

# INT 330 -- MANAGING CLOUD SOLUTIONS

## CA 2: PROJECT

### 1. Scenario:

Many readers struggle to consistently track their reading progress due to busy schedules or simply forgetting to log their sessions. Over time, this leads to unfinished books, loss of motivation, and lack of insight into their own reading habits. Readers often wish they had a personal assistant that could remind them to read, track their time spent, and help them stay on target to finish books by their planned deadlines. They also desire useful statistics and monthly summaries of their reading patterns to reflect on their progress and improve their habits.

### 2. Problem Statement:

There is a need for a smart system that enables readers to efficiently manage and track their reading activity. The system should:

- Log books with essential details (title, author, start date, expected end date, page count).
- Track and update reading time per book.
- Predict expected completion based on current reading pace.
- Send automated reminders if no reading activity is detected for a while.
- Generate monthly reports summarizing reading patterns and progress.
- This solution should be lightweight, easy to use, and capable of running on cloud infrastructure with automation features.

### 3. Objectives:

#### 1. Develop a Cloud-Based Book Tracking System

Build a system hosted on AWS that allows users to log book details (title, author, dates, pages, etc.) into a centralized database. To ensure the website remains operational with minimal downtime, even during peak traffic.

#### 2. Enable Real-Time Reading Time Updates

Implement a serverless function (AWS Lambda) to record and update the time a user spends reading each book.

#### 3. Set up an alert system (via Amazon SNS) that sends email reminders when a book hasn't been updated for a certain period.

### 4. Outcomes:

#### 1. Functional Book Logging System

A working application where users can input and manage their book reading data including title, author, start/end dates, page count, and time spent.

#### 2. Automated Reading Time Tracking

A Lambda-based backend service that updates reading time in real-time whenever users log a session, keeping their progress up to date.

#### 3. Timely Reading Reminders

Users receive automatic email reminders if no reading activity is detected for a predefined period, encouraging consistent reading habits.

#### 4. Daily Automation via CloudWatch

CloudWatch automatically triggers reading check functions daily, ensuring reminders and progress tracking continue without manual input.

#### 5. Improved Reading Discipline

Readers become more disciplined and consistent, thanks to timely reminders and a visual sense of progress.

### 5. Proposed AWS Components:

- **Amazon EC2 (Elastic Compute Cloud)**

👉 To host and run your Flask app continuously in the cloud.

- **Amazon RDS (Relational Database Service)**

👉 To store and manage your book data in a MySQL database.

- **Amazon SNS (Simple Notification Service)**

👉 To send automated reading reminder notifications to users.

- **AWS Lambda**

👉 To automate the triggering of reminders (via SNS) at scheduled times using CloudWatch Events (cron jobs).

- **Amazon VPC Security Group**

👉 To control and allow only specific traffic (like HTTP on port 80 or SSH on port 22) to your EC2 instance for security.

- **MySQL Workbench**

👉 To visually connect to your Amazon RDS MySQL database, create tables, run queries, and manage your data without using terminal commands.

### 6. Solution:

#### Implementation 1: Traditional Server-Based Approach:

This approach uses **Amazon EC2** for compute, **Amazon RDS** for the backend database, and additional managed services like **SNS**, **CloudWatch**, and **Security Groups** for availability, monitoring, and security.

#### Steps and AWS Services Used:

##### 1. Frontend & Content Delivery:

- **Amazon EC2** hosts the Flask app with a Bootstrap GUI for a lightweight yet modern user interface.

##### 2. Compute Resources:

- **Amazon EC2** is used to run the Python Flask application continuously.

##### 3. Database Configuration:

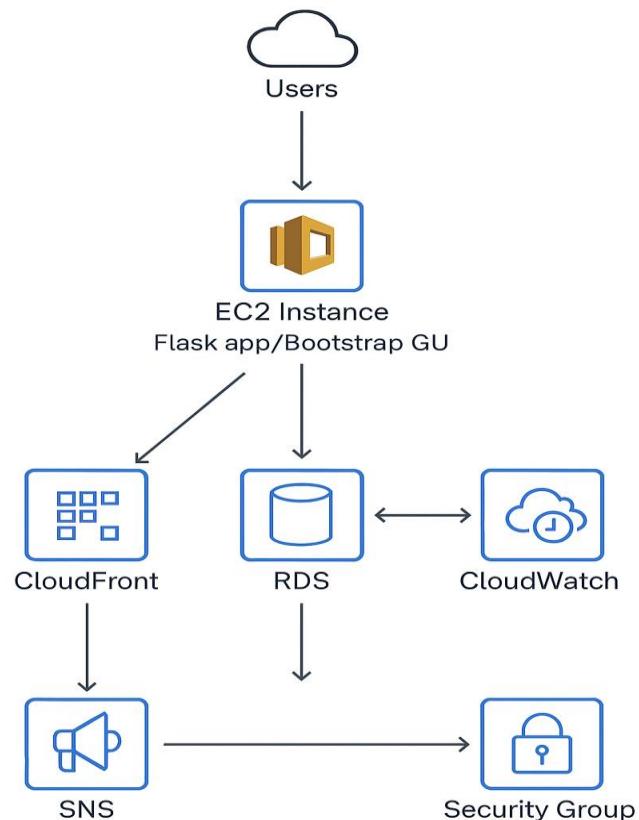
- **Amazon RDS (MySQL)** stores all the book tracking data (titles, authors, dates, pages, etc.) securely in a managed relational database.
- **MySQL Workbench** is used to connect to RDS for schema design, running queries, and DB administration.

