

# Homework 2



과 목

Cloud Computing System

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# 1. Introduction

Amazon Web Services(AWS) is a secure cloud services platform, offering compute power, database storage, content delivery and other functionality to help businesses scale and grow. This paper is about introducing Amazon EC2, core of AWS, and how to create own web server from sign up to file upload to it with Amazon EC2. Before introducing installation steps, there are some explanation about Amazon EC2, Auto scaling, Amazon S3, Amazon RDS, instance and even pricing plan in Amazon EC2. After that, there is detail specification with some screenshot to help you install your own webserver then uploading test file.

## 2. Amazon EC2

### 2-1. Survey

#### Amazon EC2

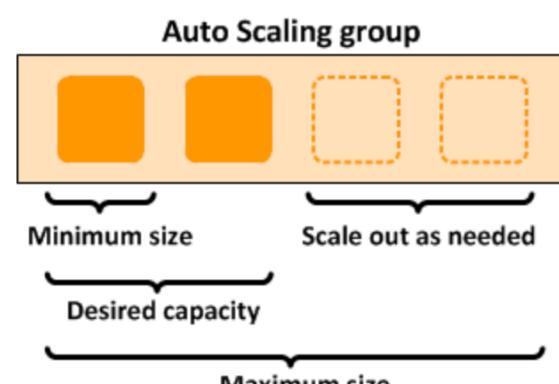
Amazon Elastic Compute Cloud(Amazon EC2) is a part of Amazon's cloud computing platform, AWS, that allows user to rent virtual computer ,known as instances, on which to run their own computer applications.

At first, amazon announced a limited public beta test on August 25, 2006 and Amazon EC2 went into full production when it dropped the bet label on October 23, 2008. Using Amazon EC2 eliminates need to invest hardware components and you can concentrate on developing and scalable deployment applications faster with latency optimization and high levels of redundancy. so user can control and use computing resource in AWS environment. The reason why using term elastic is that user can create, launch, and terminate server instances as needed, paying by the second for active servers.<sup>1</sup>

#### AWS Auto Scaling

Auto scaling is a service that automatically monitors and adjusts compute resources to maintain performance for applications hosted in the AWS.

it helps you ensure that you have the correct number of Amazon EC2 instances available to handle the load for your application in minutes, not hours, days. If you specify the minimum or maximum number of instances in each Auto Scaling group, Amazon EC2 Auto scaling ensures that your group never goes below or above that size. Also, if you specify any scaling policies, it can launch or terminate instances as demand on your application increases or decreases.



There are key components of Amazon EC2 Auto scaling.

1. Group: the group of EC2 instances with policies you specified(number of instance etc.)

2. Configuration templates: the launch template or launch configuration that group use for its EC2 instances with specifying instance type, key pair, security group etc.
3. Scaling options: the several ways of scaling(ex. Dynamic scaling, static scaling).

## Amazon S3

Amazon Simple Storage Service(Amazon S3)is online storage service.

it has a simple web services interfaces that user can store and retrieve any amount of data, at any time anywhere in online with high level of stability.<sup>2</sup> It is designed to make web-scale computing easier for developers with fee as used.

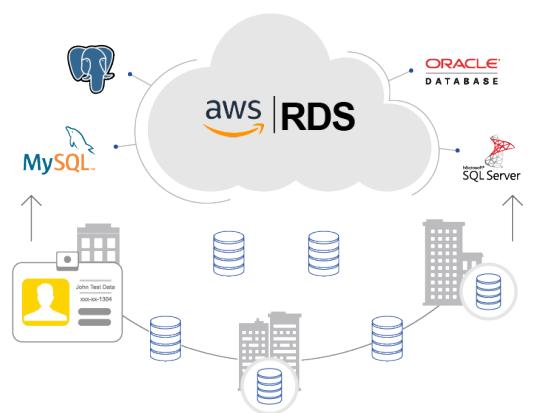
There are key concept of Amazon S3.

1. Buckets: it is container for objects stored in Amazon S3.
2. Objects: it is the fundamental entities stored in Amazon S3, consist of object data and metadata.
3. Keys: it is the unique identifier for an object within a bucket. Every object in a bucket has exactly one key. so the combination of a bucket, key, and version ID identify each object.
- Ex) <https://doc.s3.amazonaws.com/2006-03-01/AmazonS3.wsdl> -> "doc" is bucket name, "2006-03-01/AmazonS4.wsdl" is the key (version is optional)
4. Region: the geographical AWS Region where Amazon S3 will store the buckets.

## Amazon RDS

Amazon Relational Database Service (Amazon RDS) is a web service that makes it easier to set up, operate, and scale a relational database in the AWS Cloud.

