Exercise: Setting Up AWS Elastic Container Service (ECS) with EC2 and Nginx

Objective:

By the end of this exercise, students will have created an ECS cluster using EC2 instances, a service, and a task that uses an Nginx container to run a simple web page. This exercise follows the steps described in the YouTube video tutorial but uses EC2 instances instead of Fargate.

Prerequisites:

- AWS account
- Basic understanding of AWS services and Docker
- Access to the AWS Management Console

Instructions:

Step 1: Create an ECS Cluster

1. **Navigate to ECS:**
   - Log in to your AWS Management Console.
   - In the services menu, search for and select **ECS (Elastic Container Service)**.
2. **Enable New ECS Experience:**
   - Ensure the new ECS experience is enabled by toggling the option on the top left, if available.
3. **Create a Cluster:**
   - In the left navigation pane, click on **Clusters**.
   - Click on **Create Cluster**.
   - Select the **EC2 Linux + Networking** option and click on **Next step**.
   - Name your cluster (e.g., `my-ec2-cluster`).
   - For **EC2 instance type**, select a type (e.g., `t2.micro` for free tier).
   - For **Number of instances**, choose `1`.
   - Choose the VPC and subnets for your cluster.
   - Select an existing key pair or create a new one for SSH access to the instances.
   - Click on **Create**.

Step 2: Create a Task Definition

4. **Navigate to Task Definitions:**
   - In the left navigation pane, click on **Task Definitions**.
   - Click on **Create new Task Definition**.
   - Select **EC2** as the launch type and click on **Next step**.
5. **Configure Task Definition:**
   - Name the task definition (e.g., `nginx-ec2-task-definition`).
   - Add a container by clicking **Add container**.

- ○ Name the container `nginx` and set the image to `public.ecr.aws/nginx/nginx`.
- ○ Set the memory limit to `512 MiB` and the CPU units to `256`.
- ○ Click on **Add**.
- ○ Click on **Next step**.

6. **Configure Task Size:**
   - ○ Set the task size to `0.5 vCPU` and `1 GB` memory.
   - ○ Click on **Next step**.
   - ○ Review the task definition and click on **Create**.

Step 3: Create a Service

7. **Navigate to Services:**
   - ○ In the left navigation pane, click on **Clusters**.
   - ○ Click on the name of your cluster (e.g., `my-ec2-cluster`).
   - ○ Click on **Create** under the **Services** tab.

8. **Configure Service:**
   - ○ Select the task definition created earlier (e.g., `nginx-ec2-task-definition`).
   - ○ Name the service (e.g., `nginx-ec2-service`).
   - ○ Set the number of desired tasks to `1`.
   - ○ Click on **Next step**.

9. **Configure Networking:**
   - ○ Ensure that the **EC2** launch type is selected.
   - ○ Select the VPC and subnets used in the cluster creation.
   - ○ Create a new security group that allows inbound traffic on port `80` (HTTP).
   - ○ Ensure the **Auto-assign public IP** is enabled.
   - ○ Click on **Next step**.

10. **Review and Create Service:**
    - ○ Review the service settings and click on **Create Service**.
    - ○ Wait for the service to be created.

Step 4: Verify the Nginx Web Page

11. **Access the Nginx Web Page:**
    - ○ In the ECS service details, find the running task.
    - ○ Click on the task ID to view details.
    - ○ Find the **Public IP** address of the task.
    - ○ Open a web browser and navigate to the public IP address.
    - ○ You should see the Nginx welcome page.