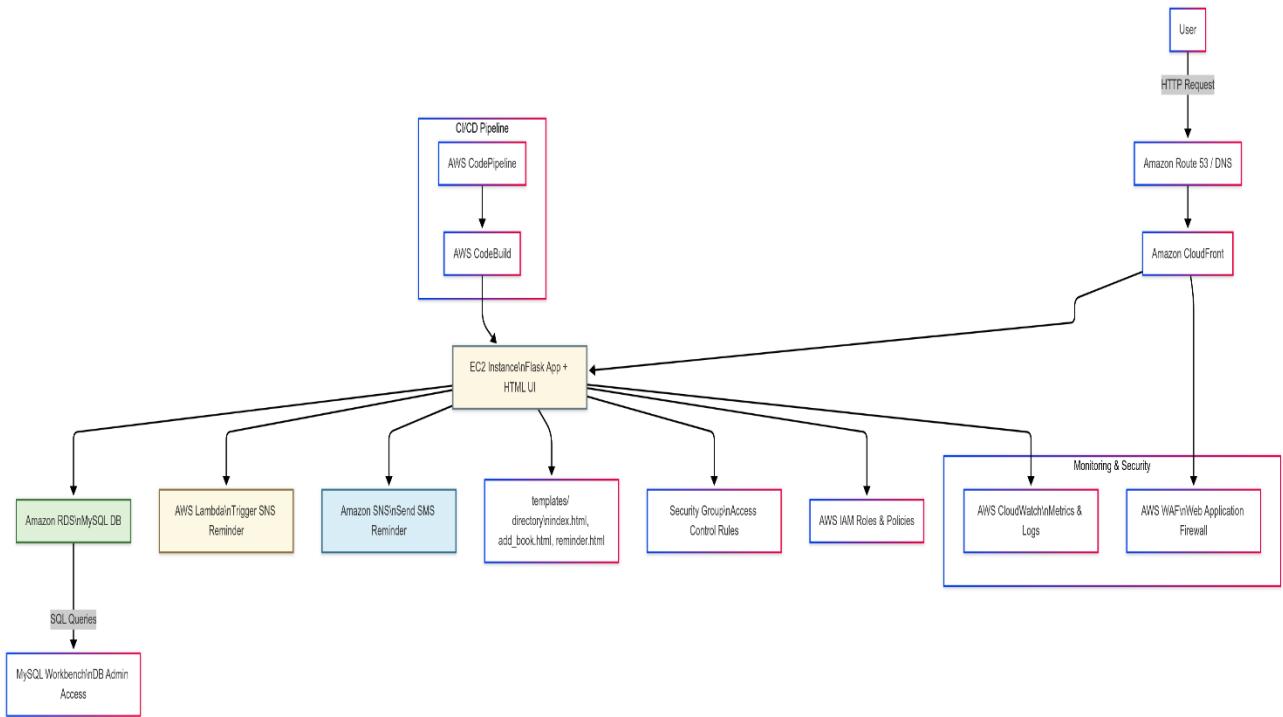
#### 4. Monitoring and Security

- **AWS CloudWatch** is configured to monitor EC2 instance health and logs (Flask app performance, DB connectivity issues, etc.).
- **AWS Security Groups** are used to control inbound/outbound access to EC2 and RDS — only allowing specific ports and IPs.

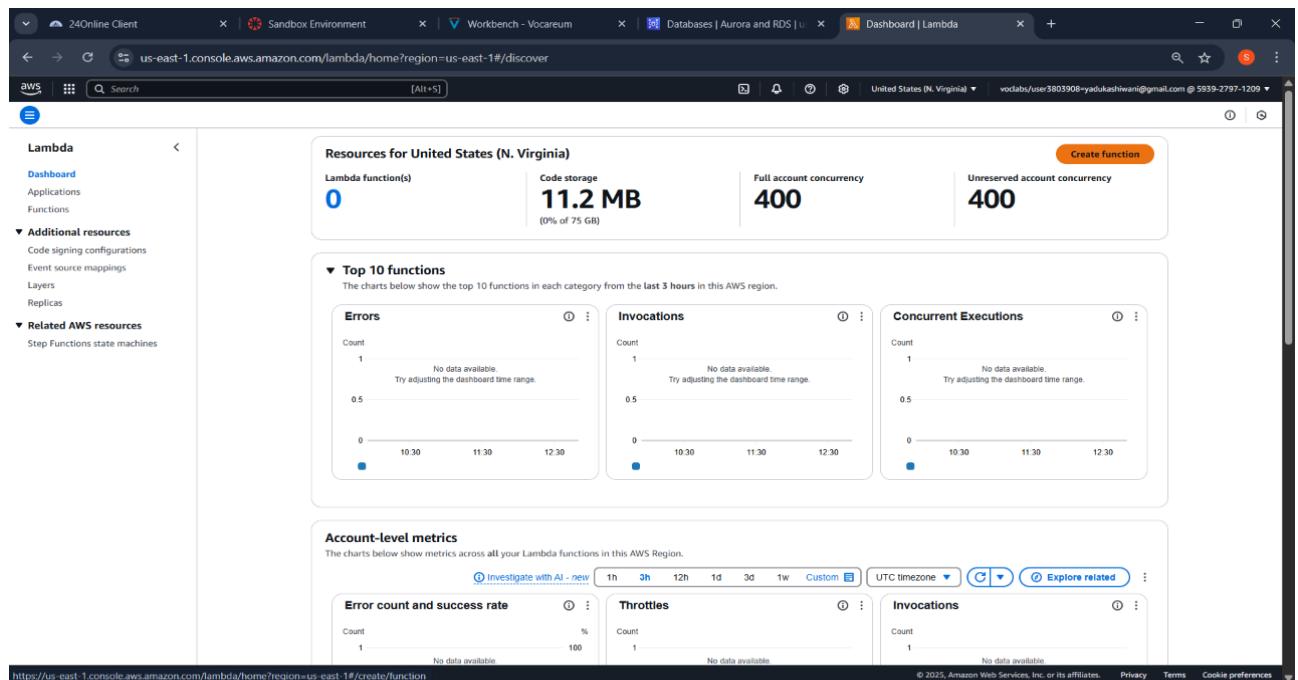
#### 5. Notifications

- **AWS SNS (Simple Notification Service)** is used to send **reading reminders** via a simple Flask route. The reminder endpoint triggers an SNS topic to send messages to subscribers.





## SCREENSHOTS:



24Online Client | Sandbox Environment | Workbench - Vocareum | Databases | Aurora and RDS | Create function | Functions | Lab

us-east-1.console.aws.amazon.com/lambda/home?region=us-east-1#/create/function

Lambda > Functions > Create function

### Create function Info

Choose one of the following options to create your function.

Author from scratch  
Start with a simple Hello World example.

Use a blueprint  
Build a Lambda application from sample code and configuration presets for common use cases.

Container image  
Select a container image to deploy for your function.

#### Basic information

**Function name**  
Enter a name that describes the purpose of your function.  
`trackReadingTime`

**Runtime** Info  
Choose the language to use to write your function. Note that the console code editor supports only Node.js, Python, and Ruby.  
`Python 3.9`

**Architecture** Info  
Choose the instruction set architecture you want for your function code.  
 `x86_64`  
 `arm64`

**Permissions** Info  
By default, Lambda will create an execution role with permissions to upload logs to Amazon CloudWatch Logs. You can customize this default role later when adding triggers.

**Change default execution role**

**Execution role**  
Choose a role that defines the permissions of your function. To create a custom role, go to the [IAM console](#).  
 Create a new role with basic Lambda permissions  
 Use an existing role  
 Create a new role from AWS policy templates

**Existing role**  
Choose an existing role that you've created to be used with this Lambda function. The role must have permission to upload logs to Amazon CloudWatch Logs.  
`LabRole`

CloudShell Feedback

24Online Client | Sandbox Environment | Workbench - Vocareum | Databases | Aurora and RDS | trackReadingTime | Functions | Lab

us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#databases:

Aurora and RDS > Databases

### Databases (0)

Filter by databases

DB identifier	Status	Role	Engine	Region	Size	Recommendations	CPU	Current activity	Mail
No instances found									

Group resources  Modify Actions  Create database

Subnet groups  
Parameter groups  
Option groups  
Custom engine versions  
Zero-ETL integrations [New](#)

Events  
Event subscriptions

Recommendations 0  
Certificate update

<https://us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#launch-dbinstance>

24Online Client | Sandbox Environment | Workbench - Vocareum | Create database | Aurora and RDS | trackReadingTime | Functions | +

us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#launch-dbinstance:

Aurora and RDS > Create database

### Create database Info

Choose a database creation method

- 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
- Oracle
- Microsoft SQL Server
- IBM Db2

MySQL

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

Edition Info

- MySQL Community

Engine version Info

View the engine versions that support the following database features.

