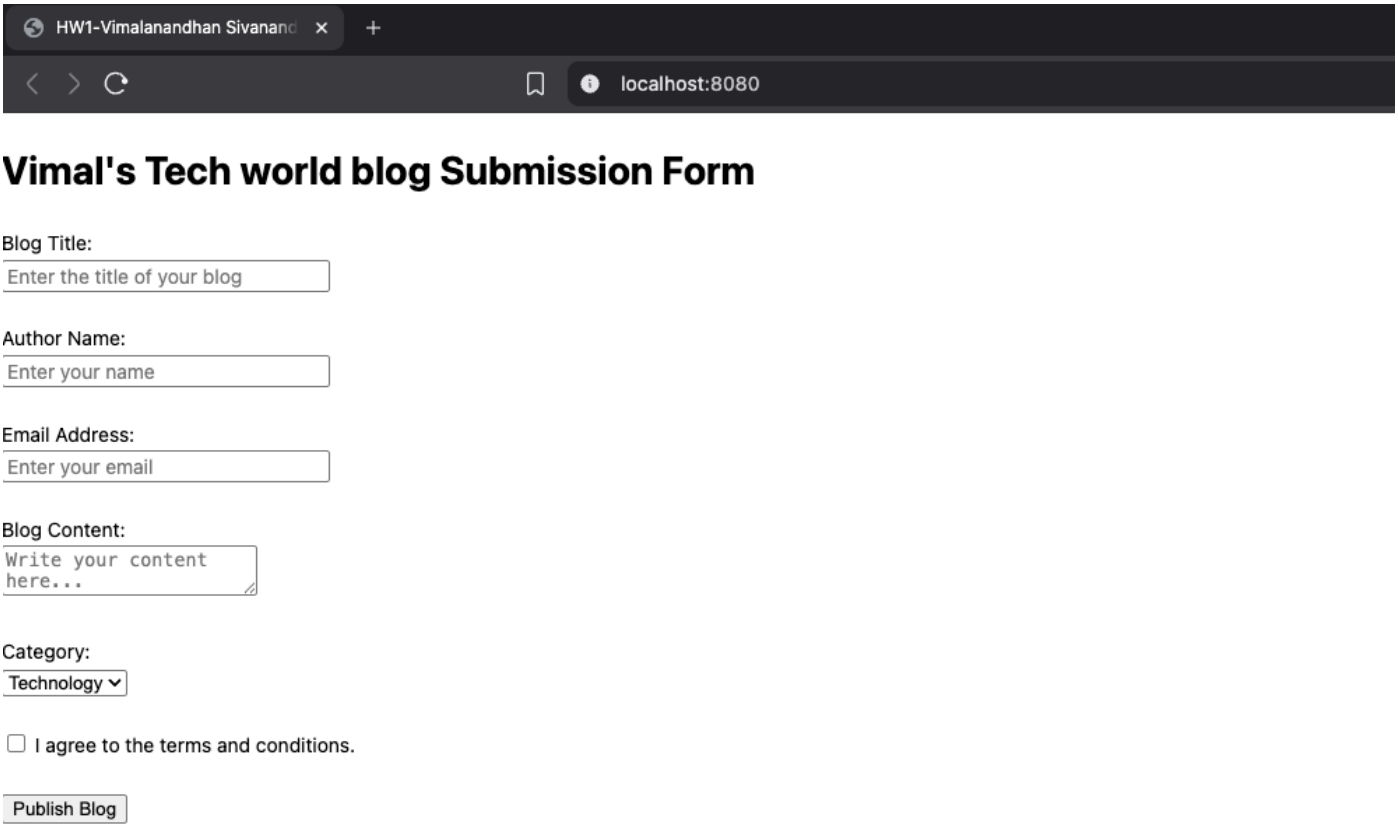


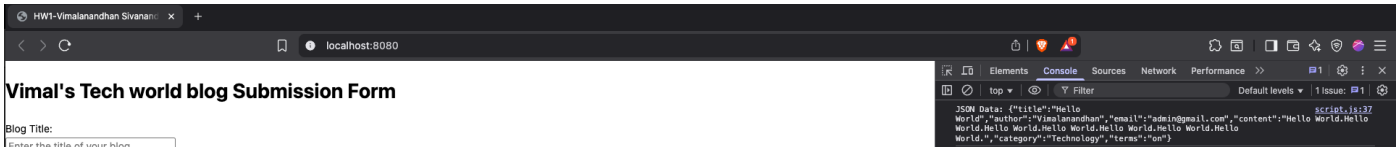

```
const terms = document.getElementById('terms').checked;
```

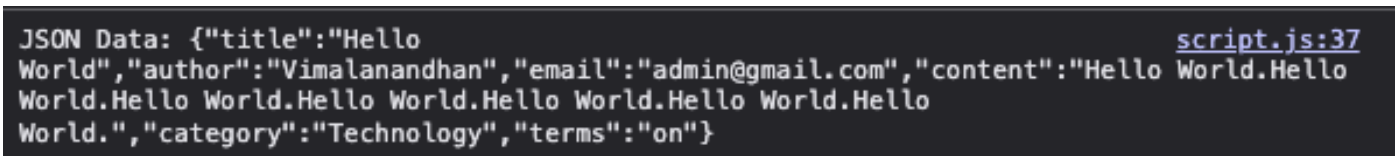
```
const validateForm = (event) => {

    if (!terms) {
        alert("You must agree to the terms and conditions");
        return;
    }
```

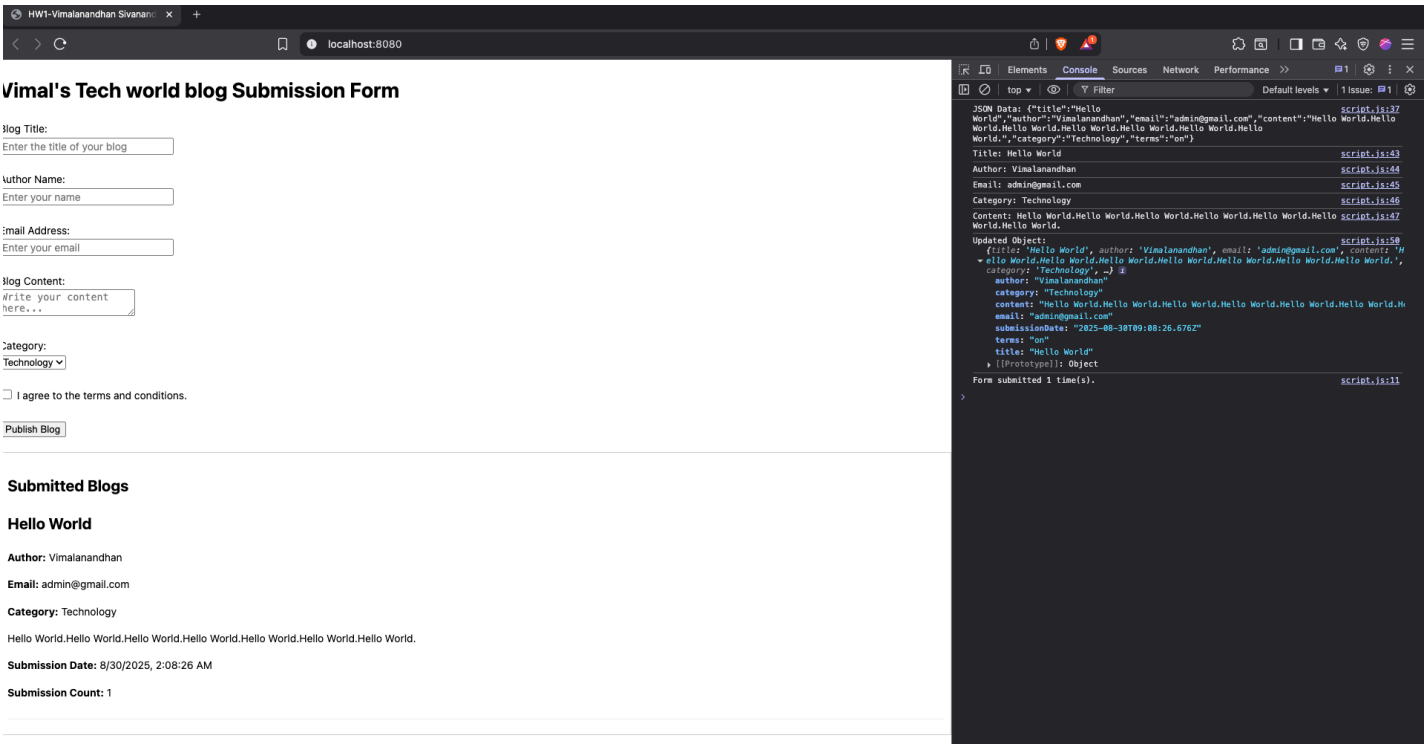
2. After the form submission is successful, convert the form data into a JSON string and log the output in the console.

