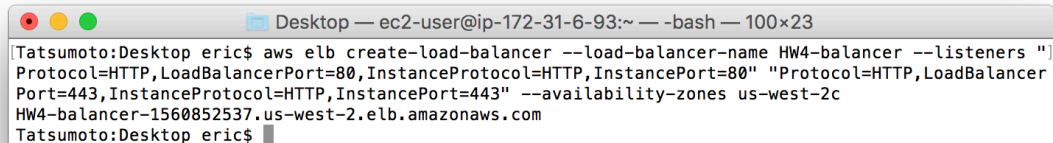


Mini Homework 4

1. Create a ELB and configure Auto-Scale with the policy rules and configuration details in the slides. You need not choose exact names, parameters etc. You need to show that you have a ELB that is attached to a group and inside the group you have scaling policy. When CPU Util > 60%, it adds a new VM.

Create load-balancer: HW4-balancer

```
aws elb create-load-balancer --load-balancer-name HW4-balancer --listeners  
"Protocol=HTTP,LoadBalancerPort=80,InstanceProtocol=HTTP,InstancePort=80"  
"Protocol=HTTP,LoadBalancerPort=443,InstanceProtocol=HTTP,InstancePort=443" --  
-availability-zones us-west-2c
```

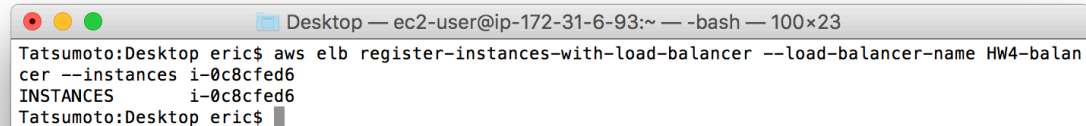


```
Desktop — ec2-user@ip-172-31-6-93:~ — -bash — 100x23  
[Tatsumoto:Desktop eric$ aws elb create-load-balancer --load-balancer-name HW4-balancer --listeners "  
Protocol=HTTP,LoadBalancerPort=80,InstanceProtocol=HTTP,InstancePort=80" "Protocol=HTTP,LoadBalancer  
Port=443,InstanceProtocol=HTTP,InstancePort=443" --availability-zones us-west-2c  
HW4-balancer-1560852537.us-west-2.elb.amazonaws.com  
Tatsumoto:Desktop eric$
```

load-balancer ID: HW4-balancer-1560852537.us-west-2.elb.amazonaws.com

Register my instance with load-balancer

```
aws elb register-instances-with-load-balancer --load-balancer-name HW4-  
balancer --instances i-0c8cfed6
```



```
Desktop — ec2-user@ip-172-31-6-93:~ — -bash — 100x23  
Tatsumoto:Desktop eric$ aws elb register-instances-with-load-balancer --load-balancer-name HW4-balan  
cer --instances i-0c8cfed6  
INSTANCES      i-0c8cfed6  
Tatsumoto:Desktop eric$
```

Download AWS AutoScaling CLI Tools and Unzip

** I discovered you don't actually need to download and run from local, these commands are available in aws cli under (aws autoscaling help)

Create Autoscale Configuration

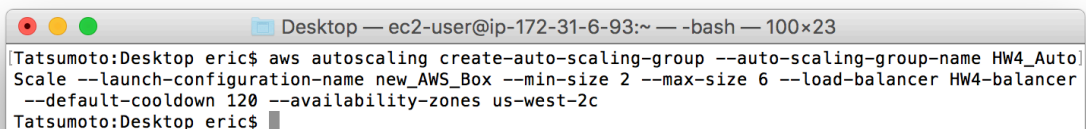
```
aws autoscaling create-launch-configuration --launch-configuration-name new_AWS_Box --image-id ami-38ad4e58 --key-name efj2106-Test --security-groups sg-858c55e2 --instance-type t2.small
```



```
Desktop — ec2-user@ip-172-31-6-93:~ — -bash — 100x23
[Tatsumoto:Desktop eric$ aws autoscaling create-launch-configuration --launch-configuration-name new_AWS_Box --image-id ami-38ad4e58 --key-name efj2106-Test --security-groups sg-858c55e2 --instance-type t2.small
Tatsumoto:Desktop eric$
```