Hide filters

Show only versions that support the Multi-AZ DB cluster Info

Create a Multi-AZ DB cluster with one primary DB instance and two read-only standby DB instances. Multi-AZ DB clusters provide up to 2x faster transaction commit latency and automatic failover in typically under 35 seconds.

CloudShell | Feedback

24Online Client | Sandbox Environment | Workbench - Vocareum | Create database | Aurora and RDS | trackReadingTime | Functions | +

us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#launch-dbinstance:

Aurora and RDS > Create database

Aurora RDS Optimized Writes improves write throughput by up to 2x at no additional cost.

Engine version Info

- MySQL 8.0.40

Enable RDS Extended Support Info

Amazon RDS Extended Support is a paid offering. By selecting this option, you consent to being charged for this offering if you are running your database major version past the RDS end of standard support date for that version. Check the end of standard support date for your major version in the RDS for MySQL documentation.

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.

MySQL

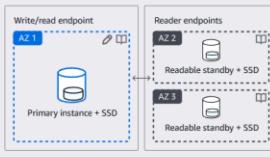
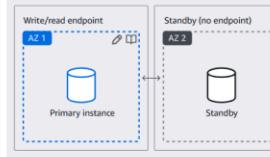
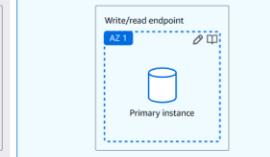
MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

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- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

Availability and durability

Deployment options Info

Choose the deployment option that provides the availability and durability needed for your use case. AWS is committed to a certain level of uptime depending on the deployment option you choose. Learn more in the [Amazon RDS service level agreement \(SLA\)](#).

- Multi-AZ DB cluster deployment (3 instances): Creates a Multi-AZ DB cluster with two read-only standbys in separate Availability Zones. This setup provides:
  - 99.99% uptime
  - Redundancy across Availability Zones
  - Increased read capacity
  - Reduced write latency
- Multi-AZ DB instance deployment (2 instances): Creates a Multi-AZ DB instance with a non-read-only standby instance in a separate Availability Zone. This setup provides:
  - 99.95% uptime
  - Redundancy across Availability Zones
- Single-AZ DB instance deployment (1 instance): Creates a single DB instance without standby instances. This setup provides:
  - 99.9% uptime
  - Redundancy across Availability Zones

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.

CloudShell | Feedback

24Online Client x Sandbox Environment x Workbench - Vocareum x Create database | Aurora and RDS x trackReadingTime | Functions x ...

us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#launch-dbinstance:

Aurora and RDS > Create database

### 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 63 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 for the master user of your DB instance.

1 to 16 alphanumeric characters. The first character must be a letter.

**Credentials management**  
You can use AWS Secrets Manager or manage your master user credentials.

**Managed in AWS Secrets Manager - most secure**  
RDS generates a password for you and manages it throughout its lifecycle using AWS Secrets Manager.

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

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

**Password strength** [Neutral](#)

Minimum constraints: At least 8 printable ASCII characters. Can't contain any of the following symbols: / \ ^ @

**Confirm master password** [Info](#)

### Instance configuration

The DB instance configuration options below are limited to those supported by the engine that you selected above.

**DB instance class** [Info](#)  
 **Show instance classes that support Amazon RDS Optimized Writes** [Info](#)  
Amazon RDS Optimized Writes improves write throughput by up to 2x at no additional cost.

**Include previous generation classes**

Standard classes (includes t classes)

Memory optimized classes (includes r and x classes)

24Online Client x Sandbox Environment x Workbench - Vocareum x Create database | Aurora and RDS x trackReadingTime | Functions x ...

us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#launch-dbinstance:

Aurora and RDS > Create database

**Burstable classes (includes 1 classes)**  
 db.t3.micro  
2 vCPUs, 1 GB RAM, Network: Up to 2,085 Mbps

### Storage

**Storage type** [Info](#)  
Premium SSD (gp2) storage volumes are now available.  
 General Purpose SSD (gp2)  
Baseline performance determined by volume size

**Allocated storage** [Info](#)  
 GB  
Allocated storage value must be 20 GiB to 6,144 GiB

**Additional storage configuration**

### Connectivity

**Compute resource**  
Choose whether to set up a connection to a compute resource for this database. Setting up a connection will automatically change connectivity settings so that the compute resource can connect to this database.

**Don't connect to an EC2 compute resource**  
Don't set up a connection to a compute resource for this database. You can manually set up a connection to a compute resource later.

**Connect to an EC2 compute resource**  
Set up a connection to an EC2 compute resource for this database.

**Network type** [Info](#)  
To use dual-stack mode, make sure that you associate an IPv6 CDR block with a subnet in the VPC you specify.  
 **IPv4**  
Your resources can communicate only over the IPv4 addressing protocol.

**Dual-stack mode**  
Your resources can communicate over IPv4, IPv6, or both.

**Virtual private cloud (VPC)** [Info](#)  
Choose the VPC. The VPC defines the virtual networking environment for this DB instance.  
 Default VPC (vpc-06a72bc2cae5f6c8)  
6 Subnets, 6 Availability Zones

Only VPCs with a corresponding DB subnet group are listed.

**After a database is created, you can't change its VPC.**

**DB subnet group** [Info](#)  
Choose the DB subnet group. The DB subnet group defines which subnets and IP ranges the DB instance can use in the VPC that you selected.  
 default-vpc-06a72bc2cae5f6c8  
6 Subnets, 6 Availability Zones

**Public access** [Info](#)

24Online Client | Sandbox Environment | Workbench - Vocareum | Create database | Aurora and RDS | trackReadingTime | Functions | +

us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#launch-dbinstance:

Aurora and RDS > Create database

**DB subnet group** Info  
Choose the DB subnet group. The DB subnet group defines which subnets and IP ranges the DB instance can use in the VPC that you selected.  
 default-vpc-06a72bc2cae5f6c8  
6 Subnets, 6 Availability Zones

**Public access** Info  
 Yes  
RDS assigns a public IP address to the database. Amazon EC2 instances and other resources outside of the VPC can connect to your database. Resources inside the VPC can also connect to the database. Choose one or more VPC security groups that specify which resources can connect to the database.  
 No  
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  
 Create new  
Create new VPC security group

**Existing VPC security groups**  
Choose one or more options  
 default X

**Availability Zone** Info  
No preference

**RDS Proxy** Info  
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-rsa2048-g1 (default)  
Expiry: May 26, 2081  
If you don't select a certificate authority, RDS chooses one for you.

**Additional configuration**

**Tags - optional**  
A tag consists of a case-sensitive key-value pair.  
No tags associated with the resource.  
[Add new tag](#)  
You can add up to 50 more tags.