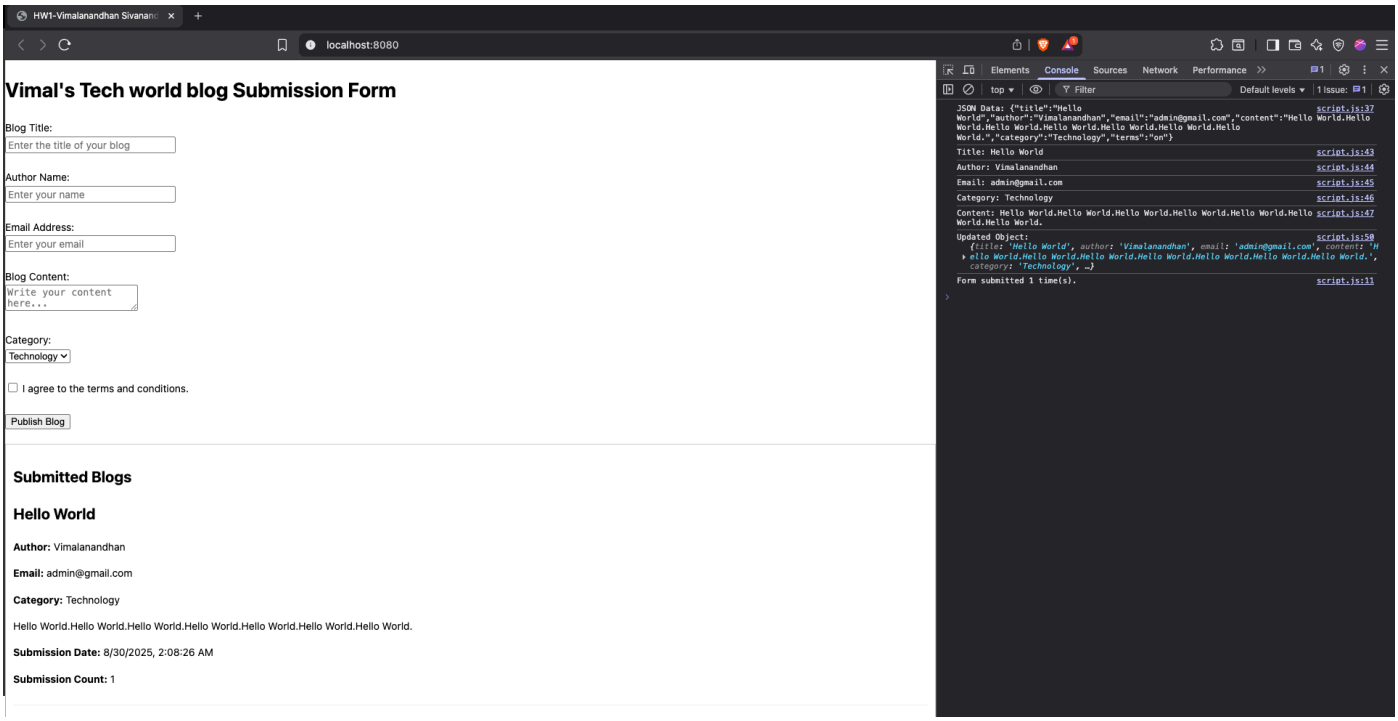


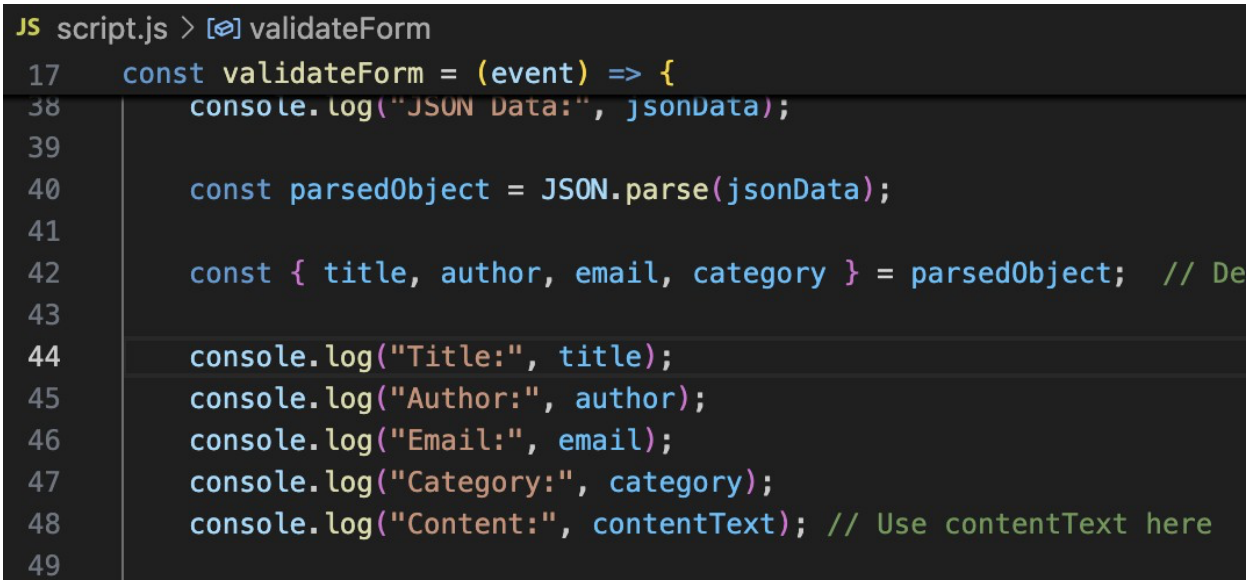




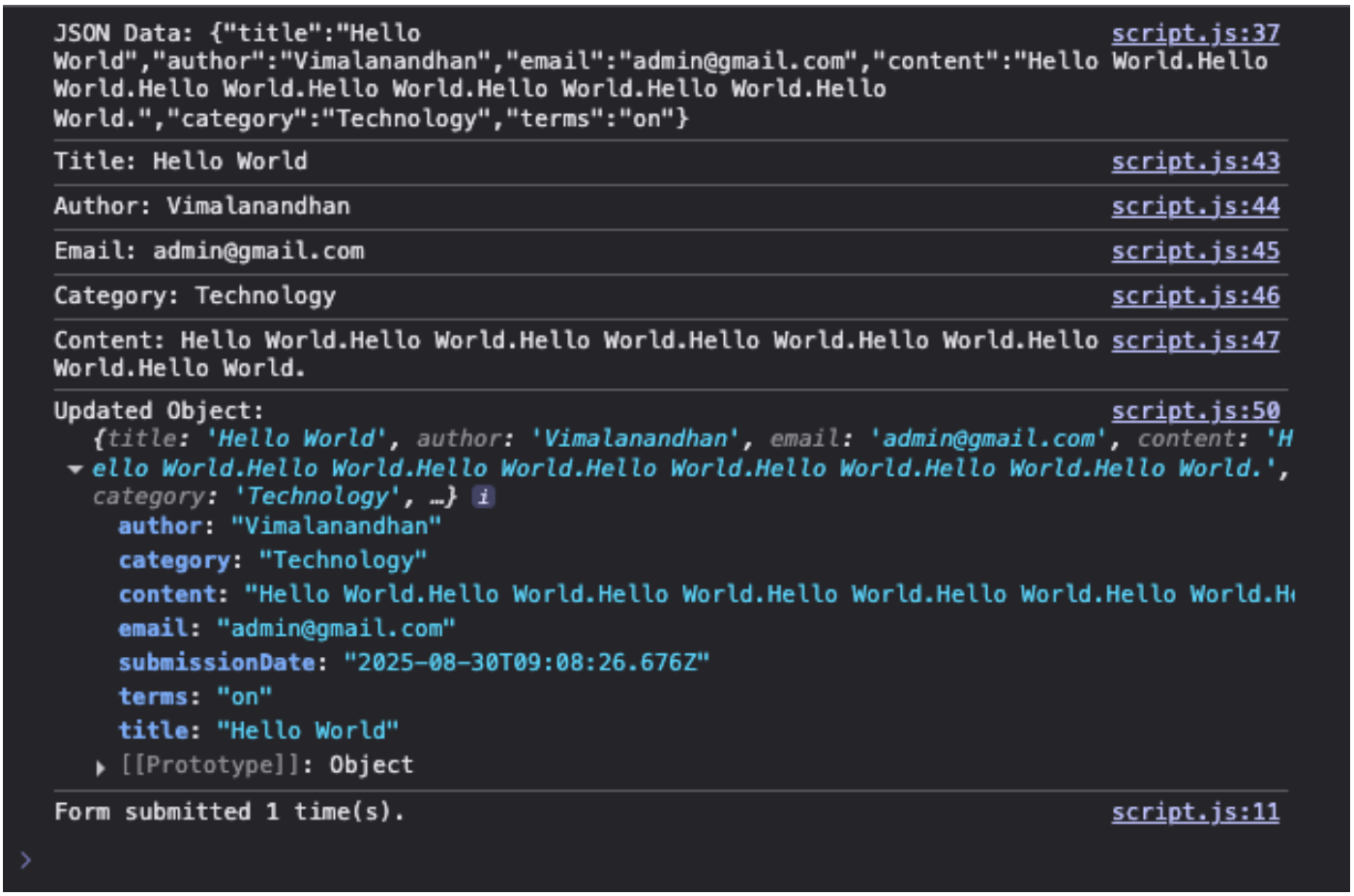
3. Use object destructuring to extract the title and email fields from the parsed object and log their values in the console


HW1-Vimalanandhan Sivanand
localhost:8080
Vimal's Tech world blog Submission Form
Blog Title:
Enter the title of your blog
Author Name:
Enter your name
Email Address:
Enter your email
Blog Content:
Write your content here...
Category:
Technology
I agree to the terms and conditions.
Publish Blog
Submitted Blogs
Hello World
Author: Vimalanandhan
Email: admin@gmail.com
Category: Technology
Hello World.Hello World.Hello World.Hello World.Hello World.Hello World.Hello World.
Submission Date: 8/30/2025, 2:08:26 AM
Submission Count: 1
Elements
Console
Sources
Network
Performance
JSON Data: {"title":"Hello World","author":"Vimalanandhan","email":"admin@gmail.com","content":"Hello World.Hello World.Hello World.Hello World.Hello World.Hello World.Hello World.Hello World.","category":"Technology","terms":"on"}
Title: Hello World
Author: Vimalanandhan
Email: admin@gmail.com
Category: Technology
Content: Hello World.Hello World.Hello World.Hello World.Hello World.Hello World.Hello World.Hello World.
Updated Object:
Form submitted 1 time(s).

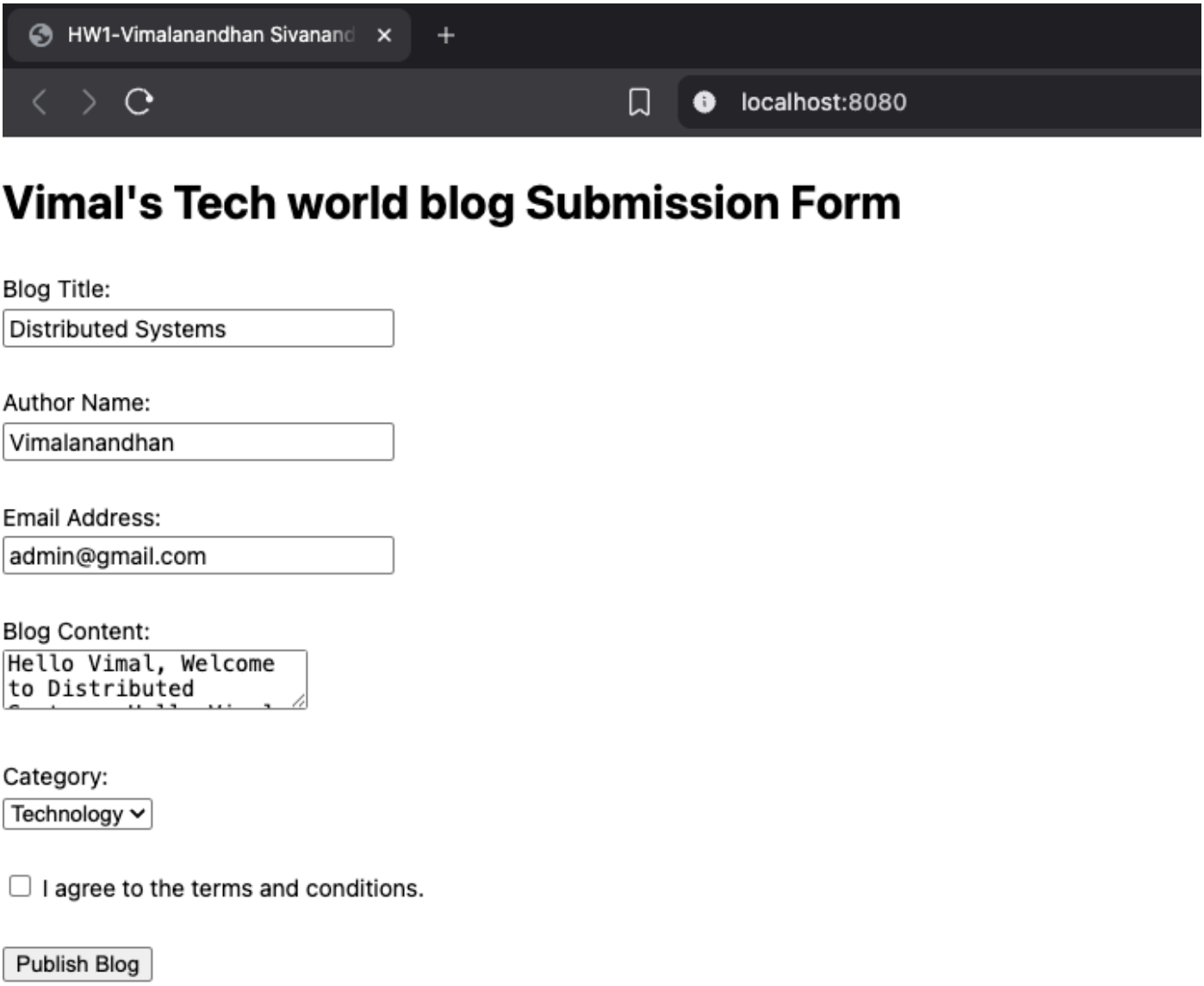

HW1-Vimalanandhan Sivanand
localhost:8080
Vimal's Tech world blog Submission Form
Blog Title:
Enter the title of your blog
Author Name:
Enter your name
Email Address:
Enter your email
Blog Content:
Write your content here...
Category:
Technology
I agree to the terms and conditions.
Publish Blog
Submitted Blogs
Hello World
Author: Vimalanandhan
Email: admin@gmail.com
Category: Technology
Hello World.Hello World.Hello World.Hello World.Hello World.Hello World.Hello World.
Submission Date: 8/30/2025, 2:08:26 AM
Submission Count: 1
Elements
Console
Sources
Network
Performance
JSON Data: {"title":"Hello World","author":"Vimalanandhan","email":"admin@gmail.com","content":"Hello World.Hello World.Hello World.Hello World.Hello World.Hello World.Hello World.Hello World.","category":"Technology","terms":"on"}
Title: Hello World
Author: Vimalanandhan
Email: admin@gmail.com
Category: Technology
Content: Hello World.Hello World.Hello World.Hello World.Hello World.Hello World.Hello World.Hello World.
Updated Object:
Form submitted 1 time(s).