It takes over many of difficult management tasks of traditional relational database. If user buy server, bundle of CPU, memory, storage is easily can get and these are split apart so that user can scale them independently. It is familiar with MySQL, Oracle, PostgreSQL etc. so if a company will transfer to cloud system, RDS is better than separated instances or Hypervisor because company concentrate on business and application, not management of database.<sup>3</sup>



## Instance type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instance types comprise varying combinations of CPU, memory, storage, and networking capacity and give you the flexibility to choose the appropriate mix of resources for your applications. As below picture, user can choose adequate instances for application.

선택	인스턴스 유형	vCPU	아키텍처	메모리(MiB)	스토리지(GB)
<input type="checkbox"/>	a1.2xlarge	8	arm64	16384	-
<input type="checkbox"/>	a1.4xlarge	16	arm64	32768	-
<input type="checkbox"/>	a1.large	2	arm64	4096	-
<input type="checkbox"/>	a1.medium	1	arm64	2048	-
<input type="checkbox"/>	a1.metal	16	arm64	32768	-
<input type="checkbox"/>	a1.xlarge	4	arm64	8192	-
<input type="checkbox"/>	c4.2xlarge	8	x86_64	15360	-
<input type="checkbox"/>	c4.4xlarge	16	x86_64	30720	-
<input type="checkbox"/>	c4.8xlarge	36	x86_64	61440	-
<input type="checkbox"/>	c4.large	2	x86_64	3840	-

Instance type can be classified by purpose of application

1. General purpose: it provides a balanced compute, memory and networking resources. These instances are ideal for applications that use these resources in equal proportions such as web servers. Ex. A1, T3, T2, M5, M4 etc.
2. Compute optimized: it is ideal for compute bound applications that benefit from high performance processors such as high performance computing(HPC), gaming or engine server engines. Ex.C5, C4 etc.
3. Memory optimized: it is designed to deliver fast performance for workloads that process large data sets in memory. ex. R5, X1, z1d etc.
4. Accelerated computing: these instances use hardware accelerators, or co-processors, to perform functions, such as graphic processing, data pattern matching. Ex. P3, G4, F1 etc.
5. Storage optimized: it is designed for workloads that require high, sequential read, write access to very large data sets on local storage. Ex. I3, D2, H1

## Pricing plan

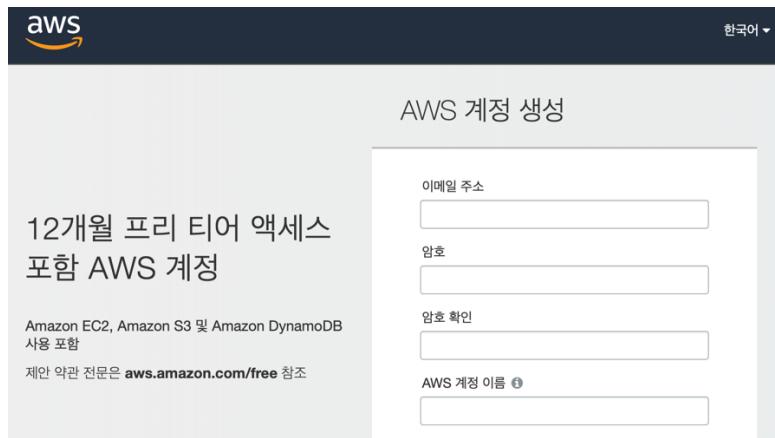
There are 5 ways to pay for Amazon EC2 instances<sup>4</sup>

1. Free tier: free for 750 hours of Linux and Windows t2.micro instances each month for a year.
2. On-Demand: pay only for used(per hours or second, differ from instances). Ex. a1.medium: \$0.0255 per hour
3. Saving plans: flexible pricing plan for a commitment for 1 or 3-year term.
4. Reserved instances: it is adequate for application need continuous demand. Ex. a1.medium: \$0.016 per hour
5. Spot instances: it uses spare capacity of EC2 computing. It is recommended for applications that have flexible start and end time.Paying when running instances

Ex. a1.medium: \$0.0049 per hour.

## 2-2. Installation Guide. (OS: mac OS Catalina 10.15.4 in May, 2020)

### 1. Sign up AWS account



There is a process to need your credit card info and \$1 for checking proper account.

### 2. Click 'Amazon EC2 start' then pop up the EC2 Dashboard.

A screenshot of the AWS EC2 Dashboard. The left sidebar shows navigation options like "Amazon EC2", "기초", "기능", "요금", "설명서", etc. A red arrow points from the "Amazon EC2 시작하기" button on the left to the main dashboard area. The dashboard itself shows resource statistics: 0 running instances, 0 static IP, 0 volume hosts, 0 snapshots, 0 volumes, 0 load balancers, 0 key pairs, 1 security group, and 0 network interfaces. A message at the bottom says "시작하려면 클라우드의 가장 서버인 Amazon EC2 인스턴스를 시작하십시오.".