MySQL

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TB
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- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

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CloudShell | Feedback

24Online Client | Sandbox Environment | Workbench - Vocareum | Databases | Aurora and RDS | trackReadingTime | Functions | +

us-east-1.console.aws.amazon.com/lambda/home?region=us-east-1#create/function

Lambda > Functions > Create function

**Create function** Info  
Choose one of the following options to create your function.

Author from scratch  
Start with a simple Hello World example.

Use a blueprint  
Build a Lambda application from sample code and configuration presets for common use cases.

Container image  
Select a container image to deploy for your function.

**Basic information**

**Function name**  
Enter a name that describes the purpose of your function.

Function name must be 1 to 64 characters, must be unique to the Region, and can't include spaces. Valid characters are a-z, A-Z, 0-9, hyphens (-), and underscores (\_).

**Runtime** Info  
Choose the language to use when writing your function. Note that the console code editor supports only Node.js, Python, and Ruby.  
 Python 3.9

**Architecture** Info  
Choose the instance architecture you want for your function code.  
 x86\_64  
 arm64

**Permissions** Info  
By default, Lambda will create an execution role with permissions to upload logs to Amazon CloudWatch Logs. You can customize this default role later when adding triggers.

**Change default execution role**

**Execution role**  
Choose a role that defines the permissions of your function. To create a custom role, go to the [IAM console](#).  
 Create a new role with basic Lambda permissions  
 Use an existing role  
 Create a new role from AWS policy templates

**Existing role**  
Choose an existing role that you've created to be used with this Lambda function. The role must have permission to upload logs to Amazon CloudWatch Logs.  
 C  
View the LebRole role [on the IAM console](#).

CloudShell | Feedback

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Successfully created the function trackReadingTime. You can now change its code and configuration. To invoke your function with a test event, choose "Test".

**Code** **Test** **Monitor** **Configuration** **Aliases** **Versions**

**Code source** **Info**

**EXPLORER** **TRACKREADINGTIME** **lambda\_function.py**

**DEPLOY [UNDEPLOYED CHANGES]**

λ You have undeployed changes.

**Deploy (Ctrl+Shift+U)** **Test (Ctrl+Shift+T)**

**TEST EVENTS [NONE SELECTED]**

+ Create new test event

**ENVIRONMENT VARIABLES**

**Code properties** **Info**

Successfully updated the function trackReadingTime.

**TEST EVENTS [NONE SELECTED]**

+ Create new test event

**ENVIRONMENT VARIABLES**

**Code properties** **Info**

Package size: 694 byte

SHA256 hash: C0p88RPUjTzn5jNanzYtet1W+WyWhaElhXOfJhYU4=

Last modified: 14 seconds ago

Encryption with AWS KMS customer managed KMS key **Info**

**Runtime settings** **Info**

Runtime: Python 3.9

Handler: **Info** lambda\_function.lambda\_handler

Architecture: **Info** x86\_64

**Edit** **Edit runtime management configuration**

**Layers** **Info**

Merge order | Name | Layer version | Compatible runtimes | Compatible architectures | Version ARN

There is no data to display.

<https://us-east-1.console.aws.amazon.com/lambda/home?region=us-east-1#/add/layer?function=trackReadingTime>

24Online Client | Sandbox Environment | Workbench - Vocareum | Database Details | Aurora | Add layer | Lambda | sendReminder | Functions | + | - |  |  |  | 

us-east-1.console.aws.amazon.com/lambda/home?region=us-east-1#/add/layer?function=trackReadingTime

aws Search [Alt+S] United States (N. Virginia) vocabs/user1801908-yadukashwan@gmail.com @ 5939-2797-1209

Lambda > Add layer

### Add layer

**Function runtime settings**

Runtime: Python 3.9 | Architecture: x86\_64

**Choose a layer**

Layer source: [Info](#) Choose from layers with a compatible runtime and instruction set architecture or specify the Amazon Resource Name (ARN) of a layer version. You can also create a new layer.

AWS layers Choose a layer from a list of layers provided by AWS.

Custom layers Choose a layer from a list of layers created by your AWS account.

Specify an ARN Specify a layer by providing the ARN.

**Custom layers** Layers created by your AWS account that are compatible with your function's runtime.

MySQL\_Layer

**Version**

1

[Cancel](#) [Add](#)

CloudShell Feedback

24Online Client | Sandbox Environment | Workbench - Vocareum | Database Details | Aurora | trackReadingTime | sendReminder | Functions | Create topic | Topics | + | - |  |  |  | 

us-east-1.console.aws.amazon.com/sns/v3/home?region=us-east-1#/create-topic

aws Search [Alt+S] United States (N. Virginia) vocabs/user1801908-yadukashwan@gmail.com @ 5939-2797-1209

Amazon SNS > Topics > Create topic

### Create topic

**Details**

Type: [Info](#) Topic type cannot be modified after topic is created.

FIFO (first-in, first-out) Strictly-preserved message ordering, Exactly-once message delivery, Subscription protocols: SQS, Lambda, Data Firehose, HTTP, SMS, email, mobile application endpoints.

Standard Best-effort message ordering, At-least once message delivery, Subscription protocols: SQS, Lambda, Data Firehose, HTTP, SMS, email, mobile application endpoints.

Name: ReadingReminder Maximum 256 characters. Can include alphanumeric characters, hyphens (-) and underscores (\_).

Display name - optional: [Info](#) To use this topic with SMS subscriptions, enter a display name. Only the first 10 characters are displayed in an SMS message.

My Topic Maximum 100 characters.

**Encryption - optional** Amazon SNS provides in-transit encryption by default. Enabling server-side encryption adds at-rest encryption to your topic.

**Access policy - optional** [Info](#) This policy defines who can access your topic. By default, only the topic owner can publish or subscribe to the topic.

**Data protection policy - optional** [Info](#) This policy defines which sensitive data to monitor and to prevent from being exchanged via your topic.

**Delivery policy (HTTP/S) - optional** [Info](#) The policy defines how Amazon SNS retries failed deliveries to HTTP/S endpoints. To modify the default settings, expand this section.

**Delivery status logging - optional** [Info](#) These settings configure the logging of message delivery status to CloudWatch Logs.

**Tags - optional** [Info](#) Tags are key-value pairs that you can use to categorize and filter topics.

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24Online Client | Sandbox Environment | Workbench - Vocare | Database Details | trackReadingTime | sendReminder | ReadingReminder | +

us-east-1.console.aws.amazon.com/sns/v3/home?region=us-east-1#/topic/arn:aws:sns:us-east-1:593927971209:ReadingReminder

Amazon SNS | Topics | ReadingReminder

New Feature: Amazon SNS now supports High Throughput FIFO topics. Learn more

Topic ReadingReminder created successfully. You can create subscriptions and send messages to them from this topic.

ReadingReminder

Details

Name: ReadingReminder

ARN: arn:aws:sns:us-east-1:593927971209:ReadingReminder

Type: Standard

Display name:

Topic owner: 593927971209

Subscriptions | Access policy | Data protection policy | Delivery policy (HTTP/S) | Delivery status logging | Encryption | Tags | Integrations

Subscriptions (0)

No subscriptions found. You don't have any subscriptions to this topic.

