

**Description:**

Amazon Elastic Compute Cloud (Amazon EC2) provides scalable computing capacity in the Amazon Web Services (AWS) cloud. Using Amazon EC2 eliminates your need to invest in hardware up front so you can develop and deploy applications faster. You can use Amazon EC2 to launch as many or as few virtual servers as you need, configure security and networking, and manage storage. Amazon EC2 enables you to scale up or down to handle changes in requirements or spikes in popularity, reducing your need to forecast traffic.

**Problem Statement:**

Company ABC wants to move their product to AWS. They have the following things set up right now:

1. MySQL DB
2. Website (PHP)

<https://lms.intellipaat.com/mediaFiles/2020/10/code.zip>

The company wants high availability on this product, therefore wants Auto Scaling to be enabled on this website.

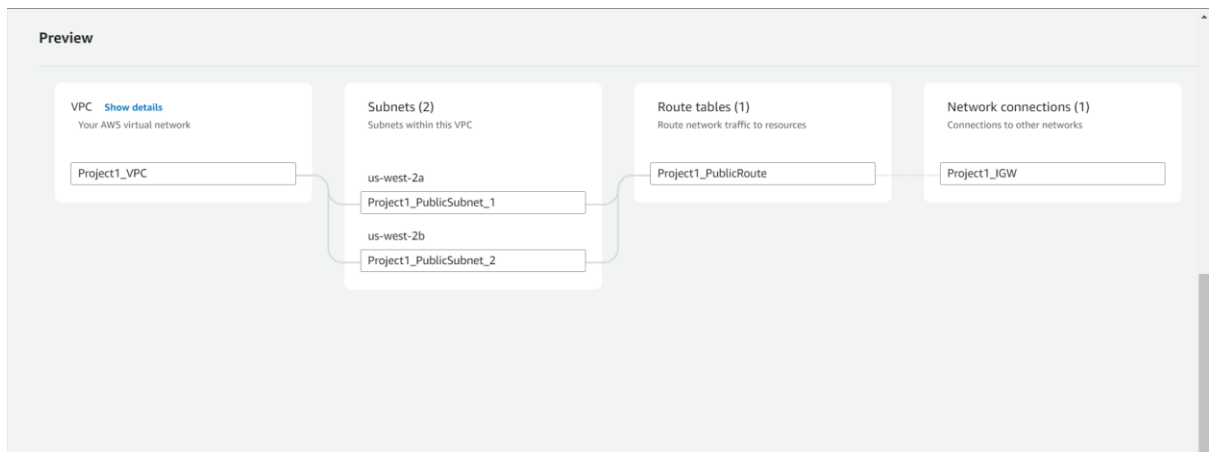
**Steps To Solve:**

1. Launch an EC2 Instance
2. Enable Auto Scaling on these instances (minimum 2)
3. Create an RDS Instance
4. Create Database & Table in RDS instance:
  - a. Database name: intel
  - b. Table name: data
  - c. Database password: intel123
5. Change hostname in website
6. Allow traffic from EC2 to RDS instance
7. Allow all-traffic to EC2 instance

**Procedure: -**

- First, we will start with creating the **vpc**.

- Goto to the VPC and click on create VPC.



- Click on create VPC.

VPC > Your VPCs > Create VPC > Create VPC resources

## Create VPC workflow

✓ Success

▼ Details

- ✓ Create VPC: [vpc-0006e0f535f4ede5b](#)
- ✓ Enable DNS hostnames
- ✓ Enable DNS resolution
- ✓ Verifying VPC creation: [vpc-0006e0f535f4ede5b](#)
- ✓ Create subnet: [subnet-04df3590428148455](#)
- ✓ Create subnet: [subnet-067633aa6924d8278](#)
- ✓ Create internet gateway: [igw-0c04aad25745100ba](#)
- ✓ Attach internet gateway to the VPC
- ✓ Create route table: [rtb-03141340b434edf4b](#)
- ✓ Create route
- ✓ Associate route table
- ✓ Associate route table
- ✓ Verifying route table creation

[View VPC](#)

- Therefore, all the resources will be created.

VPC > Your VPCs > Create VPC

## Create VPC [Info](#)

A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such as EC2 instances, Elastic Load Balancing, Amazon S3, and Amazon ElastiCache.

### VPC settings

**Resources to create** [Info](#)  
Create only the VPC resource or the VPC and other networking resources.

☐ VPC only ☒ VPC and more

**Name tag auto-generation** [Info](#)  
Enter a value for the Name tag. This value will be used to auto-generate Name tags for all resources in the VPC.

☐ Auto-generate

**IPv4 CIDR block** [Info](#)  
Determine the starting IP and the size of your VPC using CIDR notation.

256 IPs

**IPv6 CIDR block** [Info](#)

☒ No IPv6 CIDR block  
☐ Amazon-provided IPv6 CIDR block

**Tenancy** [Info](#)

1 2 3

### Customize AZs

**Number of public subnets** [Info](#)  
The number of public subnets to add to your VPC. Use public subnets for web applications that need to be publicly accessible over the internet.

**Number of private subnets** [Info](#)  
The number of private subnets to add to your VPC. Use private subnets to secure backend resources that don't need public access.

**Customize subnets CIDR blocks**

**NAT gateways (\$)** [Info](#)  
Choose the number of Availability Zones (AZs) in which to create NAT gateways. Note that there is a charge for each NAT gateway.