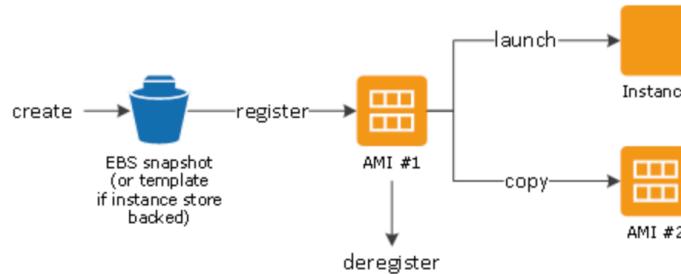
### 3. Click "start instance"

A screenshot of the "Instances Start" dialog box. It shows a search bar with placeholder text "태그 및 속성별 필터 또는 키워드별 검색". Below it, a message says "이 리전에는 실행 중인 인스턴스가 없습니다." and "EC2 사용이 처음이십니까? 시작 안내서 읽(음) 확인해 보십시오.". At the bottom, a blue button labeled "인스턴스 시작" has a red arrow pointing to it. The left sidebar of the dashboard is visible on the left.

## 4. Config preference and launch instance through each step

### Step 1. Select AMI

The AMI(Amazon Machine Image) is a special type of virtual appliance that is used to create a virtual machine within the Amazon EC2. It include one or more EBS snapshots, a template for the root volume of the instance(OS, server, applications).the architecture is like below.



(Author selected Amazon Linux AMI 2018.03.0 (HVM), SSD Volume Type)

### Step 2. Select instance type.

If you read above survey contents, you know what is the best instance type for your application. In this time, I selected 't2.micro' for General purpose with simple testing for free.

## Step 3-4. Construct instance and add storage.

단계 3: 인스턴스 세부 정보 구성  
당구 사용에 적합하게 인스턴스를 구성합니다. 동일한 AMI의 여러 인스턴스를 시작하고 소포 인스턴스를 요청하여 보다 저렴한 요금을 활용하며 인스턴스에 액세스 관리 역할을 할당하는 등 다양한 기능을 사용할 수 있습니다.

단계 4: 스토리지 추가  
인스턴스가 다음 스토리지 디바이스 설정으로 시작됩니다. 추가 EBS 볼륨 및 인스턴스 스토어 볼륨을 인스턴스에 연결하거나 런트 볼륨의 설정을 편집할 수 있습니다. 인스턴스를 시작한 후 추가 EBS 볼륨을 연결할 수도 있지만, 인스턴스 스토어 볼륨은 연결할 수 없습니다. Amazon EC2의 스토리지 옵션에 대해 자세히 알아보십시오.

These steps include setting the number of instance, storage size and other configuration. In this time, I just clicked 'Next', **not 'start'**, because don't need to change default preference.

## Step 5. Add tag.

단계 5: 태그 추가  
태그는 대소문자를 구별하는 키-값 페어로 이루어져 있습니다. 예를 들어 키가 Name이고 값이 Webserver인 태그를 정의할 수 있습니다.  
태그 복사본은 볼륨, 인스턴스 또는 둘 다에 적용될 수 있습니다.  
태그는 모든 인스턴스 및 볼륨에 적용됩니다. Amazon EC2 리소스 태그 지침에 대해 자세히 알아보기.

키 (최대 128자)	값 (최대 256자)	인스턴스 ( )	볼륨 ( )
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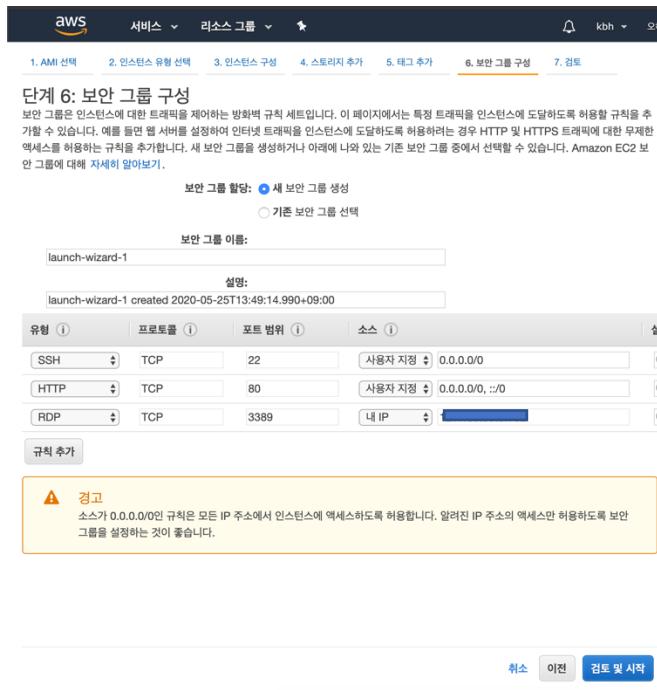
이 리소스에는 현재 태그가 없습니다.  
태그 추가 버튼 또는 Name 태그를 추가하려면 클릭합니다. 유통 선택합니다.  
IAM 정책에 태그를 생성할 수 있는 권한이 포함되어 있는지 확인합니다.