Create subscription

Edit | Delete | Request confirmation | Confirm subscription | Create subscription

CloudShell | Feedback

24Online Client | Sandbox Environment | Workbench - Vocare | Database Details | trackReadingTime | sendReminder | ReadingReminder | Create subscription | +

us-east-1.console.aws.amazon.com/sns/v3/home?region=us-east-1#/create-subscription

Amazon SNS | Subscriptions | Create subscription

New Feature: Amazon SNS now supports High Throughput FIFO topics. Learn more

Create subscription

Details

Topic ARN: arn:aws:sns:us-east-1:593927971209:ReadingReminder

Protocol: Email

Endpoint: yadukashwan@gmail.com

After your subscription is created, you must confirm it.

Subscription filter policy - optional

Redrive policy (dead-letter queue) - optional

Cancel | Create subscription

CloudShell | Feedback

24Online Client | Sandbox Environment | Workbench - Vocare | Database Details | trackReadingTime | sendReminder | ReadingReminder | +

us-east-1.console.aws.amazon.com/sns/v3/home?region=us-east-1#/create-subscription

Amazon SNS | Subscriptions | Create subscription

New Feature: Amazon SNS now supports High Throughput FIFO topics. Learn more

Create subscription

Details

Topic ARN: arn:aws:sns:us-east-1:593927971209:ReadingReminder

Protocol: Email

Endpoint: yadukashwan@gmail.com

After your subscription is created, you must confirm it.

Subscription filter policy - optional

Redrive policy (dead-letter queue) - optional

Cancel | Create subscription

24Online Client | Sandbox Environment | Workbench - Vocare | Database Details | trackReadingTime | sendReminder | ReadingReminder

us-east-1.console.aws.amazon.com/sns/v3/home?region=us-east-1#/topic/arn:aws:sns:us-east-1:593927971209:ReadingReminder

Amazon SNS > Topics > ReadingReminder

### ReadingReminder

**Details**

Name	ReadingReminder
ARN	arn:aws:sns:us-east-1:593927971209:ReadingReminder
Type	Standard

**Display name**

**Topic owner**

**Subscriptions**

ID	Endpoint	Status	Protocol
c21a5d89-8b4f-4e6b-ab2e-f4ea7be93d75	yadukashiwan@gmail.com	Confirmed	EMAIL

**Access policy**

**Data protection policy**

**Delivery policy (HTTP/S)**

**Delivery status logging**

**Encryption**

**Tags**

**Integrations**

**Subscriptions (1)**

**Endpoint**

**Status**

**Protocol**

**Create subscription**

CloudShell Feedback

24Online Client | Sandbox Environment | Workbench - Vocare | Database Details | trackReadingTime | sendReminder | ReadingReminder

us-east-1.console.aws.amazon.com/lambda/home?region=us-east-1#/functions/sendReminder?newFunction=true&tab=code

Lambda > Functions > sendReminder

Successfully updated the function sendReminder.

**Code** | Test | Monitor | Configuration | Aliases | Versions

**Code source**

```
lambda_function.py
1 import boto3
2 sns = boto3.client("sns")
3 def lambda_handler(event, context):
4     message = "You haven't logged reading time in a while. Keep going!"
5     topic_arn = "arn:aws:sns:us-east-1:593927971209:ReadingReminder"
6
7     sns.publish(
8         TopicArn=topic_arn,
9         Message=message,
10        Subject="Reading Reminder"
11    )
12
13
14
15
16
```

**EXPLORER**

SENDRMINIDER

lambda\_function.py

DEPLOY

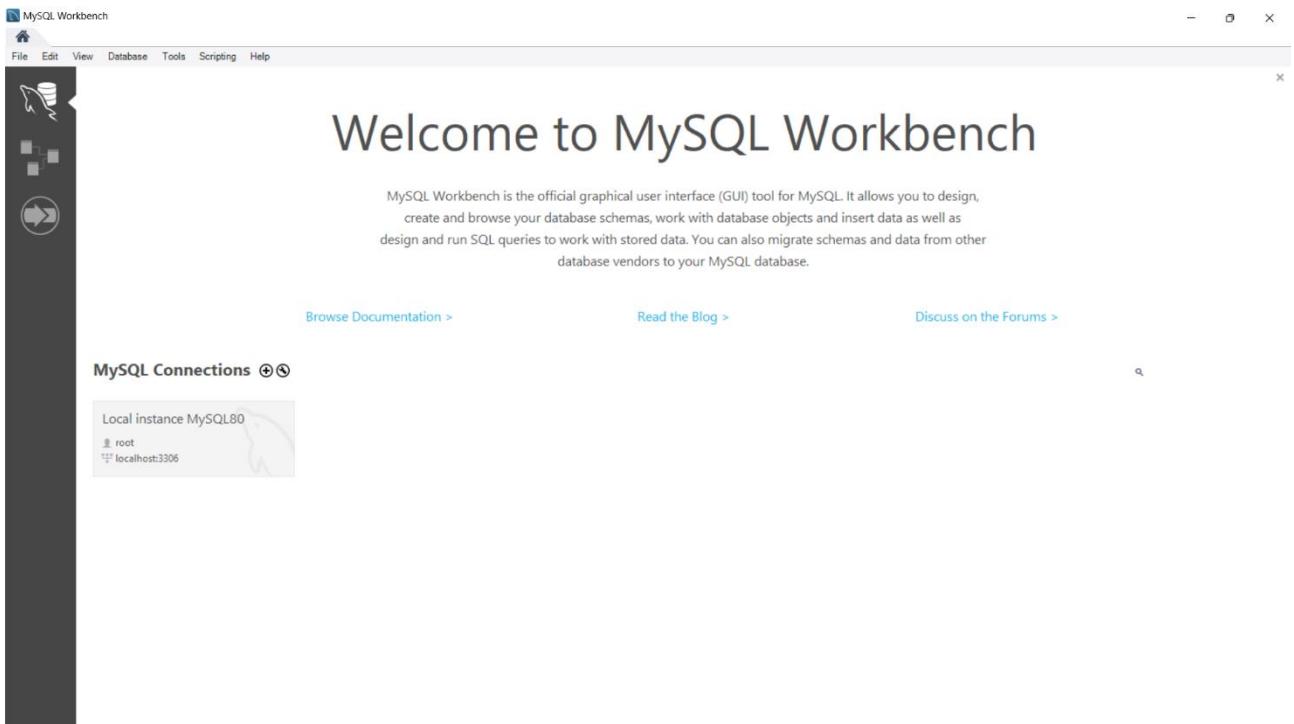
Deploy (Ctrl+Shift+U)

Test (Ctrl+Shift+I)