**VPC endpoints** [Info](#)  
Endpoints can help reduce NAT gateway charges and improve security by accessing S3 directly from the VPC. By default, full access policy is used. You can customize this policy at any time.

**DNS options** [Info](#)

☒ Enable DNS hostnames  
☒ Enable DNS resolution

- Now we need to launch an instance.

▼ Network settings [Info](#)

VPC - required [Info](#)  
vpc-0006e0f535f4ede5b (Project1\_VPC)  
10.0.0.0/24

Subnet [Info](#)  
subnet-04df3590428148455 Project1\_PublicSubnet\_1  
VPC: vpc-0006e0f535f4ede5b Owner: 049198078472  
Availability Zone: us-west-2a IP addresses available: 11 CIDR: 10.0.0.0/28

Auto-assign public IP [Info](#)  
Enable

Firewall (security groups) [Info](#)  
A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.  
☒ Create security group ☐ Select existing security group

Security group name - required  
Project1\_SG  
This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and \_-./!#\$%&'()\*+,-=:;@[]^\_`{|}~

Description - required [Info](#)  
Project1\_SecurityGroup

Inbound Security Group Rules  
▼ Security group rule 1 (TCP, 22, 0.0.0.0/0) [Remove](#)

▼ Summary

Number of instances [Info](#)  
1

Software Image (AMI) [Info](#)  
Canonical, Ubuntu, 22.04 LTS, ...[read more](#)  
ami-03f65b8614a860c29

Virtual server type (instance type)  
t2.micro

Firewall (security group)  
New security group

Storage (volumes)  
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance

Cancel [Launch instance](#) [Review commands](#)

Inbound Security Group Rules

▼ Security group rule 1 (TCP, 22, 0.0.0.0/0) [Remove](#)

Type [Info](#) Protocol [Info](#) Port range [Info](#)  
ssh TCP 22

Source type [Info](#) Source [Info](#) Description - optional [Info](#)  
Anywhere [Add CIDR, prefix list or security](#) e.g. SSH for admin desktop  
0.0.0.0/0 [X](#) [::/0](#) [X](#)

▼ Security group rule 2 (TCP, 80, Multiple sources) [Remove](#)

Type [Info](#) Protocol [Info](#) Port range [Info](#)  
HTTP TCP 80

Source type [Info](#) Source [Info](#) Description - optional [Info](#)  
Anywhere [Add CIDR, prefix list or security](#) e.g. SSH for admin desktop  
0.0.0.0/0 [X](#) [::/0](#) [X](#)

Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

[Add security group rule](#)

▼ Summary

Number of instances [Info](#)  
1

Software Image (AMI) [Info](#)  
Canonical, Ubuntu, 22.04 LTS, ...[read more](#)  
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Cancel [Launch instance](#) [Review commands](#)

- Click on Launch instance.

Name and tags [Info](#)

Name  
Project1\_MyWebInstance [Add additional tags](#)

▼ Application and OS Images (Amazon Machine Image) [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

[Search our full catalog including 1000s of application and OS images](#)

Quick Start

Amazon Linux

macOS

Ubuntu

Windows

Red Hat

SUSE Li

[Browse more AMIs](#)  
including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)  
Ubuntu Server 22.04 LTS (HVM), SSD Volume Type [Free tier eligible](#)

▼ Summary

Number of instances [Info](#)  
1

Software Image (AMI) [Info](#)  
Canonical, Ubuntu, 22.04 LTS, ...[read more](#)  
ami-03f65b8614a860c29

Virtual server type (instance type)  
t2.micro

Firewall (security group)  
New security group

Storage (volumes)  
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance

Cancel [Launch instance](#) [Review commands](#)

- Now we need to create our RDS mysql database.
- Click on create database.

## Templates

Choose a sample template to meet your use case.

### ☐ Production

Use defaults for high availability and fast, consistent performance.

### ☐ Dev/Test

This instance is intended for development use outside of a production environment.

### ☒ Free tier

Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. [Info](#)

## Settings

### DB instance identifier [Info](#)

Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

### ▼ Credentials Settings

#### Master username [Info](#)

Type a login ID for the master user of your DB instance.

1 to 16 alphanumeric characters. First character must be a letter.

#### ☐ Manage master credentials in AWS Secrets Manager

Manage master user credentials in Secrets Manager. RDS can generate a password for you and manage it throughout its lifecycle.

[i](#) If you manage the master user credentials in Secrets Manager, some RDS features aren't supported. [Learn more](#)

#### ☐ Auto generate a password

Amazon RDS can generate a password for you, or you can specify your own password.

#### Master password [Info](#)

[RDS](#) > Create database

## Create database

### Choose a database creation method [Info](#)

#### ☒ Standard create

You set all of the configuration options, including ones for availability, security, backups, and maintenance.

#### ☐ Easy create

Use recommended best-practice configurations. Some configuration options can be changed after the database is created.

### Engine options

#### Engine type [Info](#)

##### ☐ Aurora (MySQL Compatible)



##### ☐ Aurora (PostgreSQL Compatible)



##### ☒ MySQL



##### ☐ MariaDB



##### ☐ PostgreSQL



##### ☐ Oracle

- Set the password as described in the question that is intel123

**Monitoring**

**Monitoring**  
☐ **Enable Enhanced monitoring**  
Enabling Enhanced monitoring metrics are useful when you want to see how different processes or threads use the CPU.

**▼ Additional configuration**  
Database options, encryption turned off, backup turned off, backtrack turned off, maintenance, CloudWatch Logs, delete protection turned off.