**태그 추가** (최대 50개 태그)

This step about adding tags to EC2 to memo each instance's role. so I add tags to webserver, admin, type like below

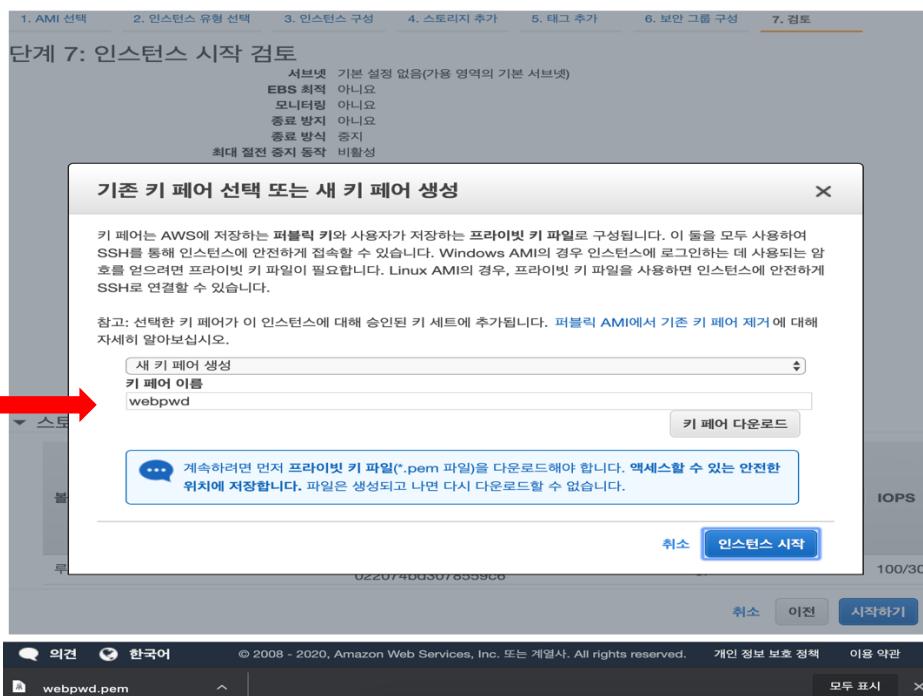
manager	kbh	2	1	0	1
name	web server	2	1	0	1
type	temporary	2	1	0	1

## Step 6. Security group



This step about configuring security group to control traffic of instance. As above picture, SSH is protocol for remote accessing instance using ssh client in console with port 22. HTTP is for accessing server through web page with open IP 0.0.0.0., port 80 and RDS is protocol for remote control only by owner with own IP(if want to give control another administrator, you can add his IP).

## Step 7. Create Key-pair(**important!**)



This step about creating key-pair. This step is important because it is needed to access and run instances. if you write your key name and download it, then memorize where is your key-pair pem.

## Step 8. Confirm

aws 서비스 리소스 그룹 ▾ kbh 오하이오 지변

1. AMI 선택 2. 인스턴스 유형 선택 3. 인스턴스 구성 4. 스토리지 추가 5. 태그 추가 6. 보안 그룹 구성 7. 검토

### 단계 7: 인스턴스 시작 검토

인스턴스 시작 세부 정보를 설정하십시오. 이전으로 돌아가서 각 섹션에 대한 변경 내용을 편집할 수 있습니다. 키 페일을 인스턴스에 할당하고 시작 프로세스를 완료하려면 [시작]을 클릭합니다.