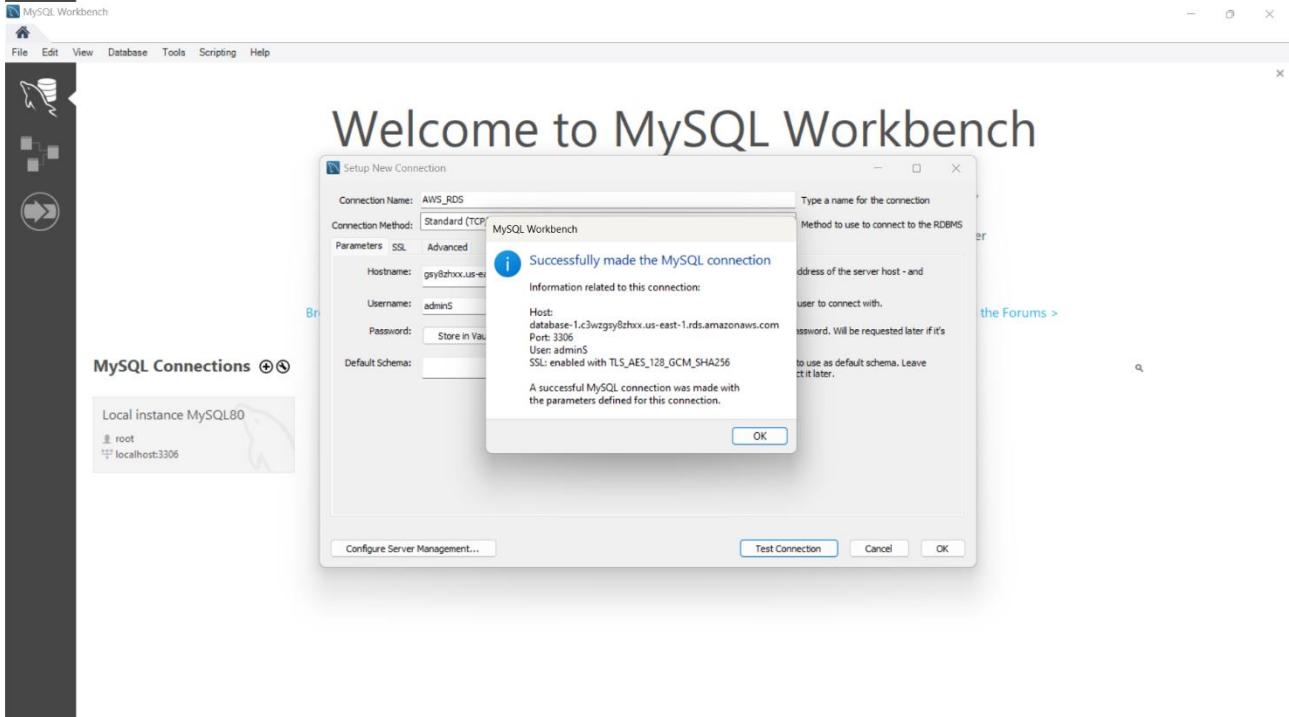
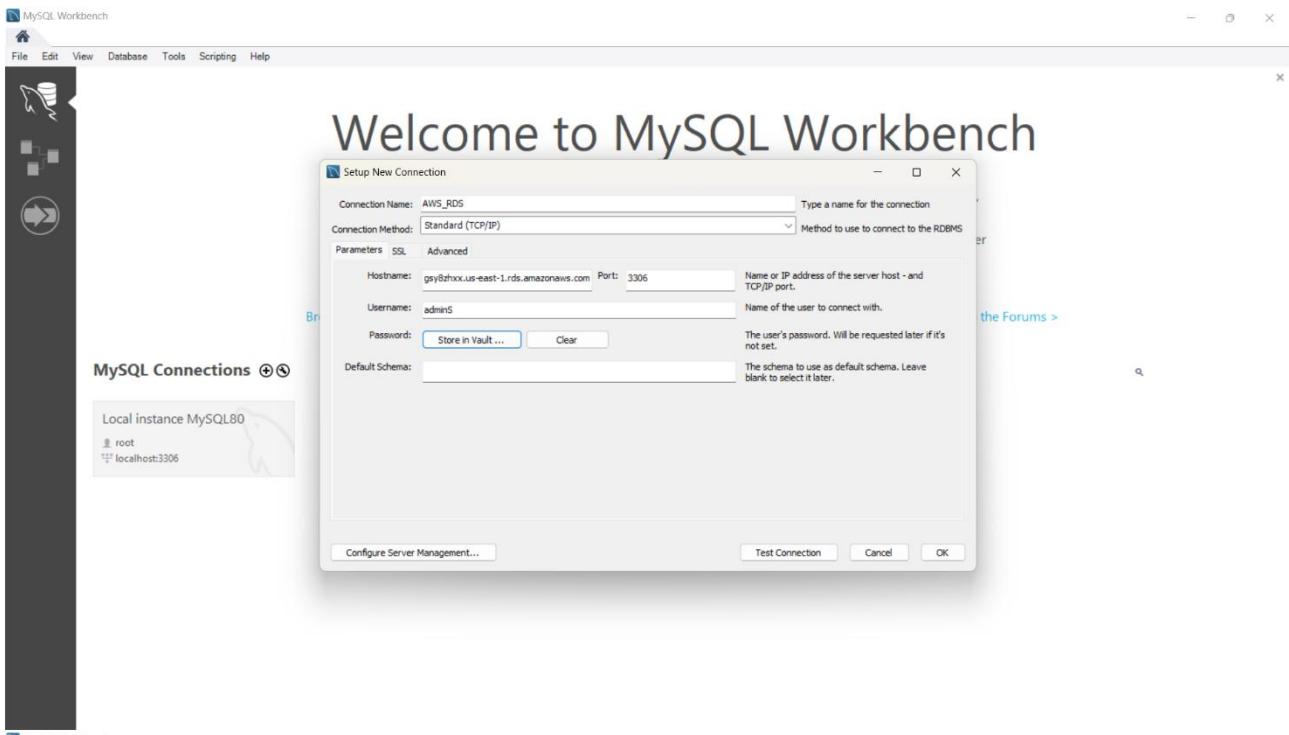
TEST EVENTS [NONE SELECTED]

ENVIRONMENT VARIABLES

Successfully updated the function sendReminder.



The screenshot shows the AWS Management Console, specifically the EC2 service. The user is on the 'Edit inbound rules' page for a security group named 'sg-0ffab48436dcb6a8a - default'. There are two rules listed: 1. A rule for 'All traffic' on 'All' ports from 'Custom' source (sg-0ffab48436dcb6a8a). 2. A rule for 'MySQL/Aurora' on port '3306' from 'Anywhere' source (0.0.0.0/0). A warning message at the bottom of the rule list states: '⚠️ Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.' At the bottom right, there are 'Cancel', 'Preview changes', and 'Save rules' buttons. The browser address bar shows the URL: 'us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#ModifyInboundSecurityGroupRules/securityGroupId=sg-0ffab48436dcb6a8a'.



24Online Client | Sandbox Enviro | Workbench - Vo | Database Details | trackReadingTime | sendReminder | ReadingReminder | Dashboard | EC2

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Home: [Alt+S]

aws Search United States (N. Virginia) vocabs/user801908-yadukashwan@gmail.com @ 5959-2791-1209

**EC2**

**Resources**

You are using the following Amazon EC2 resources in the United States (N. Virginia) Region:

Instances (running)	1	Auto Scaling Groups	0	Capacity Reservations	0
Dedicated Hosts	0	Elastic IPs	0	Instances	1
Key pairs	1	Load balancers	0	Placement groups	0
Security groups	3	Snapshots	0	Volumes	1

**Launch instance**

To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.