**Database options**  
Initial database name [Info](#)  
  
If you do not specify a database name, Amazon RDS does not create a database.  
DB parameter group [Info](#)  
default.mysql8.0  
Option group [Info](#)  
default:mysql-8-0  
**Backup**  
☐ **Enable automated backups**

RDS doesn't assign a public IP address to the database. Only Amazon EC2 instances and other resources inside the VPC can connect to your database. Choose one or more VPC security groups that specify which resources can connect to the database.

**VPC security group (firewall)** [Info](#)  
Choose one or more VPC security groups to allow access to your database. Make sure that the security group rules allow the appropriate incoming traffic.

☐ **Choose existing**  
Choose existing VPC security groups

☒ **Create new**  
Create new VPC security group

**New VPC security group name**  
Project1\_SG\_RDS

**Availability Zone** [Info](#)  
No preference

**RDS Proxy**  
RDS Proxy is a fully managed, highly available database proxy that improves application scalability, resiliency, and security.  
☐ **Create an RDS Proxy** [Info](#)  
RDS automatically creates an IAM role and a Secrets Manager secret for the proxy. RDS Proxy has additional costs. For more information, see [Amazon RDS Proxy pricing](#).

**Certificate authority - optional** [Info](#)  
Using a server certificate provides an extra layer of security by validating that the connection is being made to an Amazon database. It does so by checking the server certificate that is automatically installed on all databases that you provision.  
rds-ca-2019 (default)

If you don't select a certificate authority, RDS chooses one for you.

**► Additional configuration**

## Backup

- ☐ Enable automated backups  
Creates a point-in-time snapshot of your database

## Encryption

- ☐ Enable encryption  
Choose to encrypt the given instance. Master key IDs and aliases appear in the list after they have been created using the AWS Key Management Service console. [Info](#)

## Log exports

Select the log types to publish to Amazon CloudWatch Logs

- ☐ Audit log  
☐ Error log  
☐ General log  
☐ Slow query log

## IAM role

The following service-linked role is used for publishing logs to CloudWatch Logs.

RDS service-linked role

## Maintenance

Auto minor version upgrade [Info](#)

- ☐ Enable auto minor version upgrade  
Enabling auto minor version upgrade will automatically upgrade to new minor versions as they are released. The automatic upgrades occur during the maintenance window for the database.

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## Maintenance window [Info](#)

Select the period you want pending modifications or maintenance applied to the database by Amazon RDS.

- ☐ Choose a window  
☒ No preference

## Deletion protection

- ☐ Enable deletion protection  
Protects the database from being deleted accidentally. While this option is enabled, you can't delete the database.

- Click on create database.
- Goto to the instance and connect the instance with the terminal. Update the server **sudo apt-get update** and then install the web server **sudo apt-get install apache2** and run the command **sudo systemctl status apache2**

```
No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-10-0-0-5:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
   Active: active (running) since Sun 2023-07-23 21:34:44 UTC; 2min 29s ago
     Docs: https://httpd.apache.org/docs/2.4/
  Main PID: 2646 (apache2)
    Tasks: 55 (limit: 1141)
   Memory: 4.9M
      CPU: 36ms
   CGroup: /system.slice/apache2.service
           └─2646 /usr/sbin/apache2 -k start
             └─2648 /usr/sbin/apache2 -k start
               └─2649 /usr/sbin/apache2 -k start

Jul 23 21:34:44 ip-10-0-0-5 systemd[1]: Starting The Apache HTTP Server...
Jul 23 21:34:44 ip-10-0-0-5 systemd[1]: Started The Apache HTTP Server.
ubuntu@ip-10-0-0-5:~$
```

- We must make sure in the loaded part the service is **enabled** and in the Active part the status is **active (running)**.
- If the service is disabled, we must enable it by the command **sudo systemctl enable apache2** and **sudo systemctl start apache2**
- **sudo systemctl disable apache2** (to disable the service)
- **sudo systemctl stop apache2** (to stop the inactive (dead))
- Copy the code address provided in the LMS and upload in the server by the command **wget** <https://lms.intellipaat.com/mediaFiles/2020/10/code.zip>

```
Jul 23 21:34:44 ip-10-0-0-5 systemd[1]: Starting The Apache HTTP Server...
Jul 23 21:34:44 ip-10-0-0-5 systemd[1]: Started The Apache HTTP Server.
ubuntu@ip-10-0-0-5:~$ wget https://lms.intellipaat.com/mediaFiles/2020/10/code.zip
--2023-07-23 21:53:48-- https://lms.intellipaat.com/mediaFiles/2020/10/code.zip
Resolving lms.intellipaat.com (lms.intellipaat.com)... 104.18.26.176, 104.18.27.176, 2606:4700:6812:1bb0, ...
Connecting to lms.intellipaat.com (lms.intellipaat.com)|104.18.26.176|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 787844 (769K) [application/zip]
Saving to: 'code.zip'

code.zip                               100%[=====>] 769.38K  --.-KB/s  in 0.1s

2023-07-23 21:53:48 (7.62 MB/s) - 'code.zip' saved [787844/787844]

ubuntu@ip-10-0-0-5:~$ ls
code.zip
ubuntu@ip-10-0-0-5:~$
```