**⚠️ 인스턴스 보안을 개선하십시오. 보안 그룹 launch-wizard-1[가] 세계에 개방되어 있습니다.**

인스턴스 보안은 IP 주소에서 액세스할 수 있습니다. 보안 그룹 규칙을 업데이트하여 열려진 IP 주소에서만 액세스를 허용하는 것이 좋습니다.  
설정 중인 애플리케이션이나 서비스에 접근 액세스를 있도록 보안 그룹에서 추가 포트를 수립 수 있습니다. 예를 들어, 웹 서버용으로 HTTP(80)을 엽니다. [보안 그룹 편집](#)

#### AMI 세부 정보

**Amazon Linux AMI 2018.03.0 (HVM), SSD Volume Type - ami-083ebc5b49873896a**

프리 지메리 Amazon Linux는 AWS 기반의 AWS 지원 이미지입니다. 기본 이미지에는 AWS 명령을 도구, Python, Ruby 및 Java가 있습니다. 리포지토리에는 Docker, PHP, MySQL, PostgreSQL 및 기타 패키지가 포함됩니다.

용기능 후드 드라이브 유형: ebs 가능성 유형: hvm

#### 인스턴스 유형

인스턴스 유형 ECU vCPUs 메모리 (GiB) 인스턴스 스토리지 (GB) EBS 최적화 사용 가능 네트워크 성능

t2.micro	Variable	1	1	EBS 전용	-	Low to Moderate
----------	----------	---	---	--------	---	-----------------

#### 보안 그룹

보안 그룹 이름: launch-wizard-1  
설명: launch-wizard-1 created 2020-05-25T13:49:14.990+09:00

유형	프로토콜	포트 범위	소스	설명
SSH	TCP	22	0.0.0.0/0	
HTTP	TCP	80	0.0.0.0/0	
HTTP	TCP	80	::/0	

취소 이전 시작하기

▼ 인스턴스 세부 정보

인스턴스 개수 1  
네트워크 vpc-5cf32c97  
서브넷 기본 설정 일음(가용 영역의 기본 서브넷)  
EBS 부착 아니오  
모니터링 아니오  
종료 방지 아니오  
종료 방식 종지  
최대 절전 흡지 풍차 비활성  
용량 예약 open  
IAM 사용법 일음  
태스크 기본 default  
T2/T3 무보안 비활성  
호스트 ID  
호스트 소스 그룹 이름  
선택도 해제  
커널 ID 기본값 사용  
RAM 디스크 ID 기본값 사용  
Metadata accessible Enabled  
Metadata version V1 and V2 (token optional)  
Metadata token response hop limit 1  
사용자 데이터  
피복적 IP 활성 서브넷 사용 설정(활성화)  
IPv6 IP 활성 서브넷 사용 설정(활성화)

구매 옵션 온디マン드

▶ 스토리지

볼륨 유형 ①	디바이스 ①	스냅샷 ①	크기(GiB) ①	볼륨 유형 ①	IOPS ①	처리량(MB/초) ①	종료 시 삭제 ①	암호화됨 ①
루트	/dev/xvda	snap-022074bd3078559c6	8	gp2	100/3000	해당 사항 없음	예	암호화되지 않음

▶ 태그

취소 이전 시작하기

스토리지 편집

데그 편집



If you follow before step well, you can show your configuration of instance. If it's done, click 'start', then you can show below page.

# 시작 상태

지금 인스턴스를 시작 중입니다.  
다음 인스턴스 시작이 개시됨: I-05086854c0fc71f70      [시작 로그 보기](#)

**예상 요금 알림 받기**  
결제 알림 생성 AWS 결제 예상 요금이 사용자가 정의한 금액을 초과하는 경우(예를 들면 프리 티어를 초과하는 경우) 이메일 알림을 받습니다.

## 인스턴스에 연결하는 방법

인스턴스를 시작 중이며, 사용할 준비가 되어 실행 중 상태가 될 때까지 몇 분이 걸릴 수도 있습니다. 새 인스턴스에서는 사용 시간이 즉시 시작되어 인스턴스를 중지 또는 종료할 때까지 계속 누적됩니다.

인스턴스 보기 버튼을 클릭하여 인스턴스의 상태를 모니터링합니다. 인스턴스가 실행 중 상태가 되고 나면 [인스턴스] 화면에서 인스턴스에 연결할 수 있습니다. 인스턴스에 연결하는 방법  [알아보기](#).

▼ 다음은 시작에 도움이 되는 유용한 리소스입니다.

- Linux 인스턴스에 연결하는 방법
- AWS 프리 티어에 대해 알아보기
- Amazon EC2: 사용 설명서
- Amazon EC2: 토큰 포럼

인스턴스가 시작되는 동안 다음을 수행할 수도 있습니다.

- 상태 검사 결과 생성 해당 인스턴스가 상태 검사를 통과하지 못하는 경우 알림을 받습니다. (추가 요금이 적용될 수 있음)
- 추가 EBS 볼륨 생성 및 연결 (추가 요금이 적용될 수 있음)
- 보안 그룹 관리



Then, if you click 'show instance', can see your instance that you configured is running well with some information like below picture.