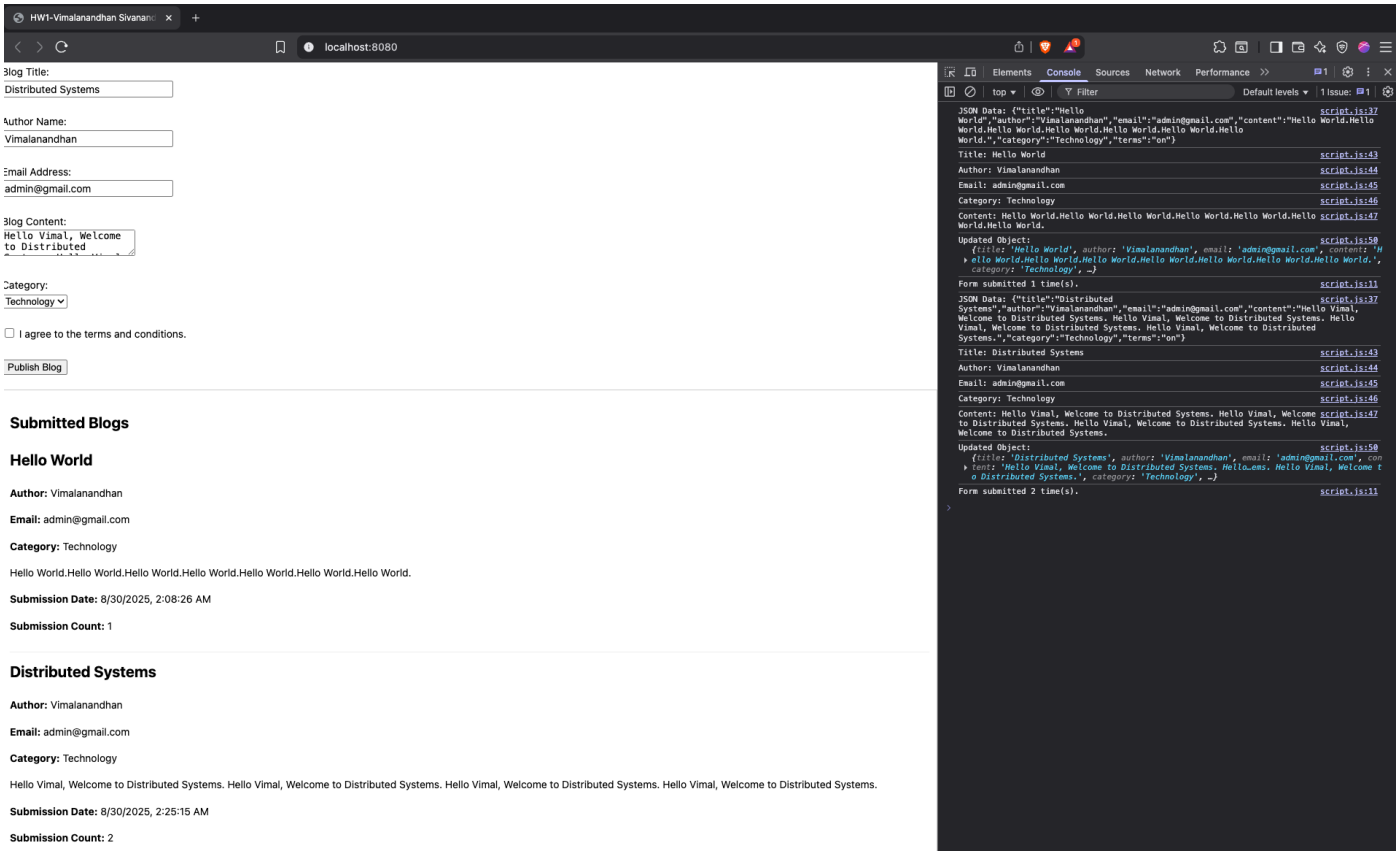

JS script.js > validateForm
17 const validateForm = (event) => {
38 console.log("JSON Data:", jsonData);
39
40 const parsedObject = JSON.parse(jsonData);
41
42 const { title, author, email, category } = parsedObject; // De
43
44 console.log("Title:", title);
45 console.log("Author:", author);
46 console.log("Email:", email);
47 console.log("Category:", category);
48 console.log("Content:", contentText); // Use contentText here
49

4. Use the spread operator to add a new field “submissionDate” with the current date and time to the parsed object. Log the updated parsed object in the console.



5. Create a closure to track how many times the form has been successfully submitted and log the submission count each time the form is submitted.





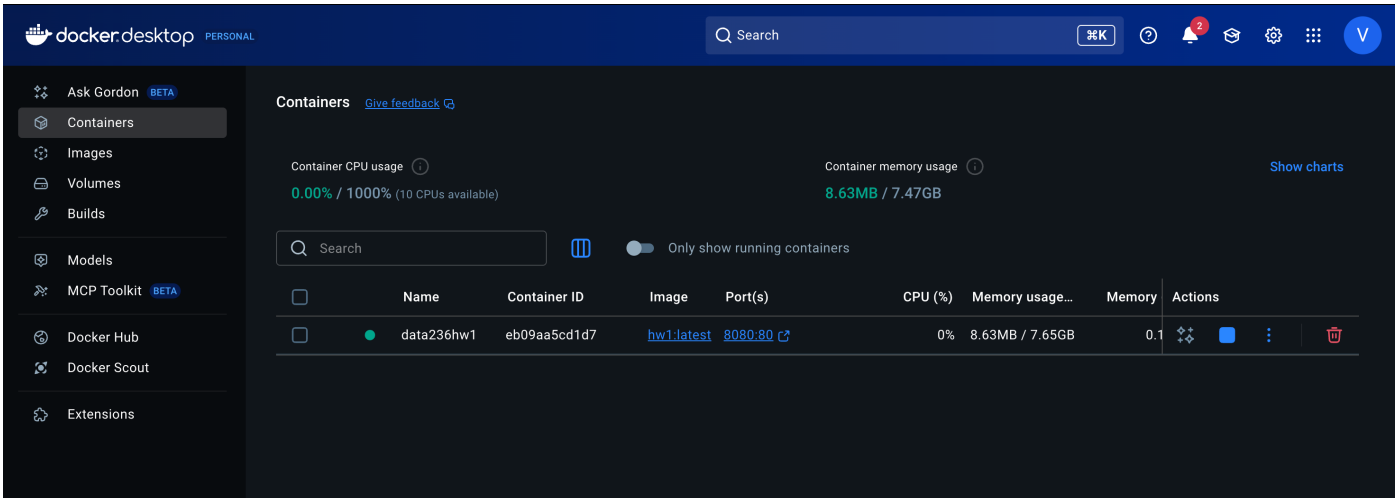

```
const submissionCounter = (() => {
    let count = 0;
    return () => {
        count++;
        console.log(`Form submitted ${count} time(s).`);
        return count;
    };
})();
```

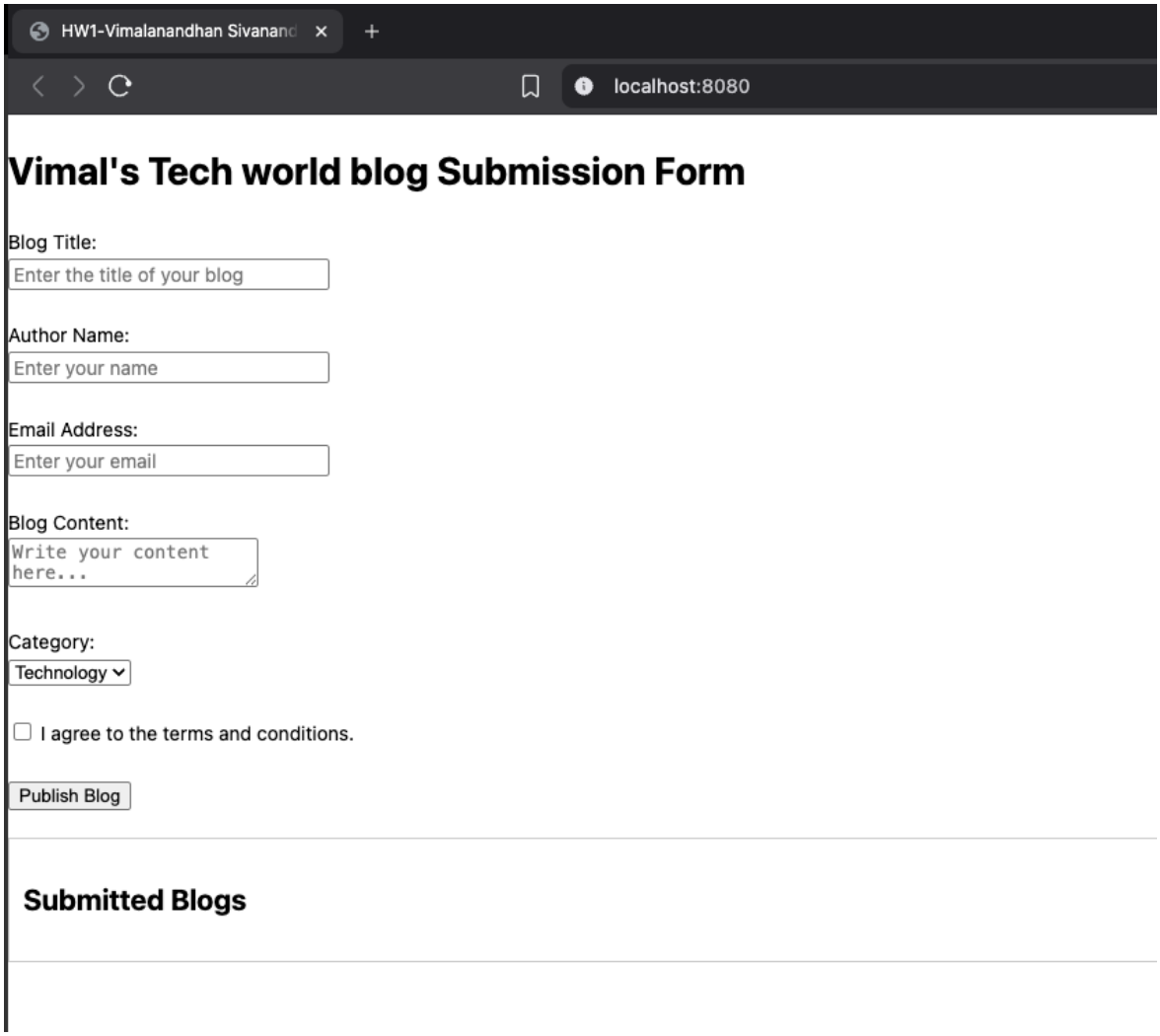
DEPLOYMENT:
Docker: Create a docker image of the above application and build and run the application using docker in your local.

```
spartan@MLK-SCS-M7J3NJ9HTV DATA-236-HW1-main % docker build -t hw1:latest .
[+] Building 1.3s (9/9) FINISHED                                                docker:desktop-linux
 => [internal] load build definition from Dockerfile                                          0.0s
 => => transferring dockerfile: 344B                                                          0.0s
 => [internal] load metadata for docker.io/library/nginx:alpine                               0.9s
 => [auth] library/nginx:pull token for registry-1.docker.io                                  0.0s
 => [internal] load .dockerignore                                                             0.0s
 => => transferring context: 2B                                                               0.0s
 => [1/3] FROM docker.io/library/nginx:alpine@sha256:42a516af16b852e33b7682d5ef8acbd5d13fe08fecadc7ed98605b  0.0s
 => => resolve docker.io/library/nginx:alpine@sha256:42a516af16b852e33b7682d5ef8acbd5d13fe08fecadc7ed98605b  0.0s
 => [internal] load build context                                                             0.0s
 => => transferring context: 4.75kB                                                           0.0s
 => CACHED [2/3] RUN rm -rf /usr/share/nginx/html/*                                           0.0s
 => [3/3] COPY . /usr/share/nginx/html/                                                       0.0s
 => exporting to image                                                                        0.3s
 => => exporting layers                                                                       0.3s
 => => exporting manifest sha256:f26681899dc7e12a5a721ef7bc428fee0746b5caef03e667931a75e945d1e635  0.0s
 => => exporting config sha256:1fa406555af76923d952ac33a7759edeb3eea2e2bc2e5671e16953d49de2d6bd  0.0s
 => => exporting attestation manifest sha256:1e703661c386460263daa450ffee2fc9867aa75f9eba968e1d7948003a8f25  0.0s
 => => exporting manifest list sha256:ad4adde55b73badfa8a83ee2d84e13caaca18c604c31763ca9e52b0d81269249  0.0s
 => => naming to docker.io/library/hw1:latest                                                 0.0s
 => => unpacking to docker.io/library/hw1:latest                                              0.1s
```

```
spartan@MLK-SCS-M7J3NJ9HTV DATA-236-HW1-main % docker run -d -p 8080:80 --name data236hw1  hw1:latest
eb09aa5cd1d7b9940032c59278f3ef8a36a337d53b2b11dd7215cb2ca2ceb08a
```