- wget is used to download the thing from the URL.
- Now we must unzip the file. To do that we need to install the command **unzip**. The command is **sudo apt install unzip** now run the command **unzip code.zip**

```
No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-10-0-0-5:~$ unzip code.zip
Archive: code.zip
  creating: 1243/images/
  inflating: 1243/images/1.png
  inflating: 1243/images/2.png
  inflating: 1243/index.php
ubuntu@ip-10-0-0-5:~$ ls
1243  code.zip
ubuntu@ip-10-0-0-5:~$ cd 1243
ubuntu@ip-10-0-0-5:~/1243$ cd images/
ubuntu@ip-10-0-0-5:~/1243/images$ ls
1.png 2.png
ubuntu@ip-10-0-0-5:~/1243/images$ cd
ubuntu@ip-10-0-0-5:~$
```

- To replace the default ubuntu server file with the PHP file we have to replace the index.html file present in the `/var/www/html`.

```
ubuntu@ip-10-0-0-5:~/1243/images$ cd
ubuntu@ip-10-0-0-5:~$ cd 1243
ubuntu@ip-10-0-0-5:~/1243$ cd /var/www/html
ubuntu@ip-10-0-0-5:/var/www/html$ ls
index.html
ubuntu@ip-10-0-0-5:/var/www/html$ sudo rm index.html
ubuntu@ip-10-0-0-5:/var/www/html$ ls
ubuntu@ip-10-0-0-5:/var/www/html$
```

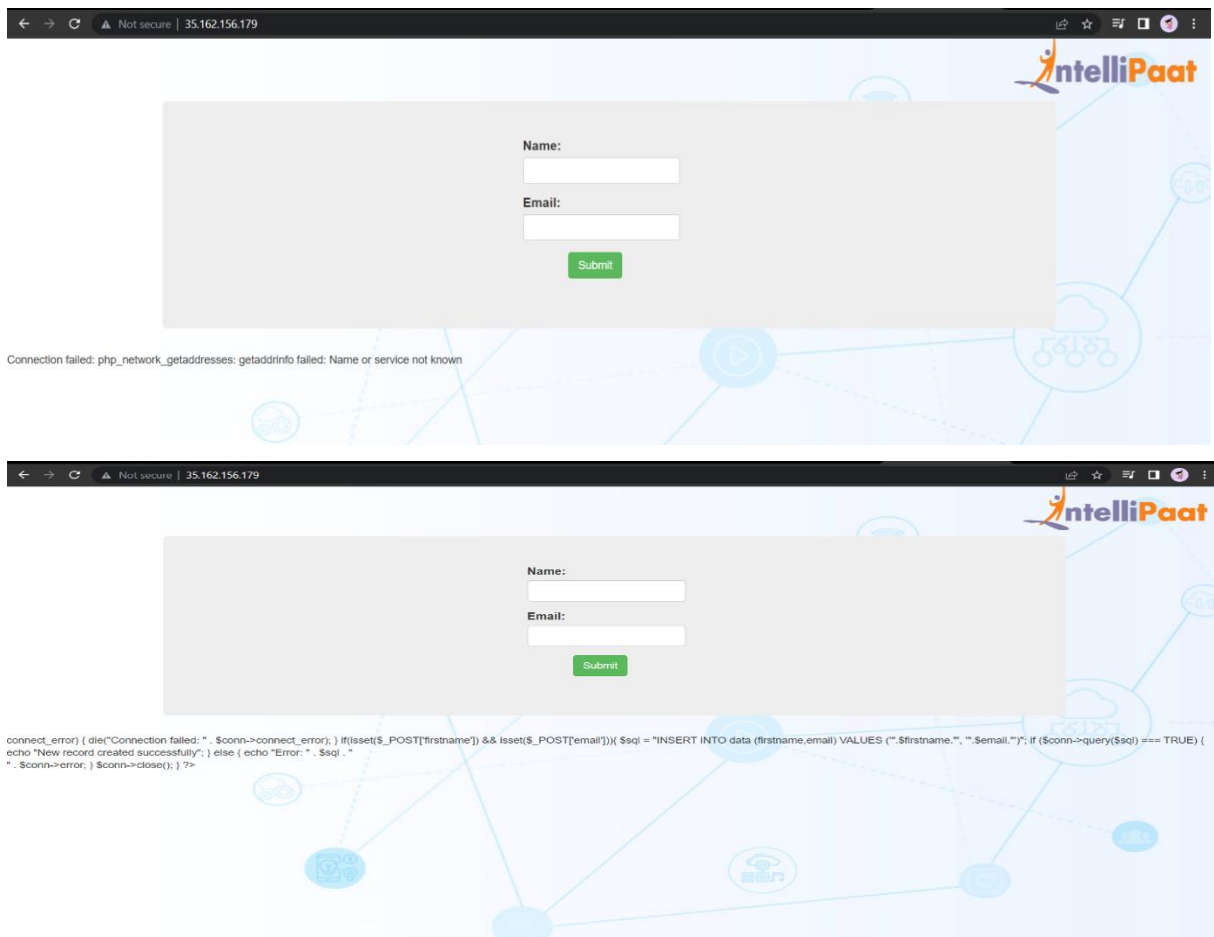


```

ubuntu@ip-10-0-0-5:~$ ls
1243  code.zip
ubuntu@ip-10-0-0-5:~$ cd 1243
ubuntu@ip-10-0-0-5:~/1243$ cd images/
ubuntu@ip-10-0-0-5:~/1243/images$ ls
1.png 2.png
ubuntu@ip-10-0-0-5:~/1243/images$ cd
ubuntu@ip-10-0-0-5:~$ cd 1243
ubuntu@ip-10-0-0-5:~/1243$ cd /var/www/html
ubuntu@ip-10-0-0-5:/var/www/html$ ls
index.html
ubuntu@ip-10-0-0-5:/var/www/html$ sudo rm index.html
ubuntu@ip-10-0-0-5:/var/www/html$ ls
ubuntu@ip-10-0-0-5:/var/www/html$ cd
ubuntu@ip-10-0-0-5:~$ cd 1243
ubuntu@ip-10-0-0-5:~/1243$ ls
images index.php
ubuntu@ip-10-0-0-5:~/1243$ sudo mv * /var/www/html
mv: target '/var/www/html' is not a directory
ubuntu@ip-10-0-0-5:~/1243$ sudo mv * /var/www/html
ubuntu@ip-10-0-0-5:~/1243$ ls
ubuntu@ip-10-0-0-5:~/1243$ cd /var/www/html
ubuntu@ip-10-0-0-5:/var/www/html$ ls
images index.php
ubuntu@ip-10-0-0-5:/var/www/html$