The screenshot shows the AWS EC2 Instances page. On the left, there's a sidebar with various navigation links: New EC2 Experience, EC2 대시보드 (New), 이벤트 (New), 태그, 보고서, 제한, 인스턴스 (Instances) (highlighted in orange), AMI, 번들 작업, ELASTIC BLOCK STORE (highlighted in orange), and 네트워크 및 보안. A red arrow points from the 'Instances' link in the sidebar to the 'Instances' section in the main content area. The main content area has a header with tabs: '인스턴스 시작' (Instance Start), '연결' (Connect), and '작업' (Jobs). Below this is a search bar and a table with one row. The table columns are: 태그 및 속성별 필터 또는 키워드별 검색 (Search by Tag or Attribute), 인스턴스 ID (Instance ID), 인스턴스 유형 (Instance Type), 가용 영역 (Availability Zone), and 인스턴스 (Instance). The table shows one instance: i-05086854c0fc71f70, t2.micro, us-east-2c. To the right of the table, there's a detailed view for the selected instance. It shows the Instance ID: i-05086854c0fc71f70, Public DNS: ec2-18-216-100-0.us-east-2.compute.amazonaws.com, and Instance Status: running. It also lists the Instance Type: t2.micro, and provides links for IPv4 and IPv6 Public IP addresses.

Instance is created well.

In my case, as above picture,

Instance ID: i-05086854c0fc71f70

Status: running (but now is closed because of fee).

Elastic ip: 3.20.124.99

Public DNS: ec2-3-20-124-99.us-east-2.compute.amazonaws.com

Instance type: t2.micro

Security group: launch-wizard 1 (SSH, RDS, HTTP)

Storage: 8GiB (default)

## 5. Register elastic IP(optional)

The screenshot shows the AWS EC2 service dashboard. On the left, there's a sidebar with various EC2-related options like 'Instances', 'Savings Plans', and 'Elastic Block Store'. A red arrow points to the 'Elastic IP' section under 'Networking & Security'. The main panel shows a table for 'Elastic IP addresses (1/1)'. One row is selected, showing details: 'Name' (3.20.124.99), 'Public IP Address' (3.20.124.99), 'Allocation ID' (eipalloc-0ce297f8eb1385f53), and other network information. A red arrow points to the 'Actions' dropdown menu at the top right of the table.

In AWS, IP is changed dynamically when start/end instance. In this case, people cannot enter our webpage. Elastic IP resolve this problem. After adding elastic IP, connect to your instance.

## 6. Setup AWS CLI for accessing instance.

```
beonghyunkangui-MacBookPro:~ beonghyunkang$ brew install awscli
==> Downloading https://homebrew.bintray.com/bottles/openssl%401.1-1.1.1
==> Downloading from https://akamai.bintray.com/19/1926679569c6af5337de8
#####
==> Downloading https://homebrew.bintray.com/bottles/awscli-2.0.16.catal
==> Downloading from https://akamai.bintray.com/f7/f7a261dd5fd0f4aeaabde
#####
```

Aws-cli is integrated tool to control AWS through terminal.

In this process, AWS ask you about your **AWS access key ID** and **AWS secret key**. These information are in **AWS web site->My account->AWS Management Console-> My Security Credentials-> make new access key-> download and open excel or csv file written your AWS access key ID and AWS Secret key**. Below image is help you follow these processes.

The screenshot shows the AWS Management Console homepage. A red arrow points to the 'Actions' dropdown menu in the top right corner. Another red arrow points to the 'AWS Access Key' creation dialog box. Inside the dialog, it says '액세스 키(액세스 키 ID 및 보안 액세스 키)가 성공적으로 생성되었습니다.' and provides instructions to download the CSV file. A third red arrow points to the 'rootkey.csv' file download link at the bottom of the dialog.

\*Default region name and Default output format can skip by default value with press Enter key.

## 7. Connect to your instance thorough ssh

To connect instance, you type command like this.

```
$ssh -i .ssh/your key-pair name.pem ec2-user@DNS address
```

\* run this command in your pem file directory to access key-pair pem file.

\* mac OS already include SSH client. So if you use other OS, use PUTTY or other program.

\* DNS address can found in your EC2 dashboard.