Provide the screenshot of your app running on your localhost.

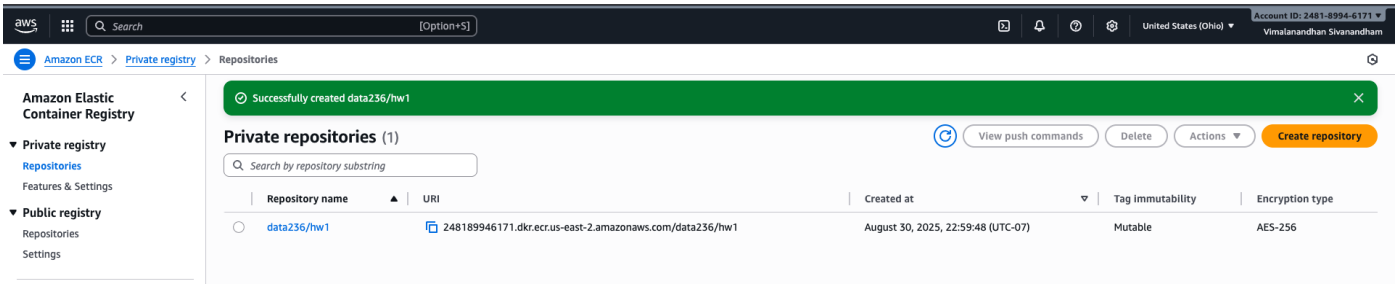




AWS ECS:

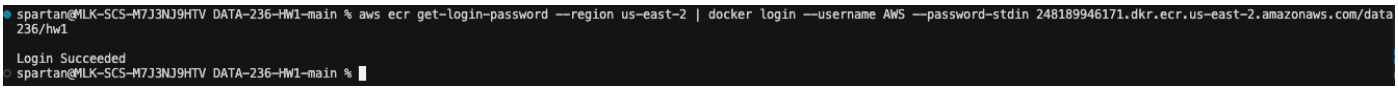
Create an AWS ECS service (only one task) running the above application using the docker image created above.

1. Create an ECR Repository. Go to the AWS Management Console > Elastic Container Registry (ECR). Click Create Repository

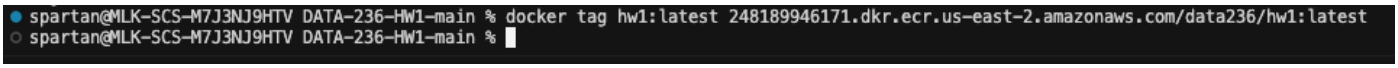


2. Authenticate Docker to ECR
   aws ecr get-login-password --region <your-region> | docker login --username AWS

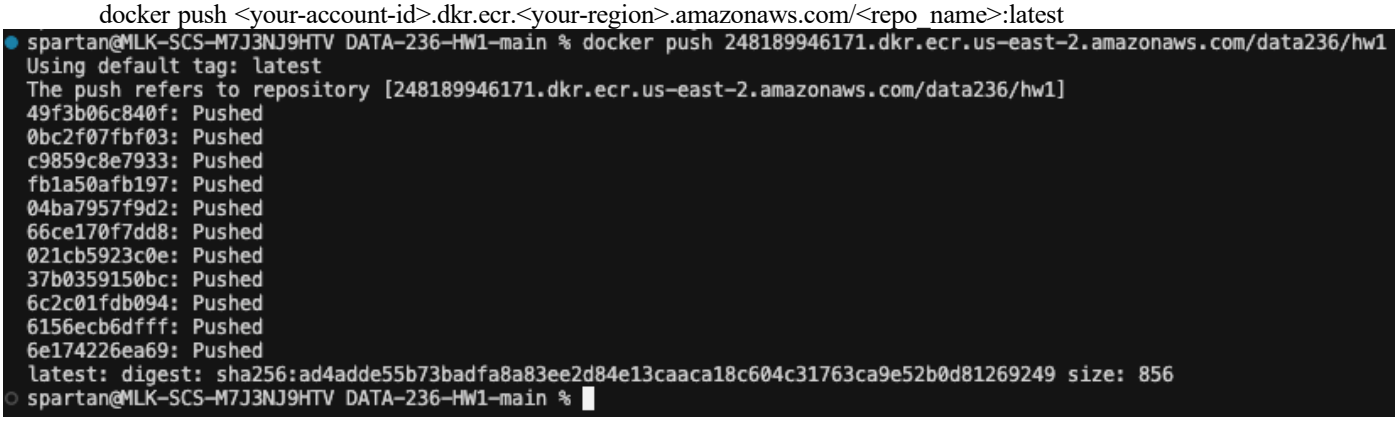
--password-stdin <your-account-id>.dkr.ecr.<your-region>.amazonaws.com



3. Tag and push the docker image
   docker tag <repo_name>:latest
   <your-account-id>.dkr.ecr.<your-region>.amazonaws.com/<repo_name>:latest



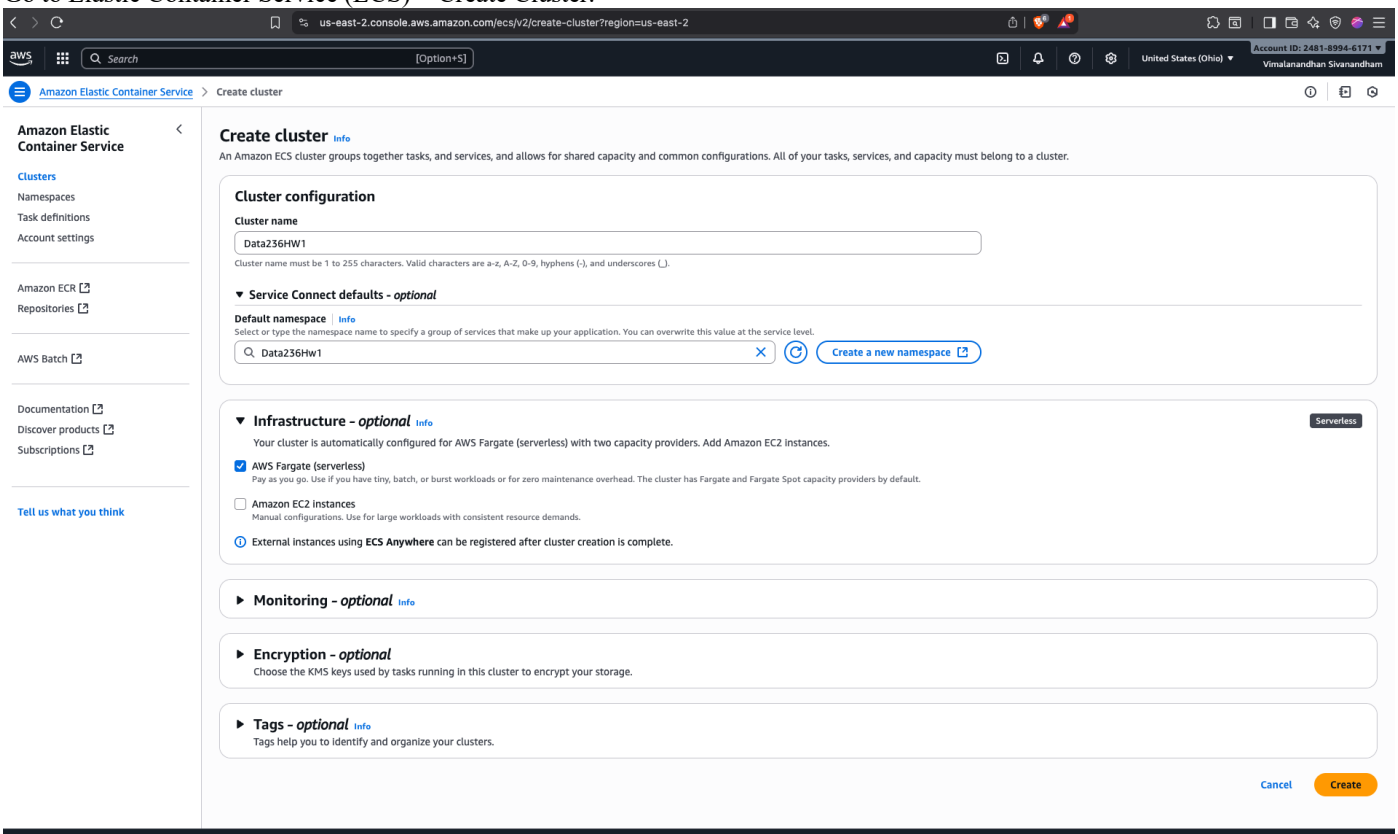
   docker push <your-account-id>.dkr.ecr.<your-region>.amazonaws.com/<repo_name>:latest