**Service health**

AWS Health Dashboard

**Zones**

Zone name	Zone ID
us-east-1a	use1-az5
us-east-1b	use1-az1
us-east-1c	use1-az2
us-east-1d	use1-az4
us-east-1e	use1-az3
us-east-1f	use1-az5

**Explore AWS**

10 Things You Can Do Today to Reduce AWS Costs

Optimize EC2 Cost with Spot Instances and EC2 Auto Scaling

Amazon GuardDuty Malware Protection

**Additional information**

Get started walkthroughs, Getting started guide, Documentation, All EC2 resources, Forums

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24Online Client | Sandbox Enviro | Workbench - Vo | Database Details | trackReadingTime | sendReminder | ReadingReminder | Dashboard | EC2

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances: [Alt+S]

aws Search United States (N. Virginia) vocabs/user801908-yadukashwan@gmail.com @ 5959-2791-1209

**EC2 > Instances > Launch an instance**

**Launch an instance**

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

**Name and tags**

Name: flask-book-tracked

**Application and OS Images (Amazon Machine Image)**

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

Recent AMIs: Amazon Linux, macOS, Ubuntu, Windows, Red Hat, SUSE Linux, Debian

**Amazon Machine Image (AMI)**

Amazon Linux 2023 AMI (ami-00a929b66ed6e0de6) (64-bit (x86), uefi-preferred) / ami-05f417c208be02d4d (64-bit (Arm), uefi)

Description: Amazon Linux 2023 is a modern, general purpose Linux-based OS that comes with 5 years of long term support. It is optimized for AWS and designed to provide a secure, stable and high-performance execution environment to develop and run your cloud applications.

Architecture: 64-bit (x86) Boot mode: uefi-preferred AMI ID: ami-00a929b66ed6e0de6 Publish Date: 2025-03-29 Username: ec2-user Verified provider

**Summary**

Number of instances: 1

Software Image (AMI): Amazon Linux 2023 AMI 2023.7.2... [read more](#)

Virtual server type (instance type): t2.micro

Firewall (security group): New security group

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

Launch instance | Preview code

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us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

EC2 > Instances > Launch an instance

**Instance type** Info | Get advice

**t2.micro** Family: t2 | 1 vCPU | 1 GiB Memory | Current generation: true

Free tier eligible Compare instance types

**Key pair (login)** Info

Key pair name - required: **vockey** Create new key pair

**Network settings** Info

Network: **vpc-06a72bc2fcae5f6c**

Subnet: **No preference (Default subnet in any availability zone)**

Auto-assign public IP: **Enable**

**Firewall (security group)** 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

We'll create a new security group called 'launch-wizard-1' with the following rules:

Allow SSH traffic from Anywhere Helps you connect to your instance

Allow HTTPS traffic from the internet To set up an endpoint, for example when creating a web server

Allow HTTP traffic from the internet

**Summary**

Number of instances: **1**

Software Image (AMI): **Amazon Linux 2023 AMI 2023.7.2...** Read more

Virtual server type (instance type): **t2.micro**

Firewall (security group): **New security group**

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

**Launch instance** Preview code

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#ModifyInboundSecurityGroupRulessecurityGroupId=sg-0407333dfdd28a1dd

EC2 > Security Groups > **sg-0407333dfdd28a1dd - launch-wizard-1** > Edit inbound rules

**Edit inbound rules** Info

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

Security group rule ID	Type	Protocol	Port range	Source	Description - optional
sgr-0493e27cc90ceb00	HTTPS	TCP	443	My IP	<input type="text"/> <small>Delete</small>
sgr-0628a39d40329433a	HTTP	TCP	80	My IP	<input type="text"/> <small>Delete</small>
sgr-017b040dd405d5ffa	SSH	TCP	22	Custom	<input type="text"/> <small>Delete</small>

**Add rule**

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

**Save rules**

24Online Client | Sandbox Env | Workbench - Vo | Database Details | trackReadingTim | sendReminder | ReadingRemind | Connect to insta | +

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#ConnectToInstance:instanceId=i-0386b447ae9f28d44

EC2 > Instances > i-0386b447ae9f28d44 > Connect to instance

**Connect to instance** Info

Connect to your instance i-0386b447ae9f28d44 (flask-book-tracker) using any of these options

**EC2 Instance Connect** Session Manager SSH client EC2 serial console

**Instance ID** i-0386b447ae9f28d44 (flask-book-tracker)

**Connection Type**

- Connect using EC2 Instance Connect
- Connect using the EC2 Instance Connect browser-based client, with a public IPv4 or IPv6 address.
- Public IPv4 address
- IPv6 address

**Username** Enter the username defined in the AMI used to launch the instance. If you didn't define a custom username, use the default username, ec2-user.

**Note:** In most cases, the default username, ec2-user, is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI username.

https://us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-east-1&connType=standard&instanceId=i-0386b447ae9f28d44&osUser=ec2-user&region=us-east-1&sshPort=22

Amazon Linux 2023

https://aws.amazon.com/linux/amazon-linux-2023

```
(ec2-user@ip-172-31-94-9) $ sudo yum update -y
Last metadata expiration check: 0:00:19 ago on Sat Apr 12 13:33:50 2025.
Dependencies resolved.
Nothing to do.
Complete!
(ec2-user@ip-172-31-94-9) $ sudo yum install python3 -y
Last metadata expiration check: 0:00:19 ago on Sat Apr 12 13:33:50 2025.
Dependencies resolved.
Dependencies resolved.
Nothing to do.
Complete!
(ec2-user@ip-172-31-94-9) $ sudo yum install python3-pip -y
Last metadata expiration check: 0:00:56 ago on Sat Apr 12 13:33:50 2025.
Dependencies resolved.

Package           Architecture      Version           Repository      Size
installing:
python3-pip        noarch        21.3.1-2.amzn2023.0.11  amazonlinux      1.8 M
installing weak dependencies:
libcrypt-compat    x86_64        4.4.33-7.amzn2023          amazonlinux      92 k

Transaction Summary
Install 2 Packages

Total download size: 1.9 M
Installed size: 11 M
Downloading Packages:
(1/2) : libcrypt-compat-4.4.33-7.amzn2023.x86_64.rpm          2.6 MB/s |  92 kB  00:00
(2/2) : python3-pip-21.3.1-2.amzn2023.0.11.noarch.rpm        30 MB/s | 1.8 MB  00:00
Total
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.

i-0386b447ae9f28d44 (flask-book-tracker)
PublicIPs: 3.92.178.95 PrivateIPs: 172.31.94.9
```

CloudShell Feedback

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```

24Online Clic x  Sandbox Env x  Workbench x  Database Dev x  trackReading x  sendReminder x  ReadingRem x  Instances | E x  EC2 Instance x  +
us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?addressFamily=ipv4&connType=standard&instanceId=i-0386b447ae9f28d44&osUser=ec2-user&region=us-east-1&sshPort=22  Search  [Alt+S]
aws  Search  United States (N. Virginia)  vocabs/user3801908-yadukashwan@gmail.com@5959-2797-1209