As a result, connecting instance is successful like below.

```
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-20-124-99.us-east-2.compute.amazonaws.com,3.20
.124.99' (ECDSA) to the list of known hosts.
Last login: Mon May 25 06:14:29 2020 from 121.165.59.87
              _\   _ 
             _ |  (   /   Amazon Linux AMI
             ___\_\_|___|
https://aws.amazon.com/amazon-linux-ami/2018.03-release-notes/
[ec2-user@ip-172-31-47-205 ~]$
```

## 8. Set up Apache web server and start web server.

In your instance environment, type command like this to set up web server in your instance. If not, you cannot enter web page with your public IP address or DNS address.

```
$sudo yum update -y // update
```

```
$sudo yum install -y http24 // install Apache webserver
```

```
$sudo service httpd start. // start web server
```

If you type above command without fault, can see below window successfully,

```
[ec2-user@ip-172-31-47-205 ~]$ sudo yum update -y
Loaded plugins: priorities, update-motd, upgrade-helper
amzn-main                                         | 2.1 kB   0
amzn-updates                                     | 2.5 kB   0
No packages marked for update
[ec2-user@ip-172-31-47-205 ~]$ sudo yum install -y httpd24
Loaded plugins: priorities, update-motd, upgrade-helper
Resolving Dependencies
--> Running transaction check
--> Package httpd24.x86_64 0:2.4.41-1.88.amzn1 will be installed
--> Processing Dependency: httpd24-tools = 2.4.41-1.88.amzn1 for package: httpd24-2.4.41-1.88.amzn1.x86_64
--> Processing Dependency: apr-util > 1.5.1 for package: httpd24-2.4.41-1.88.amzn1.x86_64
--> Processing Dependency: apr > 1.5.1 for package: httpd24-2.4.41-1.88.amzn1.x86_64
--> Processing Dependency: libaprutil-1.so.0()(64bit) for package: httpd24-2.4.41-1.88.amzn1.x86_64
--> Processing Dependency: libapr-1.so.0()(64bit) for package: httpd24-2.4.41-1.88.amzn1.x86_64
--> Running transaction check
--> Package apr.x86_64 0:1.5.2-5.13.amzn1 will be installed
```

...

```

Installed:
  httpd24.x86_64 0:2.4.41-1.88.amzn1

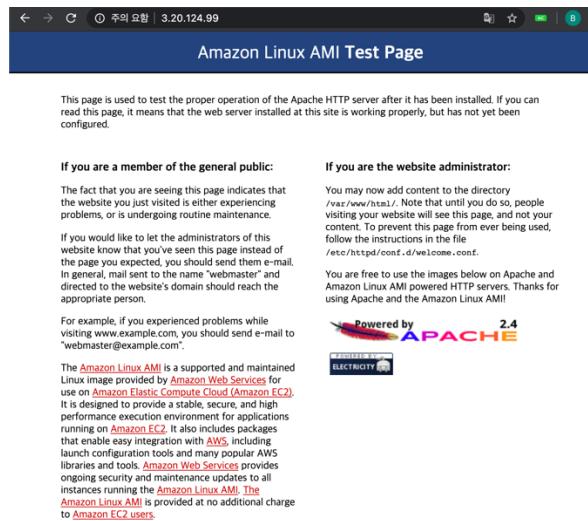
Dependency Installed:
  apr.x86_64 0:1.5.2-5.13.amzn1           apr-util.x86_64 0:1.5.4-6.
  httpd24-tools.x86_64 0:2.4.41-1.88.amzn1

Complete!
[[ec2-user@ip-172-31-47-205 ~]$ sudo service httpd start
Starting httpd:                                         [  OK  ]

```

## 9. Check if your web server works well!

Open your browser and type your elastic IP address or DNS address in URL.(cf. step 5)



If you can see above default Apache HTTP server page, all processes are well done!

## 10. Before Uploading file, get rid of default page.

To upload file and check if it is well, you should get rid of default page. To do this, back to terminal and enter directory **/etc/httpd/conf.d** and you can see welcome.conf.

As welcom.conf., you have to see default page you don't want. in my case, change the file name to not open the welcome.conf like below. After that, restart the httpd service. There are other options to hide the default page with comment and else.

```

[[ec2-user@ip-172-31-47-205 conf.d]$ ls
README autoindex.conf notrace.conf userdir.conf welcome.conf
[[ec2-user@ip-172-31-47-205 conf.d]$ vi welcome.conf
[[ec2-user@ip-172-31-47-205 conf.d]$ mv welcome.conf welcome.conf_backup
mv: cannot move `welcome.conf' to `welcome.conf_backup': 허가 거부
[[ec2-user@ip-172-31-47-205 conf.d]$ sudo mv welcome.conf welcome.conf_backup
[[ec2-user@ip-172-31-47-205 conf.d]$ ls
README autoindex.conf notrace.conf userdir.conf welcome.conf_backup
[[ec2-user@ip-172-31-47-205 conf.d]$ systemctl restart httpd