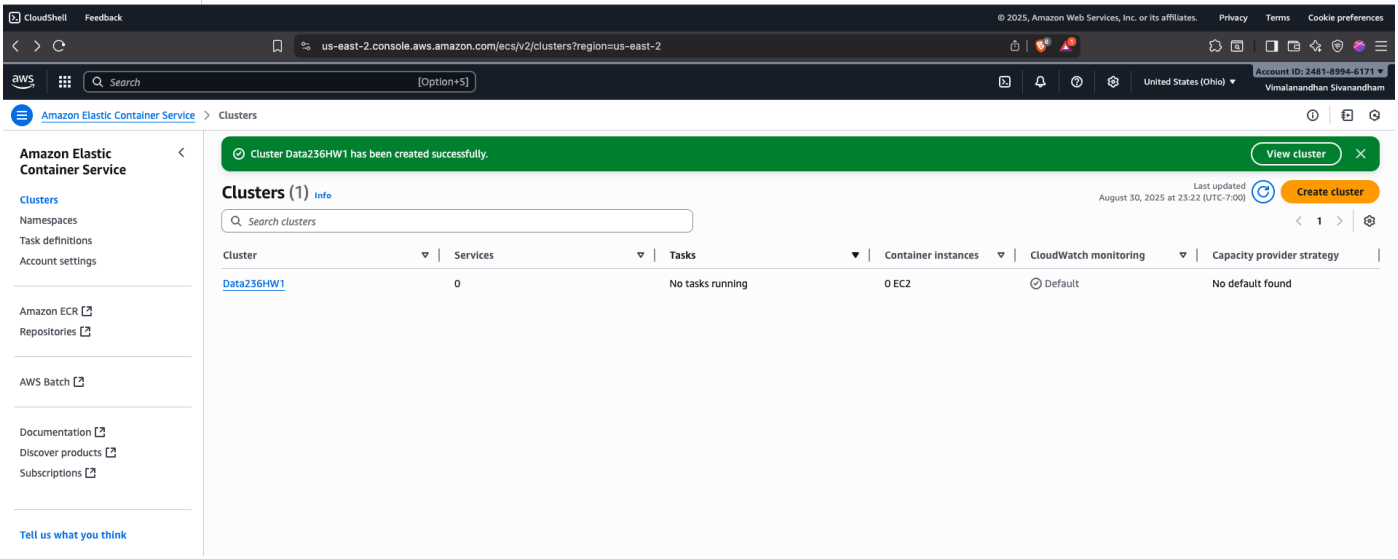


Deploy to AWS ECS

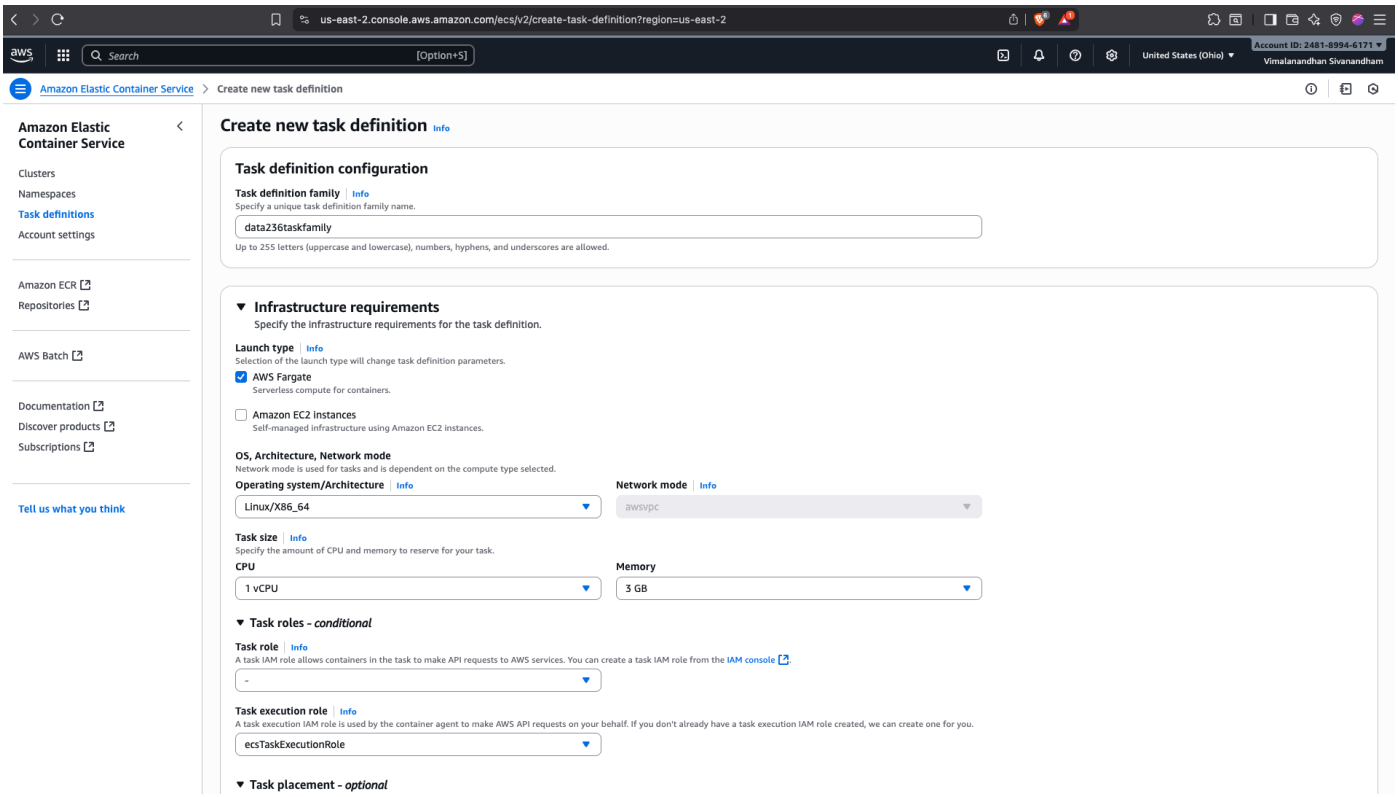
1. Create an ECS Cluster:

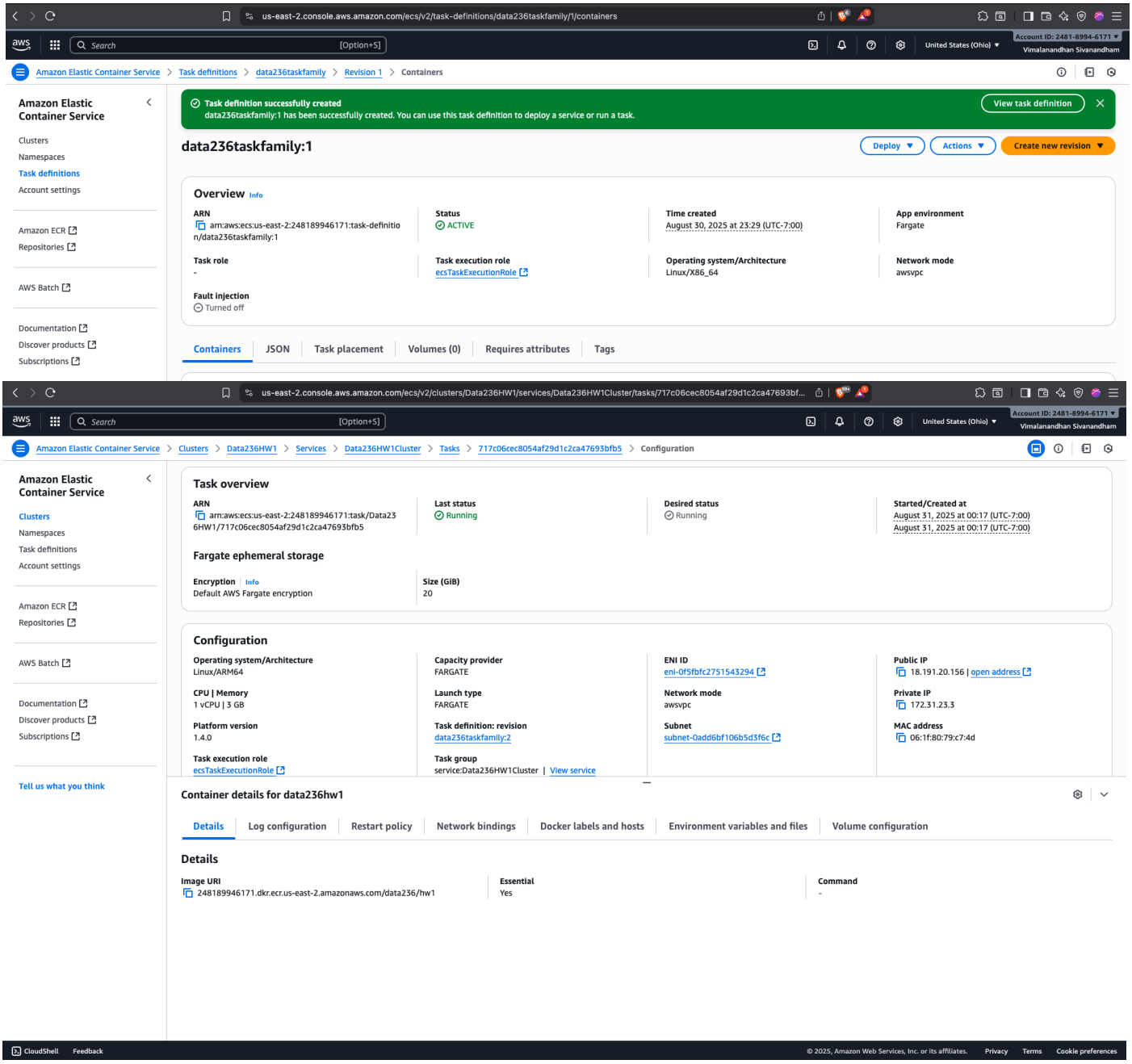
Go to Elastic Container Service (ECS) > Create Cluster.





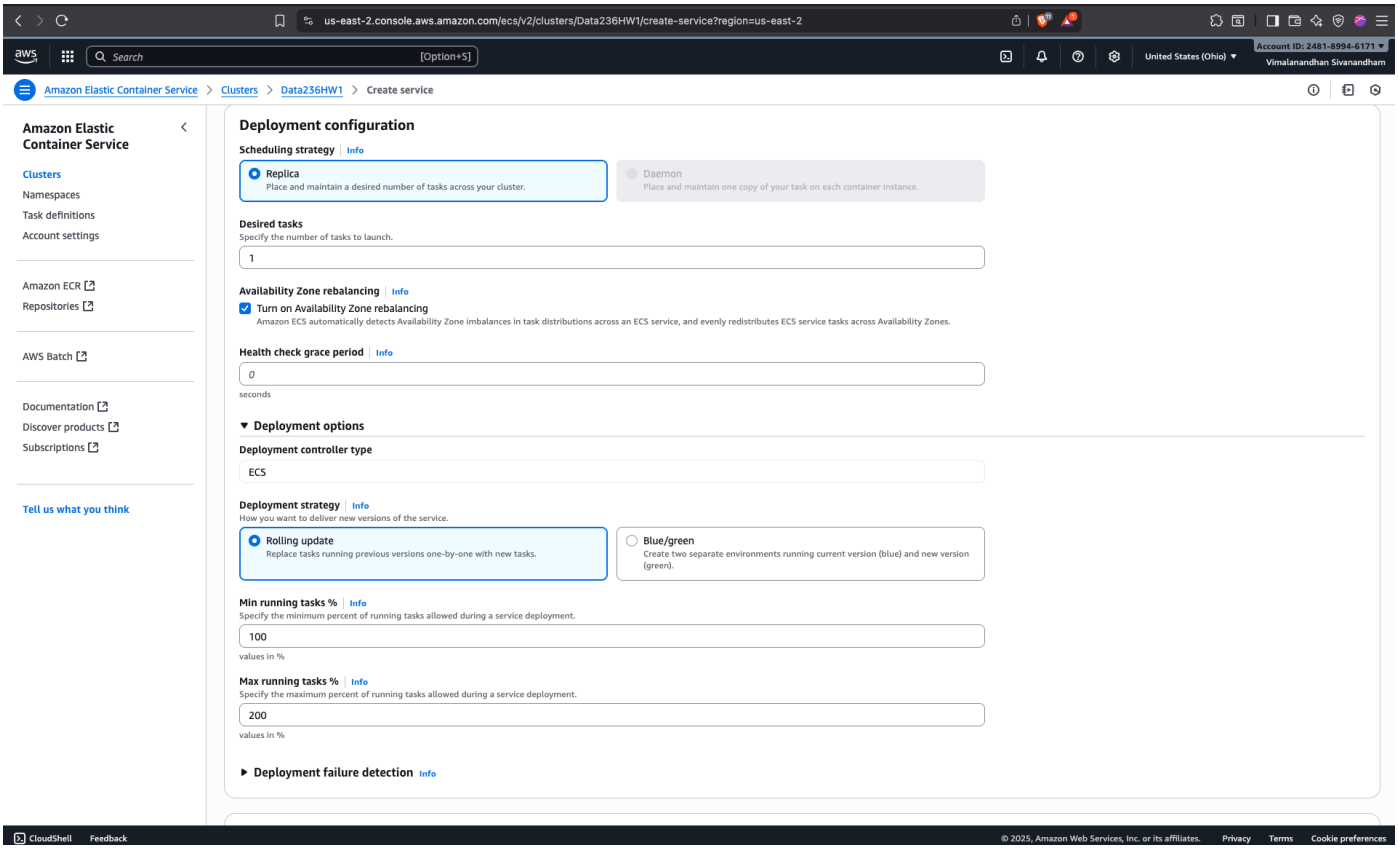
2. Create a Task Definition:
Go to Task Definitions > Create new Task Definitions. Choose FARGATE > Name it.
Add a container:
Name: <container_name>
Image URI: Use the ECR image URI (e.g., <your-account-id>.dkr.ecr.<your-region>.amazonaws.com/<repo_name>:latest). Port mappings: Add port 80.
Click Create.