```

- We have removed the index.html file from the location /var/www/html and from the location 1243 we have moved the file to the location /var/www/html.
- If we refresh the page we will see the PHP file on the browser.
- Below we see that we are getting the connection failed error because it is the Html page and the code is written for PHP environment.
- For this we will add a repository that is **sudo add-apt-repository -y ppa:ondrej/php** and then install PHP along with mysql with the command **sudo apt install php5.6 mysql-client php5.6-mysqli -y**





- ```
No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-10-0-0-5:/var/www/html$ cd /var/www/html
ubuntu@ip-10-0-0-5:/var/www/html$ ls
images  index.php
ubuntu@ip-10-0-0-5:/var/www/html$ sudo nano index.php
ubuntu@ip-10-0-0-5:/var/www/html$
```

- We have to change the servername to the endpoint mentioned in the RDS.

- As a result, we will now get the connection time out error. This means that the database is existing but we are not able to connect to the server.
- It is because the **security group** of the RDS is not allowing us to make a connection.
- Therefore, we will edit the inbound rule of the security group of the RDS.

aws

Services

Search

[Alt+S]

EC2

>

Security Groups

>

sg-0e2e774d4fe080913 - Project1\_SG\_RDS

>

Edit inbound rules

## Edit inbound rules [Info](#)

Inbound rules control the incoming traffic that's allowed to reach the instance.

**Inbound rules** [Info](#)

| Security group rule ID | Type <a href="#">Info</a> | Protocol <a href="#">Info</a> | Port range <a href="#">Info</a> | Source <a href="#">Info</a> | Description - optional <a href="#">Info</a> |
|------------------------|---------------------------|-------------------------------|---------------------------------|-----------------------------|---------------------------------------------|
| sg-020b4d59a7c911cc4   | <div>MySQL/Aurora</div>   | TCP                           | 3306                            | <div>Anywh...</div>         | <div></div>                                 |

Add rule

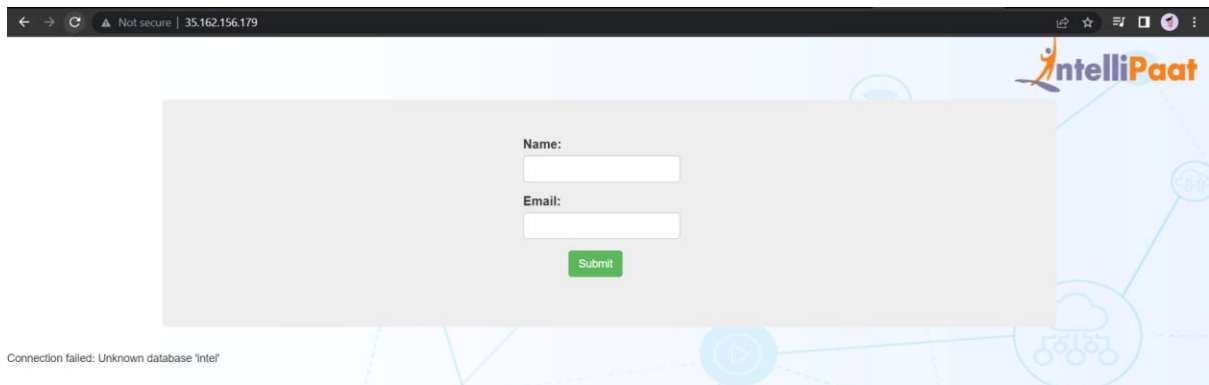
0.0.0.0

X

Cancel

Preview changes

Save rules



- Now we got another error that is unknown database intel. This is because we have not mentioned the name of the database initially.
- Now let's connect to the mysql server with the following command **mysql -h project1-mysql.ctgjfrptswm.us-west-2.rds.amazonaws.com -u intel -p** and then enter the password and then hit enter. You will be connected to your database.

```

aws  Services  Search  [Alt+S]
Running kernel seems to be up-to-date.
No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.
No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-10-0-0-5:/var/www/html$ cd /var/www/html
ubuntu@ip-10-0-0-5:/var/www/html$ ls
images  index.php
ubuntu@ip-10-0-0-5:/var/www/html$ sudo nano index.php
ubuntu@ip-10-0-0-5:/var/www/html$ mysql -h project1-mysql.ctgjfrptswm.us-west-2.rds.amazonaws.com -u intel -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 29
Server version: 8.0.33 Source distribution

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>

```

```

mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
4 rows in set (0.00 sec)

mysql> create database intel;
Query OK, 1 row affected (0.00 sec)

mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| intel |
| mysql |
| performance_schema |
| sys |
+-----+
5 rows in set (0.00 sec)

mysql>

```

- Initially we see that there is not database with the name intel. Therefore, we have create the database with the name intel.

