**EC2 with ELB and ASG**

**Objective**: Learn how to create a scalable and highly available web application environment using Amazon EC2 instances, ELB, and ASG.

**Approach**:

1. **Launch EC2 Instances**: Start by launching two or more EC2 instances. These instances will run a simple web application (e.g., a "Hello World" page or any basic web service).
2. **Configure Load Balancer**: Set up an Elastic Load Balancer (ELB) to distribute incoming web traffic across your EC2 instances. This step ensures high availability and fault tolerance.
3. **Set Up Auto Scaling Group (ASG)**: Create an ASG that uses the launched EC2 instances. Configure ASG policies to automatically scale the number of instances up or down based on criteria like CPU usage or network traffic.
4. **Test Your Setup**: Simulate traffic to test the scaling policies and the load balancer. Observe how ASG adds or removes instances and how ELB distributes traffic.
5. **Verify Website Functionality**: Ensure that the website hosted on EC2 instances remains accessible and functional during scaling operations.

**Goal**: By the end of this lab, students will have a hands-on understanding of setting up a load-balanced and auto-scaled web application using AWS services.

Steps

1. Create two security group
   1. Group 1 with http inbound rule
   2. Group 2 with SSH inbound rule
2. Create two EC2 with using both the security group
3. Verify instances is running or not using windows Powershell
   1. Command used
      1. ssh -i C:\Users\Akshay.Funde\Downloads\Basic1.pem [ec2-user@3.80.190.26](mailto:ec2-user@3.80.190.26)
      2. sudo su  
         yum update -y  
         yum install httpd
      3. systemctl start httpd  
         systemctl enable httpd
      4. chown -R $USER /var/www/html
      5. echo "<h1>Hello World</h1>" > /var/www/html/index.html
4. Now open id address for Hello World webpage
5. Create target group
   1. Include both the instances
6. Create Application Load balancer now
   1. Select all mapping networks.
7. Check if it is working or not ( open DNS ) load-1-1438966997.us-east-1.elb.amazonaws.com
8. Create an Amazon Machine image on any of the instances.
9. Launch new template with AMI image
10. Create auto scalling group for the same tempalate
    1. Advance option
       1. Attach to an existing load balancer.
       2. Turn on Elastic Load Balancing health checks
    2. Set the scaling min and max (1 & 5)
11. After completing auto scaling group check if there is new unnamed instance must be created.
12. Open the ip address of new unnamed instance for the testing