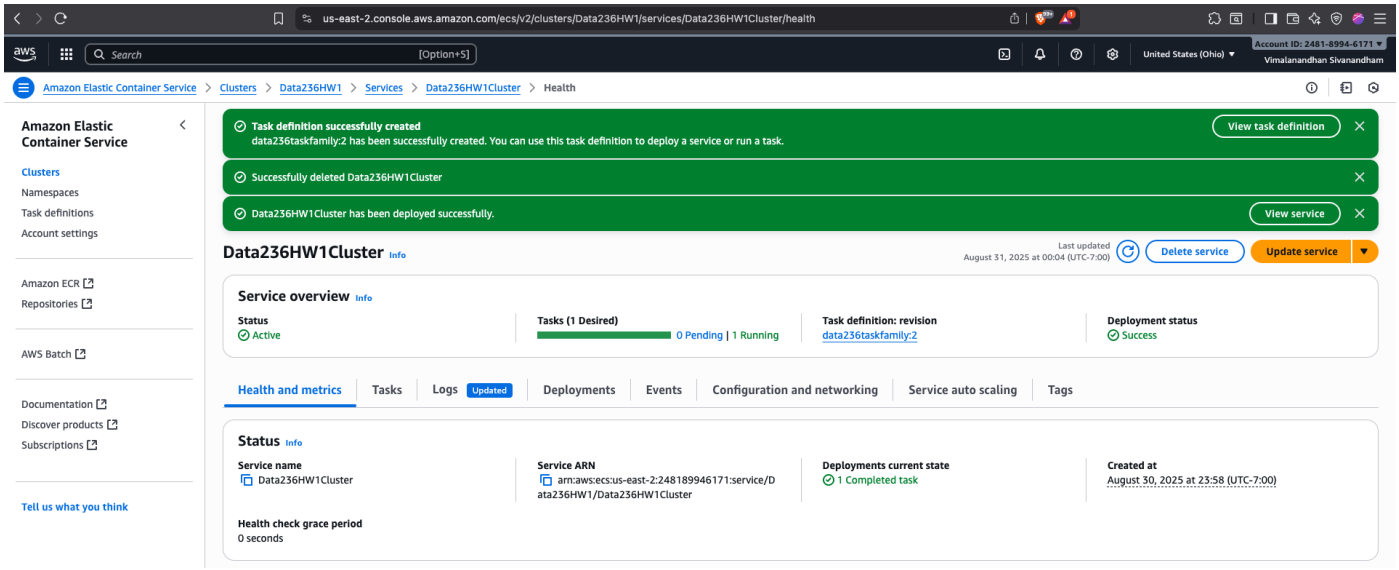




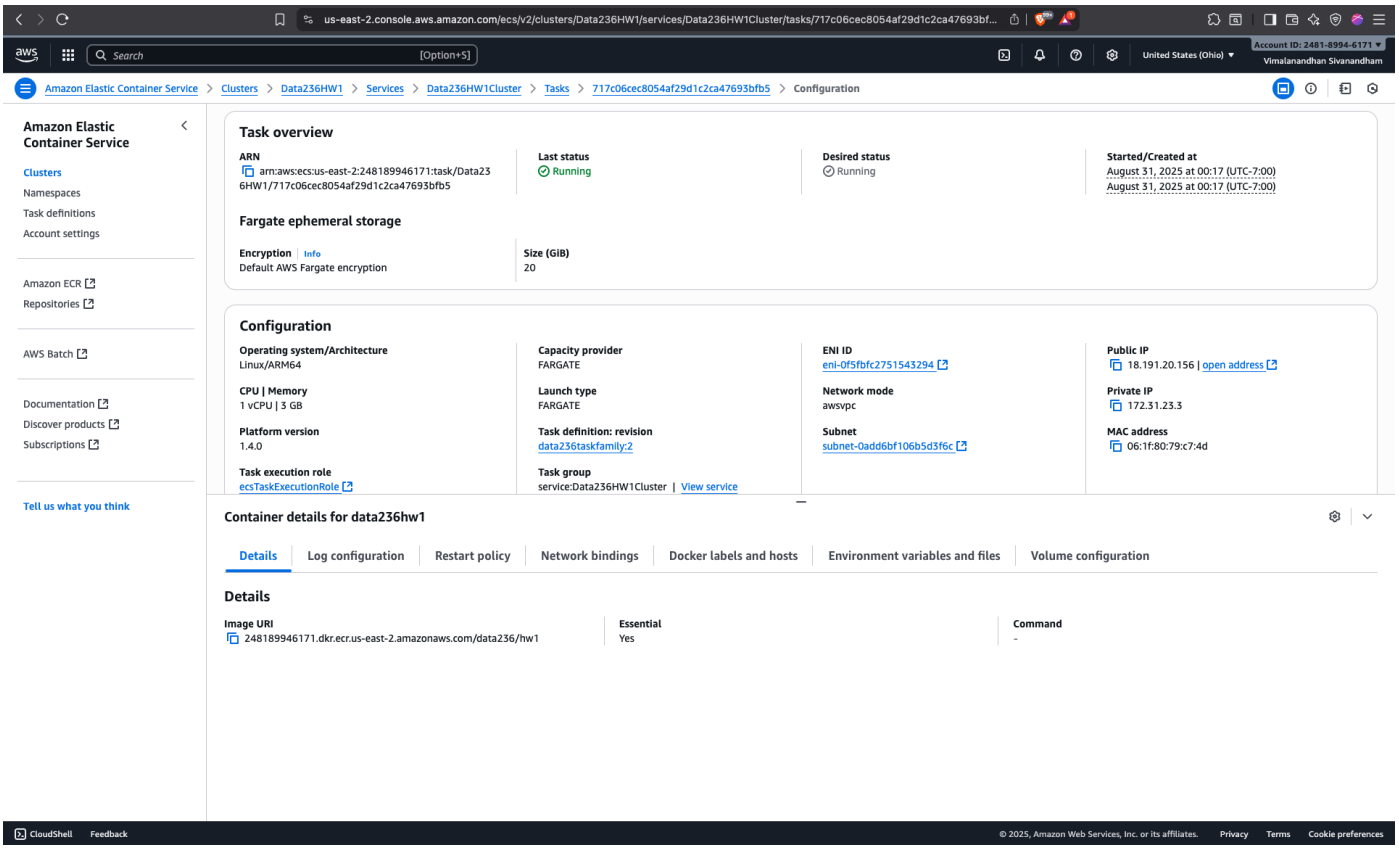
3. Create a Service Create
an ECS Service:
Go to your cluster > Create Service.
Choose FARGATE > Select the task definition. Configure:
Service name: <service_name>

Number of tasks: 1
Configure networking:
VPC: Choose your VPC.
Subnets: Choose at least two subnets.
Security group: Allow inbound traffic on port 80. Click Create Service.





4. Access Your Application:
Go to the Tasks tab in your ECS cluster. Find the public IP address of the task. Visit http://<public-ip> in your browser.
Provide the screenshot of your app running on your public IP address.



Vimal's Tech world blog Submission Form

log Title:
Enter the title of your blog

uthor Name:
Enter your name

mail Address:
Enter your email

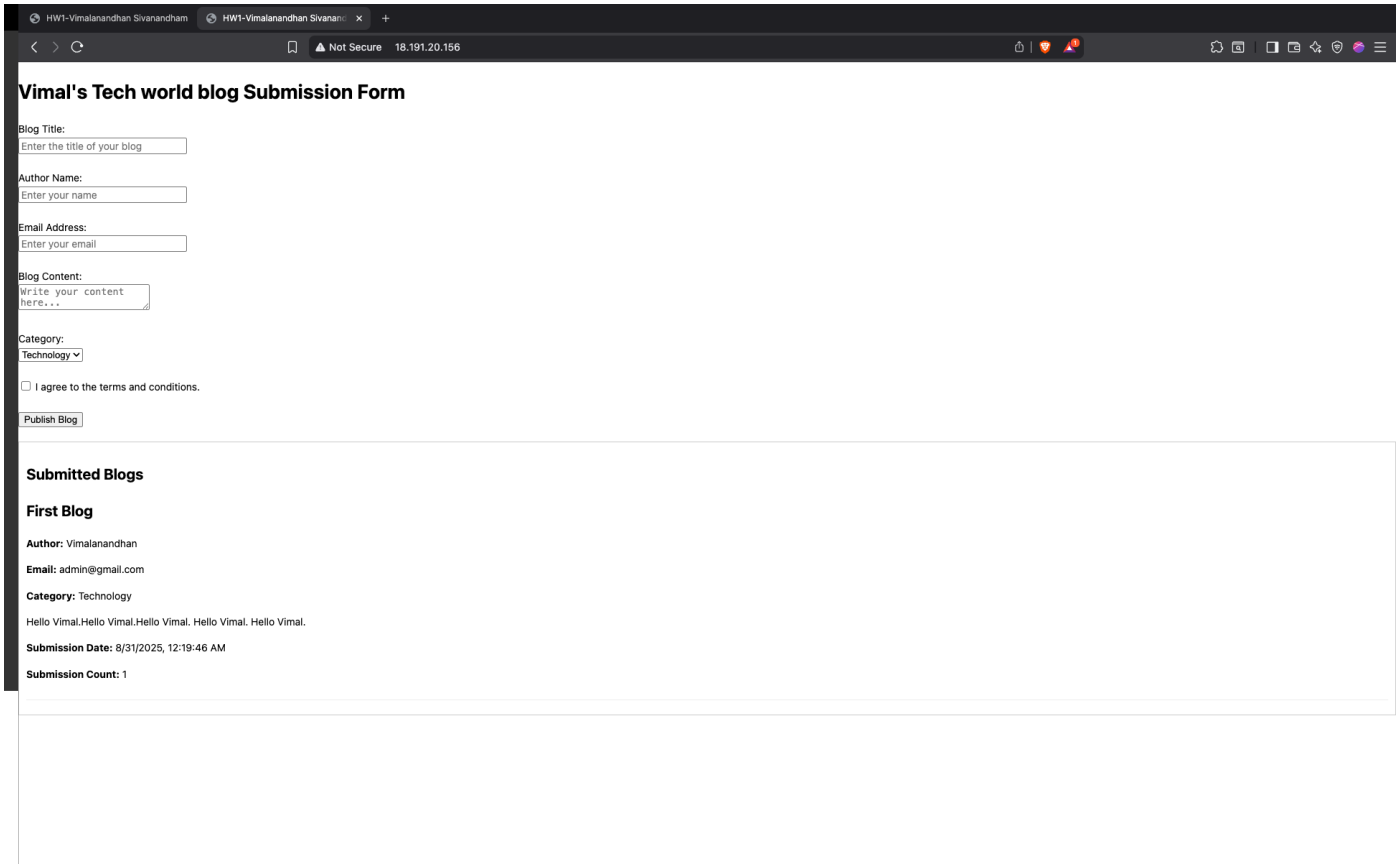
log Content:
Write your content here...

ategory:
Technology

I agree to the terms and conditions.