- Now the error is gone.

- Now when we try to enter the data, we will get this error because we have not specified any columns with the name and the email. Therefore, we need to specify the attribute.
- use intel; and create table data (firstname varchar(20) ,email varchar(35));**

```
mysql> use intel
Database changed
mysql> create table data (firstname varchar(20) ,email varchar(35));
Query OK, 0 rows affected (0.02 sec)

mysql> show tables
-> ^C
mysql> show tables;
+-----+
| Tables_in_intel |
+-----+
| data             |
+-----+
1 row in set (0.00 sec)

mysql>
```

- Now if we refresh the page, we will see that the error is gone.

← → ↻ Not secure | 35.162.156.179

**IntelliPaat**

Name:

Email:

New record created successfully

```
mysql> selet * from data;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'selet * from data' at line 1
mysql> select * from data;
+-----+-----+
| firstname | email |
+-----+-----+
| kavitha   | kukavith@gmail.com |
+-----+-----+
1 row in set (0.00 sec)

mysql>
```

- Now to task is to provide the high availability therefore we will create an AMI and launch the instance to the other region with the help of autoscaling group to provide the high availability

EC2 > Instances > i-062a383063296738e

**Instance summary for i-062a383063296738e (Project1\_MyWebInstance)** Info

Updated less than a minute ago

|                                                                  |                                                                           |                                                                                                                |                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Instance ID<br>i-062a383063296738e (Project1_MyWebInstance)      | Public IPv4 address<br>35.162.156.179   <a href="#">open address</a>      | Private IPv4 addresses<br>10.0.0.5                                                                             | <div> <div>Connect</div> <div>Instance state ▼</div> <div>Actions ▲</div> <div> <div>Connect</div> <div>Manage instance state</div> <div>Instance settings ▶</div> <div>Networking ▶</div> <div>Security ▶</div> <div>Image and templates ▶</div> <div>Monitor and troubleshoot ▶</div> </div> </div> |
| IPv6 address<br>-                                                | Instance state<br>Running                                                 | Public IPv4 DNS<br>ec2-35-162-156-179.compute-1.amazonaws.com                                                  |                                                                                                                                                                                                                                                                                                       |
| Hostname type<br>IP name: ip-10-0-0-5.us-west-2.compute.internal | Private IP DNS name (IPv4 only)<br>ip-10-0-0-5.us-west-2.compute.internal | <div> <div>Create image</div> <div>Create template from instance</div> <div>Launch more like this</div> </div> |                                                                                                                                                                                                                                                                                                       |
| Answer private resource DNS name                                 | Instance type                                                             | Elastic IP addresses                                                                                           |                                                                                                                                                                                                                                                                                                       |
|                                                                  |                                                                           |                                                                                                                |                                                                                                                                                                                                                                                                                                       |

- give the name to the template and click on Launch template.
- Now we have to create the Autoscaling group

Step 1

**Choose launch template or configuration**

Step 2

Choose instance launch options

Step 3 - optional

Configure advanced options

Step 4 - optional

Configure group size and scaling policies

Step 5 - optional

Add notifications

Step 6 - optional

Add tags

Step 7

Review

## Choose launch template or configuration [Info](#)

Specify a launch template that contains settings common to all EC2 instances that are launched by this Auto Scaling group. If you currently use launch configurations, you might consider migrating to launch templates.

### Name

**Auto Scaling group name**

Enter a name to identify the group.

Must be unique to this account in the current Region and no more than 255 characters.

### Launch template [Info](#)

[Switch to launch configuration](#)**Launch template**

Choose a launch template that contains the instance-level settings, such as the Amazon Machine Image (AMI), instance type, key pair, and security groups.

[Create a launch template](#)**Version**[Create a launch template version](#)

Step 1

**Choose launch template or configuration**

Step 2

**Choose instance launch options**

Step 3 - optional

[Configure advanced options](#)

Step 4 - optional

[Configure group size and scaling policies](#)

Step 5 - optional

[Add notifications](#)

Step 6 - optional

[Add tags](#)

Step 7

[Review](#)

## Choose instance launch options [Info](#)

Choose the VPC network environment that your instances are launched into, and customize the instance types and purchase options.

### Network [Info](#)

For most applications, you can use multiple Availability Zones and let EC2 Auto Scaling balance your instances across the zones. The default VPC and default subnets are suitable for getting started quickly.

**VPC**

Choose the VPC that defines the virtual network for your Auto Scaling group.

  
10.0.0.0/24[Create a VPC](#)**Availability Zones and subnets**

Define which Availability Zones and subnets your Auto Scaling group can use in the chosen VPC.

us-west-2a | subnet-04df3590428148455  
(Project1\_PublicSubnet\_1)  
10.0.0.0/28

us-west-2b | subnet-067633aa6924d8278  
(Project1\_PublicSubnet\_2)  
10.0.0.16/28

[Create a subnet](#)**Choose instance launch options**

Step 3 - optional

**Configure advanced options**

Step 4 - optional

[Configure group size and scaling policies](#)

Step 5 - optional

[Add notifications](#)

Step 6 - optional

[Add tags](#)

Step 7

[Review](#)

### Load balancing [Info](#)

Use the options below to attach your Auto Scaling group to an existing load balancer, or to a new load balancer that you define.

☐ No load balancer

Traffic to your Auto Scaling group will not be fronted by a load balancer.