Installed:
libcrypt-compat-4.4.33-7.amzn2023.x86_64
python3-pip-21.3.1-2.amzn2023.0.11.noarch

Completed:
[ec2-user@ip-172-31-94-4 ~]$ sudo pip3 install flask mysql-connector-python boto3
Collecting Flask
  Downloading flask-3.1.0-py3-none-any.whl (102 kB)
    102 kB 20.6 MB/s
Collecting mysql-connector-python
  Downloading mysql_connector_python-8.0.20-cp39-cp39-manylinux2_28_x86_64.whl (33.9 kB)
    33.9 kB 14.2 MB/s
Collecting boto3
  Downloading boto3-1.37.33-py3-none-any.whl (139 kB)
    139 kB 71.0 MB/s
Collecting Werkzeug<3.1
  Downloading werkzeug-3.1.3-py3-none-any.whl (224 kB)
    224 kB 59.9 MB/s
Collecting itsdangerous<2.2
  Downloading itsdangerous-2.0.0-py3-none-any.whl (16 kB)
Collecting importlib-metadata<3.6
  Downloading importlib_metadata-3.6.1-py3-none-any.whl (26 kB)
Collecting click<8.1.3
  Downloading click-8.1.0-py3-none-any.whl (8.5 kB)
Collecting click<8.1.0-py3-none-any.whl
  Downloading click-8.1.0-py3-none-any.whl (98 kB)
    98 kB 14.8 MB/s
Collecting Jinja2<3.1.2
  Downloading jinja2-3.1.6-py3-none-any.whl (134 kB)
    134 kB 57.2 MB/s
Collecting s3transfer<0.12.0,>=0.11.0
  Downloading s3transfer-0.11.4-py3-none-any.whl (84 kB)
    84 kB 6.9 MB/s
Collecting botocore<1.38.0,>=1.37.33
  Downloading botocore-1.37.33-py3-none-any.whl (13.5 kB)
    13.5 kB 15.6 MB/s
Requirement already satisfied: jmespath<2.0.0,>=0.7.1 in /usr/lib/python3.9/site-packages (from boto3) (0.10.0)
Requirement already satisfied: python-dateutil<3.0.0,>=2.1 in /usr/lib/python3.9/site-packages (from botocore<1.38.0,>=1.37.33->boto3) (2.8.1)
Requirement already satisfied: urllib3<1.27,>=1.25.4 in /usr/lib/python3.9/site-packages (from botocore<1.38.0,>=1.37.33->boto3) (1.25.10)
Collecting MarkupSafe<2.0
  Downloading MarkupSafe-2.0.2-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (20 kB)
Requirement already satisfied: MarkupSafe<2.0.2-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl in /usr/lib/python3.9/site-packages (from python-dateutil<3.0.0,>=2.1->botocore<1.38.0,>=1.37.33->boto3) (1.15.0)
Installing collected packages: s3transfer, MarkupSafe, botocore, Werkzeug, Jinja2, itsdangerous, importlib-metadata, click, blinker, mysql-connector-python, flask, boto3
  Attempting uninstall: MarkupSafe
    Found existing installation: MarkupSafe 1.1.1
    Uninstalling MarkupSafe-1.1.1...

```

i-0386b447ae9f28d44 (flask-book-tracker)

PublicIPs: 3.92.178.95 PrivateIPs: 172.31.94.9

The screenshot shows the MySQL Workbench interface for an AWS RDS database. The 'Navigator' pane on the left lists the 'mybookdb' schema, which contains tables, views, stored procedures, and functions. The 'Query 1' pane displays the SQL code for creating a database and a table:

```

1 • CREATE DATABASE mybookdb;
2 • SHOW DATABASES;
3 • SHOW TABLES;
4 • USE mybookdb;
5 • CREATE TABLE books (
6   id INT AUTO_INCREMENT PRIMARY KEY,
7   title VARCHAR(255),
8   ...
9

```

The 'Result Grid' pane shows the results of the 'SHOW TABLES' command, listing a single table named 'books'. The 'Result 2' pane shows the log of operations performed:

Action	Time	Message	Duration / Fetch
SHOW DATABASES	19:12:19	5 row(s) returned	0.985 sec / 0.000 sec
USE mybookdb	19:12:29	0 row(s) affected	0.297 sec
CREATE TABLE books ( id INT AUTO_INCREMENT PRIMARY KEY, title VARCHAR(255), ... )	19:12:34	0 row(s) affected	0.422 sec
SHOW TABLES	19:12:40	1 row(s) returned	0.312 sec / 0.000 sec

MySQL Workbench

File Edit View Query Database Server Tools Scripting Help

Navigator: Schemas

Query 1:

```

1 • CREATE DATABASE mybookdb;
2 • SHOW DATABASES;
3 • SHOW TABLES;
4 • USE mybookdb;
5 • CREATE TABLE books (
6     id INT AUTO_INCREMENT PRIMARY KEY,
7     title VARCHAR(255),
8     author VARCHAR(255),
9     start_date DATE,
10    expected_end_date DATE,
11    pages INT,
12    time_spent INT DEFAULT 0
13 );
14
15

```

Result Grid | Filter Rows | Export | Wrap Cell Content | Tables\_in\_mybookdb | books

No object selected

Object Info | Session | Result 2 | Read Only

us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?addressFamily=ipv4&connType=standard&instanceId=i-0386b447ae9f28d44&osUser=ec2-user&region=us-east-1&sshPort=22

aws | Search | [Alt+S]

```

.
.
.
Amazon Linux 2023
https://aws.amazon.com/linux/amazon-linux-2023
.
.
.

Last login: Sat Apr 12 13:31:59 2025 from 10.206.107.29
[ec2-user@ip-172-31-94-9 ~]$ history
1 sudo yum update -y
2 sudo yum install python3 -y
3 sudo yum install python3-pip -y
4 sudo pip3 install flask mysql-connector-python boto3
5 vim flask-app.py
[ec2-user@ip-172-31-94-9 ~]$ mkdir flask-app
[ec2-user@ip-172-31-94-9 flask-app]$ cd flask-app
[ec2-user@ip-172-31-94-9 flask-app]$ nano __init__.py
[ec2-user@ip-172-31-94-9 flask-app]$ nano templates/index.html
[ec2-user@ip-172-31-94-9 flask-app]$ nano templates/add_book.html
[ec2-user@ip-172-31-94-9 flask-app]$ nano templates/reminder.html
[ec2-user@ip-172-31-94-9 flask-app]$ 

```

i-0386b447ae9f28d44 (flask-book-tracker)

PublicIPs: 3.92.178.95 PrivateIPs: 172.31.94.9

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24Online 392.178.95 Not secure

# My Book Tracker

Add a New Book

Title	Author	Start Date	Expected End Date	Pages	Time Spent
-------	--------	------------	-------------------	-------	------------

Send Reading Reminder

---