Create Autoscale Group

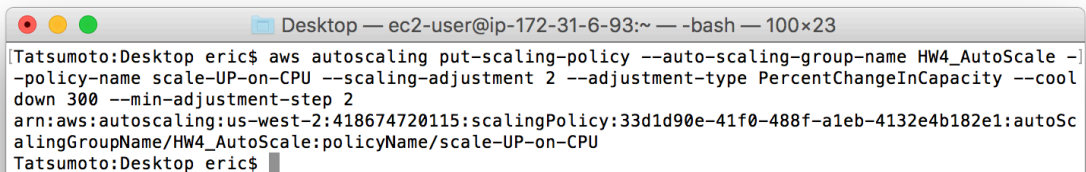
```
aws autoscaling create-auto-scaling-group --auto-scaling-group-name HW4_AutoScale --launch-configuration-name new_AWS_Box --min-size 2 --max-size 6 --load-balancer HW4-balancer --default-cooldown 120 --availability-zones us-west-2c
```



```
Desktop — ec2-user@ip-172-31-6-93:~ — -bash — 100x23
[Tatsumoto:Desktop eric$ aws autoscaling create-auto-scaling-group --auto-scaling-group-name HW4_AutoScale --launch-configuration-name new_AWS_Box --min-size 2 --max-size 6 --load-balancer HW4-balancer --default-cooldown 120 --availability-zones us-west-2c
Tatsumoto:Desktop eric$
```

Create AutoScaling Policy (UP) - POLICY

```
aws autoscaling put-scaling-policy --auto-scaling-group-name HW4_AutoScale --policy-name scale-UP-on-CPU --scaling-adjustment 2 --adjustment-type PercentChangeInCapacity --cooldown 300 --min-adjustment-step 2
```



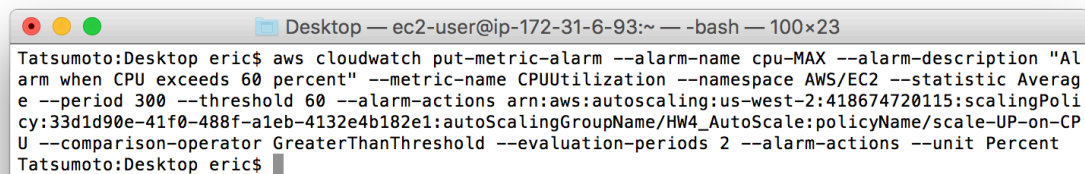
```
Desktop — ec2-user@ip-172-31-6-93:~ — -bash — 100x23
[Tatsumoto:Desktop eric$ aws autoscaling put-scaling-policy --auto-scaling-group-name HW4_AutoScale --policy-name scale-UP-on-CPU --scaling-adjustment 2 --adjustment-type PercentChangeInCapacity --cooldown 300 --min-adjustment-step 2
arn:aws:autoscaling:us-west-2:418674720115:scalingPolicy:33d1d90e-41f0-488f-a1eb-4132e4b182e1:autoScalingGroupName/HW4_AutoScale:policyName/scale-UP-on-CPU
Tatsumoto:Desktop eric$
```

Mini HW 4

```
arn:aws:autoscaling:us-west-2:418674720115:scalingPolicy:33d1d90e-41f0-488f-a1eb-4132e4b182e1:autoScalingGroupName/HW4_AutoScale:policyName/scale-UP-on-CPU
```

Create Cloudwatch Alarm (UP) - POLICY ALARMS

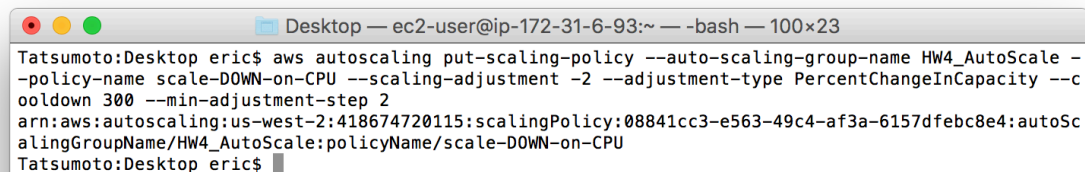
```
aws cloudwatch put-metric-alarm --alarm-name cpu-MAX --alarm-description "Alarm when CPU exceeds 60 percent" --metric-name CPUUtilization --namespace AWS/EC2 --statistic Average --period 300 --threshold 60 --alarm-actions arn:aws:autoscaling:us-west-2:418674720115:scalingPolicy:33d1d90e-41f0-488f-a1eb-4132e4b182e1:autoScalingGroupName/HW4_AutoScale:policyName/scale-UP-on-CPU --comparison-operator GreaterThanThreshold --evaluation-periods 2 --alarm-actions --unit Percent
```



```
Desktop — ec2-user@ip-172-31-6-93:~ — bash — 100x23
Tatsumoto:Desktop eric$ aws cloudwatch put-metric-alarm --alarm-name cpu-MAX --alarm-description "Alarm when CPU exceeds 60 percent" --metric-name CPUUtilization --namespace AWS/EC2 --statistic Average --period 300 --threshold 60 --alarm-actions arn:aws:autoscaling:us-west-2:418674720115:scalingPolicy:33d1d90e-41f0-488f-a1eb-4132e4b182e1:autoScalingGroupName/HW4_AutoScale:policyName/scale-UP-on-CPU --comparison-operator GreaterThanThreshold --evaluation-periods 2 --alarm-actions --unit Percent
Tatsumoto:Desktop eric$
```