☐ Attach to an existing load balancer

Choose from your existing load balancers.

☒ Attach to a new load balancer

Quickly create a basic load balancer to attach to your Auto Scaling group.

**Attach to a new load balancer**

Define a new load balancer to create for attachment to this Auto Scaling group.

**Load balancer type**

Choose from the load balancer types offered below. Type selection cannot be changed after the load balancer is created. If you need a different type of load balancer than those offered here, visit the [Load Balancing console](#).

☒ Application Load Balancer  
HTTP, HTTPS☐ Network Load Balancer  
TCP, UDP, TLS**Load balancer name**

Name cannot be changed after the load balancer is created.

**Load balancer scheme**

Scheme cannot be changed after the load balancer is created.

☐ Internal☒ Internet-facing

|                                                                                                                                                                                                                                       |                                                              |                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------|
| <input checked="" type="radio"/> Application Load Balancer<br>HTTP, HTTPS                                                                                                                                                             | <input type="radio"/> Network Load Balancer<br>TCP, UDP, TLS |                              |
| <b>Load balancer name</b><br>Name cannot be changed after the load balancer is created.<br><input type="text" value="Project1_ASG-ALB"/>                                                                                              |                                                              |                              |
| <b>Load balancer scheme</b><br>Scheme cannot be changed after the load balancer is created.<br><input type="radio"/> Internal <input checked="" type="radio"/> Internet-facing                                                        |                                                              |                              |
| <b>Network mapping</b><br>Your new load balancer will be created using the same VPC and Availability Zone selections as your Auto Scaling group. You can select different subnets and add subnets from additional Availability Zones. |                                                              |                              |
| <b>VPC</b><br>vpc-0006e0f535f4ede5b <a href="#">↗</a> Project1_VPC                                                                                                                                                                    |                                                              |                              |
| <b>Availability Zones and subnets</b><br>You must select a single subnet for each Availability Zone enabled. Only public subnets are available for selection to support DNS resolution.                                               |                                                              |                              |
| <input checked="" type="checkbox"/> us-west-2b                                                                                                                                                                                        | <input type="text" value="subnet-067633aa6924d8278"/>        |                              |
| <input checked="" type="checkbox"/> us-west-2a                                                                                                                                                                                        | <input type="text" value="subnet-04df3590428148455"/>        |                              |
| <b>Listeners and routing</b><br>If you require secure listeners, or multiple listeners, you can configure them from the <a href="#">Load Balancing console</a> <a href="#">↗</a> after your load balancer is created.                 |                                                              |                              |
| Protocol                                                                                                                                                                                                                              | Port                                                         | Default routing (forward to) |

### Listeners and routing

If you require secure listeners, or multiple listeners, you can configure them from the [Load Balancing console](#) [↗](#) after your load balancer is created.

|                                                                                                 |                                 |                                                    |
|-------------------------------------------------------------------------------------------------|---------------------------------|----------------------------------------------------|
| <b>Protocol</b>                                                                                 | <b>Port</b>                     | <b>Default routing (forward to)</b>                |
| <input type="text" value="HTTP"/>                                                               | <input type="text" value="80"/> | <input type="text" value="Create a target group"/> |
| <b>New target group name</b><br>An instance target group with default settings will be created. |                                 |                                                    |
| <input type="text" value="Project1_ASG-Targetgroup"/>                                           |                                 |                                                    |

### Tags - optional

Consider adding tags to your load balancer. Tags enable you to categorize your AWS resources so you can more easily manage them.

50 remaining

### Health checks

Health checks increase availability by replacing unhealthy instances. When you use multiple health checks, all are evaluated, and if at least one fails, instance replacement occurs.

#### EC2 health checks

[ⓘ](#) Always enabled

#### Additional health check types - optional [Info](#)

- ☐ Turn on Elastic Load Balancing health checks **Recommended**  
Elastic Load Balancing monitors whether instances are available to handle requests. When it reports an unhealthy instance, EC2 Auto Scaling can replace it on its next periodic check.
- ☐ Turn on VPC Lattice health checks  
VPC Lattice can monitor whether instances are available to handle requests. If it considers a target as failed a health check, EC2 Auto Scaling replaces it after its next periodic check.

#### Health check grace period [Info](#)

This time period delays the first health check until your instances finish initializing. It doesn't prevent an instance from terminating when placed into a non-running state.

## Configure group size and scaling policies - *optional* [Info](#)

Set the desired, minimum, and maximum capacity of your Auto Scaling group. You can optionally add a scaling policy to dynamically scale the number of instances in the group.

### Group size - *optional* [Info](#)

Specify the size of the Auto Scaling group by changing the desired capacity. You can also specify minimum and maximum capacity limits. Your desired capacity must be within the limit range.

Desired capacity

Minimum capacity

Maximum capacity

### Scaling policies - *optional*

Choose whether to use a scaling policy to dynamically resize your Auto Scaling group to meet changes in demand. [Info](#)



#### Target tracking scaling policy

Choose a desired outcome and leave it to the scaling policy to add and remove capacity as needed to achieve that outcome.



None

Scaling policy name

Metric type

Target value

Instances need

seconds warm up before including in metric

☐ Disable scale in to create only a scale-out policy

- Skip the add notification and add tags and review the Asg and click on create autoscaling group.