```

## 11. Upload file and check whether it is uploaded correctly.

To upload some file, prepare file first, then move to correct directory to show its content. In this time, I make a text file and move that using 'scp' (secure copy) command.(local->remote server)

```
[ec2-user@ip-172-31-47-205 ~]$ sudo chmod 777 /var/www/html -R
[ec2-user@ip-172-31-47-205 ~]$ exit
logout
Connection to ec2-3-20-124-99.us-east-2.compute.amazonaws.com closed.
beonghyunkangui-MacBookPro:Downloads beonghyunkang$ sudo scp -i "/Users/beonghyunkang/Downloads/webpwd.pem" testccs.txt ec2-user@ec2-3-20-124-99.us-east-2.compute.amazonaws.com:/var/www/html
testccs.txt                                              100% 397      2.2KB/s  00:00
beonghyunkangui-MacBookPro:Downloads beonghyunkang$
```

\* if permission denied when command scp, change the authority like above picture.

\* scp command form is "scp -i [pemfile path] [file name to upload] ec2-user@DNS address: destination location path(/var/www/html)

If you move the file successful, you can find your file using command 'ls'.

```
[ec2-user@ip-172-31-47-205 ~]$ cd /var/www
[ec2-user@ip-172-31-47-205 www]$ ls
cgi-bin  error  html  icons  noindex
[ec2-user@ip-172-31-47-205 www]$ cd html/
[ec2-user@ip-172-31-47-205 html]$ ls
test  testccs.txt
```

In this paper, do not deal with downloading file from server, it is also possible using scp.

**At last, all processes are done.**

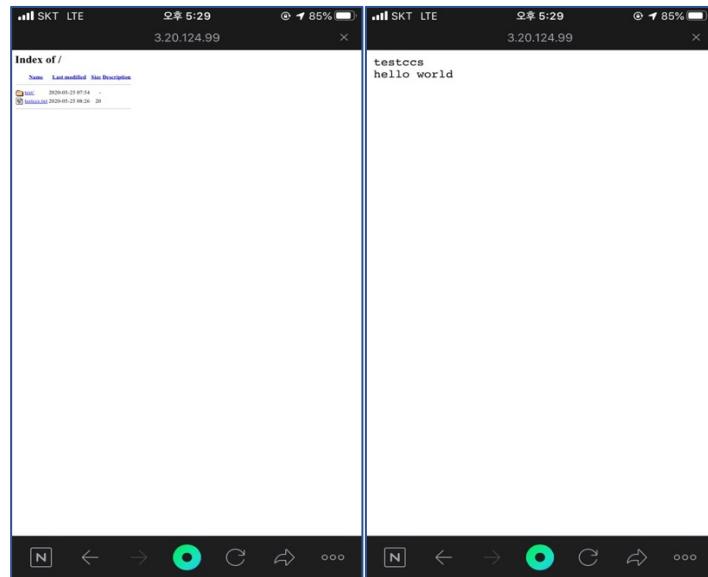
Check if file is well uploaded in your web-page like below.

The screenshot shows a web browser displaying the contents of the root directory ('/'). The left pane lists files: 'test/' and 'testccs.txt'. The right pane shows the content of 'testccs.txt', which is 'hello world'. A blue arrow points from the file name 'testccs.txt' in the list to its content in the preview pane.

Name	Last modified	Size	Description
test/	2020-05-25 07:54	-	
testccs.txt	2020-05-25 08:02	397	

```
testccs
hello world
```

**Ps. Using mobile phone, check whether it is uploaded correctly like below.**



### 3. Conclusion.

In this paper, I surveyed some concept of Amazon EC2 and other things to help you make your web-server and upload file. Following above processes, may some issues to interrupt you to set up. Please contact me then, give you some help as much as possible.

Anyway, I hope this paper can help your goal.

[beonghyunkang@gmail.com](mailto:beonghyunkang@gmail.com)

## Reference.

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<sup>1</sup> **Buildupworks, AWS EC2 란 무엇이며 왜 기업들이 EC2 를 선택할까요?,** <https://medium.com/@buw/aws-ec2%EB%9E%80-%EB%AC%B4%EC%97%87%EC%9D%B4%EB%A9%B0-%EC%99%9C-%EA%B8%B0%EC%97%85%EB%93%A4%EC%9D%B4-ec2%EB%A5%BC-%EC%84%A0%ED%83%9D%ED%95%A0%EA%B9%8C%EC%9A%94-e4c4d6b419b4>

<sup>2</sup> AWS Docs, <https://docs.aws.amazon.com/AmazonS3/latest/dev/Welcome.html>

<sup>3</sup> Amazon RDS, <https://www.bespinglobal.com/bespins-pick-vol-11-aws-rds-vs-ec2/>

<sup>4</sup> Amazon EC2 pricing, <https://aws.amazon.com/ec2/pricing/>