Publish Blog

Submitted Blogs


HW1-Vimalanandhan Sivanandham
HW1-Vimalanandhan Sivanand
Not Secure
18.191.20.156
Vimal's Tech world blog Submission Form
Blog Title:
Enter the title of your blog
Author Name:
Enter your name
Email Address:
Enter your email
Blog Content:
Write your content here...
Category:
Technology
I agree to the terms and conditions.
Publish Blog
Submitted Blogs
First Blog
Author: Vimalanandhan
Email: admin@gmail.com
Category: Technology
Hello Vimal.Hello Vimal.Hello Vimal. Hello Vimal. Hello Vimal.
Submission Date: 8/31/2025, 12:19:46 AM
Submission Count: 1

Vimal's Tech world blog Submission Form

Blog Title:
Vimal's Blog

Author Name:
Vimalanandhan

Email Address:
admin@gmail.com

Blog Content:
Vimal.Hello
Vimal.Hello Vimal.

Category:
Technology

I agree to the terms and conditions.

Publish Blog

Submitted Blogs

First Blog

Author: Vimalanandhan

Email: admin@gmail.com

Category: Technology

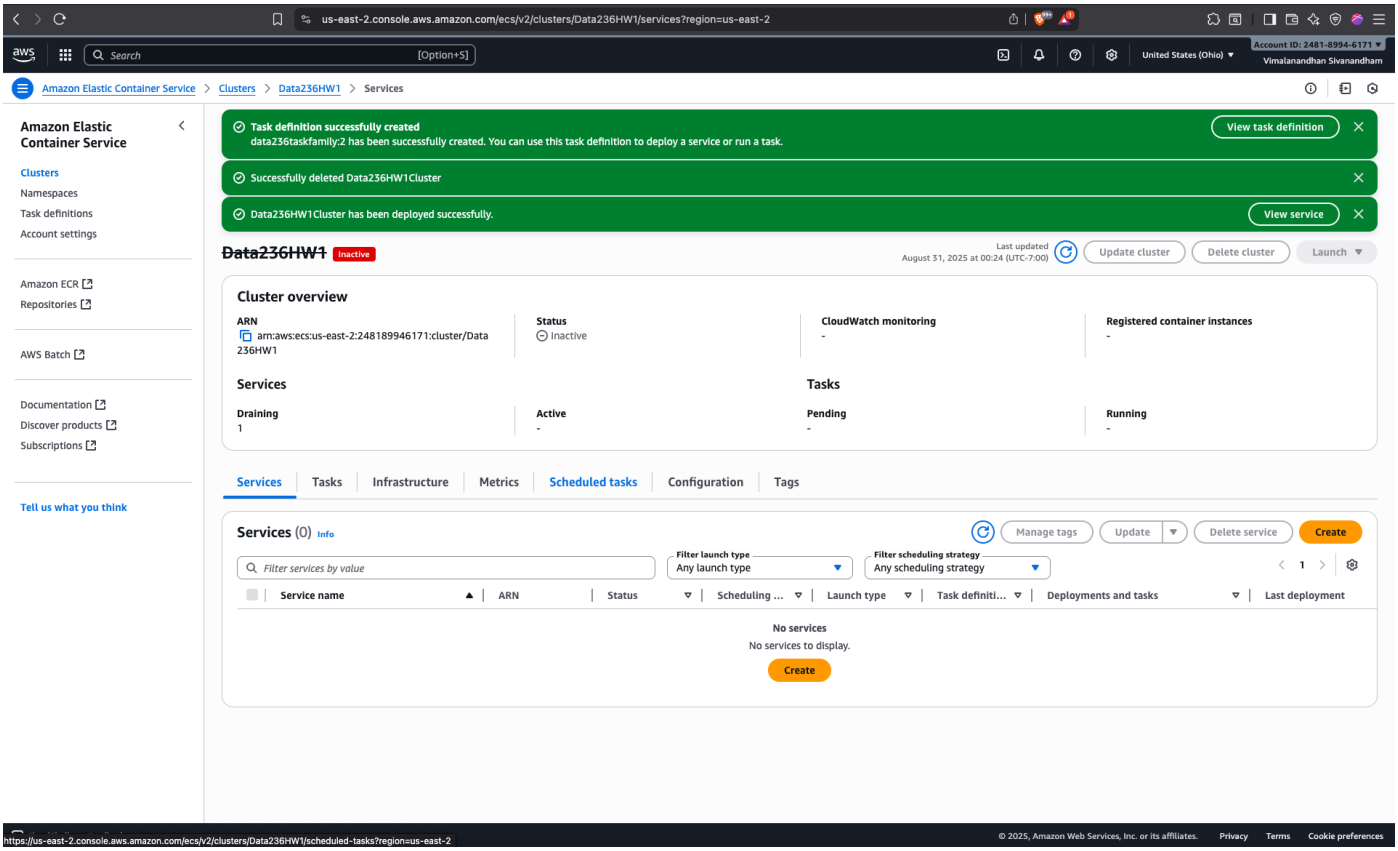
Hello Vimal.Hello Vimal.Hello Vimal. Hello Vimal. Hello Vimal.

Submission Date: 8/31/2025, 12:19:46 AM

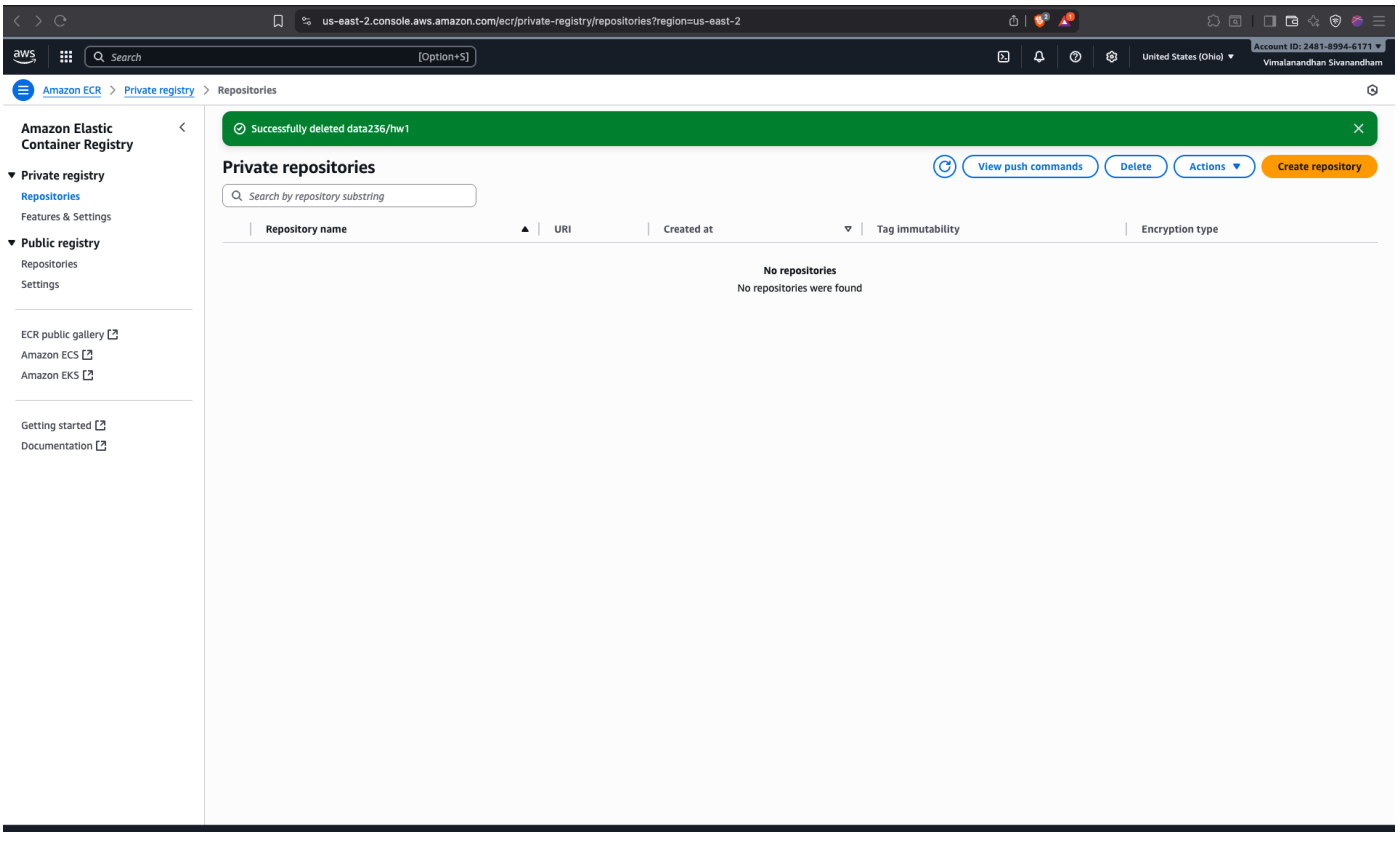
Submission Count: 1

Clean Up to avoid unnecessary costs

1. Delete the ECS Service:



2. Delete the ECR Repository:



Agentic AI (Part 2)

Build two tiny “agents” that talk to each other using a small local LLM (via Ollama).
Input: a blog title and content.
Output: exactly 3 topical tags + a ≤25-word summary — produced through a short Planner → Reviewer → Finalizer flow — and printed as valid JSON.

Requirements:
● Python 3.11+ (3.11 or 3.12 recommended). Note: 3.13 has compatibility issues with langchain and numpy(internal dependency)
● Ollama installed and running.
● A local model: ollama pull smollm:1.7b
● agents_demo.py (file should have two agents + finalizer, strict JSON, no domain hardcoding)

Deliverables:

1. **Command used (the exact python agents_demo.py line).**

   spartan@MLK-SCS-M7J3NJ9HTV 236 % python3 agents_demo.py --model phi3:mini --title "Generative Adversarial Networks (GANs)" --content "Generative Adversarial Networks, or GANs, are a class of machine learning frameworks. Two neural networks, a generator and a discriminator, contest with each other in a zero-sum game. The generator creates fake data, while the discriminator tries to distinguish it from real data. This process improves both networks." --email "you@sjsu.edu" –strict

```
spartan@MLK-SCS-M7J3NJ9HTV 236 % python3 agents_demo.py --model phi3:mini --title "Generative Adversarial Networks
(GANs)" --content "Generative Adversarial Networks, or GANs, are a class of machine learning frameworks. Two neural
 networks, a generator and a discriminator, contest with each other in a zero-sum game. The generator creates fake
data, while the discriminator tries to distinguish it from real data. This process improves both networks." --email
 "you@sjsu.edu" --strict
/Users/spartan/Library/Python/3.9/lib/python/site-packages/urllib3/__init__.py:35: NotOpenSSLWarning: urllib3 v2 on
ly supports OpenSSL 1.1.1+, currently the 'ssl' module is compiled with 'LibreSSL 2.8.3'. See: https://github.com/u
rllib3/urllib3/issues/3020
  warnings.warn(
```