**Instances (3)** Info

Find instance by attribute or tag (case-sensitive)

Instance state = running X Clear filters

|                          | Name            | Instance ID         | Instance state | Instance type | Status check      | Alarm status | Availability Zone | Public IPv4 DNS |
|--------------------------|-----------------|---------------------|----------------|---------------|-------------------|--------------|-------------------|-----------------|
| <input type="checkbox"/> | Project1_MyW... | i-04f96cf64fa3afda3 | Running        | t2.micro      | Initializing      | No alarms    | us-west-2b        | ec2-34-222-12-2 |
| <input type="checkbox"/> | Project1_MyW... | i-062a383063296738e | Running        | t2.micro      | 2/2 checks passed | No alarms    | us-west-2a        | ec2-35-162-156- |
| <input type="checkbox"/> | Project1_MyW... | i-039cca2a419b332b6 | Running        | t2.micro      | Initializing      | No alarms    | us-west-2a        | ec2-35-87-23-17 |

**EC2 > Load balancers**

**Load balancers (1)** Info

Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.

Find resources by attribute or tag

|                          | Name             | DNS name                   | State  | VPC ID                | Availability Zones   | Type        | Date created              |
|--------------------------|------------------|----------------------------|--------|-----------------------|----------------------|-------------|---------------------------|
| <input type="checkbox"/> | Project1-ASG-ALB | Project1-ASG-ALB-916256... | Active | vpc-0006e0f535f4ede5b | 2 Availability Zones | application | July 24, 2019 (UTC+05:30) |

**EC2 > Target groups**

**Target groups (1)** Info

Find resources by attribute or tag

|                          | Name                     | ARN                           | Port | Protocol | Target type | Load balancer    |
|--------------------------|--------------------------|-------------------------------|------|----------|-------------|------------------|
| <input type="checkbox"/> | Project1-ASG-Targetgroup | arn:aws:elasticloadbalanci... | 80   | HTTP     | Instance    | Project1-ASG-ALB |

- WE should also create the image.

**Amazon Machine Images (AMIs) (1)** Info

Owned by me Find AMI by attribute or tag

|                          | Name | AMI ID                | AMI name | Source               | Owner        | Visibility |
|--------------------------|------|-----------------------|----------|----------------------|--------------|------------|
| <input type="checkbox"/> | -    | ami-0e45a5b5c82e52947 | MyImage  | 049198078472/MyImage | 049198078472 | Private    |

**EC2 > Launch templates**

**Launch templates (1/1)** Info

Filter by tags or properties or search by keyword

|                                  | Launch template ID   | Launch template name | Default version |
|----------------------------------|----------------------|----------------------|-----------------|
| <input checked="" type="radio"/> | lt-07655f4c72f158919 | Project1_Template    | 1               |

**Project1\_Template (lt-07655f4c72f158919)**

- Launch instance from template
- Modify template (Create new version)
- Delete template
- Delete template version
- Set default version
- Manage tags
- Create Spot Fleet
- Create Auto Scaling group
- View details



### ▼ Application and OS Images (Amazon Machine Image) [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

AMI from catalog

Recents

**My AMIs**

Quick Start

☐ Don't include in launch template

☒ Owned by me

☐ Shared with me

[Browse more AMIs](#)  
Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

MyImage

ami-0e45a5b5c82e52947

2023-07-23T23:40:14.000Z   Virtualization: hvm   ENA enabled: true   Root device type: ebs

Description

-

Architecture

AMI ID

Software Image (AMI)

MyImage

ami-0e45a5b5c82e52947

Virtual server type (instance type)

t2.micro

Firewall (security group)

Project1\_SG

Storage (volumes)

1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the

Cancel

Create template version

Project1\_Template (lt-07655f4c72f158919)

Versions (2)

|                                  | Version | Default version | Description | Creation time            |                                       |
|----------------------------------|---------|-----------------|-------------|--------------------------|---------------------------------------|
| <input checked="" type="radio"/> | 2       | No              | -           | 2023-07-23T23:43:38.0... |                                       |
| <input type="radio"/>            | 1       | Yes             | -           | 2023-07-23T23:14:27.0... | arn:aws:iam:04919...   ami-03f65b8... |

Actions ▲

Delete template version

Launch instance from template

Modify template (Create new version)

**Set default version**

Create Auto Scaling group

Create Spot Fleet

Set default version

Which template version would you like to make the default version?

Template

Project1\_Template (lt-07655f4c72f158919)

Template version

2

▶ CLI commands

Cancel

Set as default version

- Shut down the instances and let another load balancers be created.
- Now we will be able to access the PHP page from any of the IPV4 addresses.
- We can also access it from the end point of the Load balancer. But for that we need to change the security group setting of that load balancer.

EC2 > Security Groups > sg-0457213c471606661 - default > Edit inbound rules

## Edit inbound rules [Info](#)

Inbound rules control the incoming traffic that's allowed to reach the instance.

### Inbound rules [Info](#)

| Security group rule ID | Type <a href="#">Info</a>         | Protocol <a href="#">Info</a>    | Port range <a href="#">Info</a> | Source <a href="#">Info</a>                                                  | Description - optional <a href="#">Info</a>                |
|------------------------|-----------------------------------|----------------------------------|---------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------|
| -                      | <input type="text" value="HTTP"/> | <input type="text" value="TCP"/> | <input type="text" value="80"/> | <input type="text" value="Anywh..."/> <input type="text" value="0.0.0.0/0"/> | <input type="text"/> <input type="button" value="Delete"/> |

- To provide a secure connection we can particularly change the security group rules of RDS and the load balancer and we can disable to public Ips of the instances so we can only access the database with the dns of the load balancers.