Create AutoScaling Policy (DOWN) - POLICY

```
aws autoscaling put-scaling-policy --auto-scaling-group-name HW4_AutoScale --policy-name scale-DOWN-on-CPU --scaling-adjustment -2 --adjustment-type PercentChangeInCapacity --cooldown 300 --min-adjustment-step 2
```



```
Desktop — ec2-user@ip-172-31-6-93:~ — bash — 100x23
Tatsumoto:Desktop eric$ aws autoscaling put-scaling-policy --auto-scaling-group-name HW4_AutoScale --policy-name scale-DOWN-on-CPU --scaling-adjustment -2 --adjustment-type PercentChangeInCapacity --cooldown 300 --min-adjustment-step 2
arn:aws:autoscaling:us-west-2:418674720115:scalingPolicy:08841cc3-e563-49c4-af3a-6157dfebc8e4:autoScalingGroupName/HW4_AutoScale:policyName/scale-DOWN-on-CPU
Tatsumoto:Desktop eric$
```

```
arn:aws:autoscaling:us-west-2:418674720115:scalingPolicy:08841cc3-e563-49c4-af3a-6157dfebc8e4:autoScalingGroupName/HW4_AutoScale:policyName/scale-DOWN-on-CPU
```

Create Cloudwatch Alarm (DOWN) - POLICY ALARMS

```
aws cloudwatch put-metric-alarm --alarm-name cpu-DOWN --alarm-
description "Alarm when CPU goes below 60 percent" --metric-name
CPUUtilization --namespace AWS/EC2 --statistic Average --period 300 --
threshold 60 --alarm-actions arn:aws:autoscaling:us-west-
2:418674720115:scalingPolicy:08841cc3-e563-49c4-af3a-
6157dfebc8e4:autoScalingGroupName/HW4_AutoScale:policyName/scale-DOWN-
on-CPU --comparison-operator LessThanThreshold --evaluation-periods 2
--alarm-actions --unit Percent
```

```
Desktop — ec2-user@ip-172-31-6-93:~ — bash — 100x23
Tatsumoto:Desktop eric$ aws cloudwatch put-metric-alarm --alarm-name cpu-DOWN --alarm-description "A
alarm when CPU goes below 60 percent" --metric-name CPUUtilization --namespace AWS/EC2 --statistic Av
erage --period 300 --threshold 60 --alarm-actions arn:aws:autoscaling:us-west-2:418674720115:scaling
Policy:08841cc3-e563-49c4-af3a-6157dfebc8e4:autoScalingGroupName/HW4_AutoScale:policyName/scale-DOWN-
on-CPU --comparison-operator LessThanThreshold --evaluation-periods 2 --alarm-actions --unit Percen
t
Tatsumoto:Desktop eric$
```

2. Run a script inside the VM1 to generate load so that auto-scale adds another VM when CPU Util > 60%.

Originally I was going to install R and then run a program to hit the CPU threshold but the installation of R alone actually hit the 60% utilization. You can see the utilization on the right using HTOP and the extra instances that were spawned beneath it in the EC2 Console.

The terminal window displays system metrics for the VM1 instance. The CPU usage is 74.5%, and the memory usage is 155/2003MB. The system is running 33 tasks, with 4 threads running. The load average is 0.05, 0.05, 0.05. The system uptime is 8 days, 16:38:14.

The AWS EC2 console shows the list of instances. The instances are sorted by Instance State, and the following instances are listed:

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS
i-0c8cfed6	i-0c8cfed6	t2.small	us-west-2c	running	2/2 checks ...	None	ec2-52-36-93-51
i-9e3d7244	i-9e3d7244	t2.small	us-west-2c	running	2/2 checks ...	None	ec2-52-37-76-11
i-d63c730c	i-d63c730c	t2.small	us-west-2c	running	2/2 checks ...	None	ec2-52-26-172-1
i-9029664a	i-9029664a	t2.small	us-west-2c	terminated		None	
i-9129664b	i-9129664b	t2.small	us-west-2c	terminated		None	