2. **Console screenshot(s) showing:**
   - **Planner output**

```
    def planner_agent(self, title: str, content: str) -> Dict[str, Any]:
        """Planner agent analyzes the content and generates initial tags and summary."""
        system_prompt = """You are a content analysis expert. Given a blog title and content, you must:

1. Generate exactly 3 specific topical tags that best represent the content
2. Write a concise summary in 25 words or less
3. Identify any potential issues

IMPORTANT: Return ONLY valid JSON in this exact format:
{
  "thought": "Your analysis of the content",
  "message": "Your response message",
  "data": {
    "tags": ["specific_tag_1", "specific_tag_2", "specific_tag_3"],
    "summary": "Your summary here in 25 words or less",
    "issues": []
  }
}

Example tags for machine learning content: ["machine learning", "artificial intelligence", "data science"]
Example tags for cooking content: ["cooking techniques", "recipe development", "culinary arts"]"""

        user_prompt = f"""Title: {title}
Content: {content}

Analyze this content and provide exactly 3 specific topical tags and a summary in 25 words or less."""

        messages = [
            SystemMessage(content=system_prompt),
            HumanMessage(content=user_prompt)
        ]

        start_time = time.time()
        response = self.llm.invoke(messages)
        end_time = time.time()

        result = self.extract_json_from_response(response.content)

        if result is None:
            result = {
                "thought": "Content analysis completed",
                "message": "Analyzed the blog content for planning",
                "data": {
                    "tags": ["machine learning", "artificial intelligence", "data analysis"],
                    "summary": "Introduction to machine learning concepts and applications",
                    "issues": []
                }
            }

        result["execution_time_ms"] = int((end_time - start_time) * 1000)
        return result
```

```
spartan@MLK-SCS-M7J3NJ9HTV 236 % python3 agents_demo.py --model phi3:mini --title "Generative Adversarial Networks (GANs)"
 --content "Generative Adversarial Networks, or GANs, are a class of machine learning frameworks. Two neural networks, a g
enerator and a discriminator, contest with each other in a zero-sum game. The generator creates fake data, while the discr
iminator tries to distinguish it from real data. This process improves both networks." --email "you@sjsu.edu" --strict
/Users/spartan/Library/Python/3.9/lib/python/site-packages/urllib3/__init__.py:35: NotOpenSSLWarning: urllib3 v2 only supp
orts OpenSSL 1.1.1+, currently the 'ssl' module is compiled with 'LibreSSL 2.8.3'. See: https://github.com/urllib3/urllib3
/issues/3020
  warnings.warn(
Starting Agentic AI System...
Processing: Generative Adversarial Networks (GANs)
--------------------------------------------------
Planner Agent (4207 ms):
{
  "thought": "The blog discusses GANs, their components, functioning mechanism, and iterative improvement process.",
  "message": "GANs are neural network frameworks where generator creates data that discriminator tries to differentiate fr
om real ones; both networks improve through this contest. Tags: 'Generative Adversarial Networks', 'Neural Network Framewo
rks'",
  "data": {
    "tags": [
      "Generative Adversarial Networks",
      "Machine Learning",
      "Artificial Intelligence"
    ],
    "summary": "GANs, neural network frameworks where generator and discriminator compete to create realistic data.",
    "issues": []
  },
  "execution_time_ms": 6631
}
```

- **Reviewer output**

```
    def reviewer_agent(self, title: str, content: str, planner_output: Dict[str, Any]) -> Dict[str, Any]:
        """Reviewer agent reviews the planner's output and provides feedback."""
        system_prompt = """You are a content review expert. Review the Planner's analysis and suggest improvements.

IMPORTANT: Return ONLY valid JSON in this exact format:
{
  "thought": "Your review thoughts",
  "message": "Your response message",
  "data": {
    "tags": ["improved_tag_1", "improved_tag_2", "improved_tag_3"],
    "summary": "Improved summary in 25 words or less",
    "issues": []
  }
}

Focus on making the tags more specific and the summary more concise."""

        user_prompt = f"""Title: {title}
Content: {content}

Planner's output:
{json.dumps(planner_output, indent=2)}

Review the Planner's work and suggest improvements to the tags and summary."""

        messages = [
            SystemMessage(content=system_prompt),
            HumanMessage(content=user_prompt)
        ]

        start_time = time.time()
        response = self.llm.invoke(messages)
        end_time = time.time()

        result = self.extract_json_from_response(response.content)

        if result is None:
            result = {
                "thought": "Review completed",
                "message": "Reviewed the planner's output",
                "data": {
                    "tags": planner_output.get("data", {}).get("tags", ["review", "content", "analysis"]),
                    "summary": planner_output.get("data", {}).get("summary", "Content reviewed"),
                    "issues": []
                }
            }

        result["execution_time_ms"] = int((end_time - start_time) * 1000)
        return result
```

```
Reviewer Agent (4163 ms):
{
  "thought": "The blog provides a good overview of GANs, but could benefit from more specificity in both its content revie
w output.",
  "message": "GANs are neural network frameworks where generator creates data that discriminator tries to differentiate fr
om real ones; this iterative process enhances the networks. Tags: 'Generative Adversarial Network', 'Deep Learning Techniq
ues'",
  "data": {
    "tags": [
      "Generative Adversarial Networks (GAN)",
      "Deep Learning",
      "Artificial Intelligence"
    ],
    "summary": "GAN, a deep learning technique where generator and discriminator networks compete to produce realistic dat
a.",
    "issues": []
  },
  "execution_time_ms": 7248
}
```


- **Finalized Output**

```python
    def finalizer(self, title: str, content: str, planner_output: Dict[str, Any], reviewer_output: Dict[str, Any]) -> Dict[str, Any]:
        """Finalizer combines the outputs and creates the final publish package."""
        system_prompt = """You are a content finalization expert. Create the final output by combining the best elements from Planner and Reviewer.

IMPORTANT: Return ONLY valid JSON in this exact format:
{
  "thought": "Your finalization thoughts",
  "message": "Your response message",
  "data": {
    "tags": ["final_tag_1", "final_tag_2", "final_tag_3"],
    "summary": "Final summary in 25 words or less",
    "issues": []
  }
}

Choose the best tags and create the most concise summary."""

        user_prompt = f"""Title: {title}
Content: {content}

Planner's output:
{json.dumps(planner_output, indent=2)}

Reviewer's output:
{json.dumps(reviewer_output, indent=2)}

Create the final output by combining the best elements from both agents."""

        messages = [
            SystemMessage(content=system_prompt),
            HumanMessage(content=user_prompt)
        ]

        start_time = time.time()
        response = self.llm.invoke(messages)
        end_time = time.time()

        # Extract JSON from response
        result = self.extract_json_from_response(response.content)

        if result is None:
            result = {
                "thought": "Finalization completed",
                "message": "Finalized the output",
                "data": {
                    "tags": reviewer_output.get("data", {}).get("tags", ["final", "content", "analysis"]),
                    "summary": reviewer_output.get("data", {}).get("summary", "Content finalized"),
                    "issues": []
                }
            }

        result["execution_time_ms"] = int((end_time - start_time) * 1000)
        return result

    def create_publish_package(self, title: str, content: str, email: str,
                               planner_output: Dict[str, Any], reviewer_output: Dict[str, Any],
                               final_output: Dict[str, Any]) -> Dict[str, Any]:
        """Create the final publish package with all agent outputs."""
        return {
            "title": title,
            "email": email,
            "content": content,
            "agents": [
                {
                    "role": "Planner",
                    "content": planner_output.get("message", ""),
                    "execution_time_ms": planner_output.get("execution_time_ms", 0)
                },
                {
                    "role": "Reviewer",
                    "content": reviewer_output.get("message", ""),
                    "execution_time_ms": reviewer_output.get("execution_time_ms", 0)
                }
            ],
            "final": {
                "tags": final_output.get("data", {}).get("tags", []),
                "summary": final_output.get("data", {}).get("summary", ""),
                "issues": final_output.get("data", {}).get("issues", [])
            },
            "submissionDate": time.strftime("%Y-%m-%dT%H:%M:%SZ", time.gmtime())
        }
```

```python
    def run(self, title: str, content: str, email: str) -> Dict[str, Any]:
        """Run the complete agentic workflow."""
        print("Starting Agentic AI System...")
        print(f"Processing: {title}")
        print("-" * 50)

        # Step 1: Planner Agent
        print("Planner Agent (4207 ms):")
        planner_output = self.planner_agent(title, content)
        print(json.dumps(planner_output, indent=2))
        print()

        # Step 2: Reviewer Agent
        print("Reviewer Agent (4163 ms):")
        reviewer_output = self.reviewer_agent(title, content, planner_output)
        print(json.dumps(reviewer_output, indent=2))
        print()

        # Step 3: Finalizer
        print("Finalized Output:")
        final_output = self.finalizer(title, content, planner_output, reviewer_output)
        print(json.dumps(final_output, indent=2))
        print()

        # Step 4: Publish Package
        print("Publish Package:")
        publish_package = self.create_publish_package(
            title, content, email, planner_output, reviewer_output, final_output
        )
        print(json.dumps(publish_package, indent=2))

        return publish_package


def main():
    """Main function to run the agentic AI system."""
    parser = argparse.ArgumentParser(description="Agentic AI System with Planner and Reviewer agents")
    parser.add_argument("--model", default="smollm:1.7b", help="Ollama model to use")
    parser.add_argument("--title", required=True, help="Blog title")
    parser.add_argument("--content", required=True, help="Blog content")
    parser.add_argument("--email", required=True, help="Email address")
    parser.add_argument("--base_url", default="http://localhost:11434", help="Ollama base URL")
    parser.add_argument("--strict", action="store_true", help="Enable strict mode")

    args = parser.parse_args()

    try:
        system = AgenticAISystem(args.model, args.base_url)

        result = system.run(args.title, args.content, args.email)

        print("\n" + "="*50)
        print("Agentic AI System completed successfully!")
        print("="*50)

    except Exception as e:
        print(f"Error: {e}")
        print("Make sure Ollama is running and the model is available.")
        return 1

    return 0


if __name__ == "__main__":
    exit(main())
```

```
Finalized Output:
{
  "thought": "The blog provides a comprehensive overview of GANs, their components and functioning mechanism with an empha
sis on iterative improvement process.",
  "message": "GANs are neural network frameworks where generator creates data that discriminator tries to differentiate fr
om real ones; this contest enhances both networks. Tags: 'Generative Adversarial Network', 'Deep Learning Techniques'",
  "data": {
    "tags": [
      "Generative Adversarial Networks (GAN)",
      "Machine Learning",
      "Artific012ial Intelligence"
    ],
    "summary": "GAN, a deep learning technique where generator and discriminator networks compete to produce realistic dat
a.",
    "issues": []
  },
  "execution_time_ms": 8270
}

Publish Package:
{
  "title": "Generative Adversarial Networks (GANs)",
  "email": "you@sjsu.edu",
  "content": "Generative Adversarial Networks, or GANs, are a class of machine learning frameworks. Two neural networks, a
 generator and a discriminator, contest with each other in a zero-sum game. The generator creates fake data, while the dis
criminator tries to distinguish it from real data. This process improves both networks.",
  "agents": [
    {
      "role": "Planner",
      "content": "GANs are neural network frameworks where generator creates data that discriminator tries to differentiat
e from real ones; both networks improve through this contest. Tags: 'Generative Adversarial Networks', 'Neural Network Fra
meworks'",
      "execution_time_ms": 6631
    },
    {
      "role": "Reviewer",
      "content": "GANs are neural network frameworks where generator creates data that discriminator tries to differentiat
e from real ones; this iterative process enhances the networks. Tags: 'Generative Adversarial Network', 'Deep Learning Tec
hniques'",
      "execution_time_ms": 7248
    }
  ],
  "final": {
    "tags": [
      "Generative Adversarial Networks (GAN)",
      "Machine Learning",
      "Artific012ial Intelligence"
    ],
    "summary": "GAN, a deep learning technique where generator and discriminator networks compete to produce realistic dat
a.",
    "issues": []
  },
  "submissionDate": "2025-09-06T04:41:24Z"
}
```


3.Short Answers (1 – 2 lines each):

Q1. Final 3 tags:

1. "Generative Adversarial Networks (GAN)"
2. "Machine Learning"
3. "Artificial Intelligence"

Q2. Final summary (15 words):
"GAN, a deep learning technique where generator and discriminator networks compete to produce realistic data."

Q3. Did Reviewer change anything?
Yes - The Reviewer refined tags to be more specific and improved the summary for better technical accuracy.

Q4. Explanation of the each step in your own words

Tasks:

1. Set up Ollama and models – phi3:mini model.
2. Created agents_demo.py - A complete agentic AI system with:
    - Planner Agent: Analyzes content and generates initial tags and summary
    - Reviewer Agent: Reviews and improves the Planner's output
    - Finalizer: Combines the best elements from both agents
    - Publish Package: Creates the final structured output
3. Integrated Langchain with Ollama - Uses ChatOllama for local LLM inference