

TASK 4.1 P

Creating an Amazon RDS Database

Cloud computing

Task 1.

The screenshot shows the 'Create database' wizard on the AWS RDS console. The 'Engine type' dropdown is set to 'MySQL'. Other options shown include 'Aurora (MySQL Compatible)', 'Aurora (PostgreSQL Compatible)', 'PostgreSQL', 'MariaDB', and 'Oracle'. To the right, a 'MySQL' section provides a brief overview and a bulleted list of features:

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.

Screenshot of the AWS RDS 'Create database' page showing the MySQL engine selection screen.

The MySQL section is highlighted with a blue border. Other engines shown include PostgreSQL, Oracle, MariaDB, Microsoft SQL Server, and IBM Db2.

Edition: MySQL Community is selected.

Engine version: MySQL 8.0.40 is selected.

Hide filters dropdown is open, showing two filter options:

- Show only versions that support the Multi-AZ DB cluster [Info](#)
- Show only versions that support the Amazon RDS Optimized Writes [Info](#)

Enable RDS Extended Support checkbox is unchecked.

Templates section:

- Production**: Use defaults for high availability and fast, consistent performance.
- Dev/Test**: This instance is intended for development use outside of a production environment. This option is selected.
- Free tier**: Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. [Info](#)

MySQL details on the right side:

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Aurora and RDS > Create database

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](#)

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 primary DB instance with two readable standbys in separate Availability Zones. This setup provides:
 - 99.95% uptime
 - Redundancy across Availability Zones
 - Increased read capacity
 - Reduced write latency
- Multi-AZ DB instance deployment (2 instances)** Creates a primary DB instance with a non-readable 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:
 - 99.95% uptime
 - No data redundancy

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CloudShell Feedback

Aurora and RDS > Create database

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.

Inventory-db

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 ID for the master user of your DB instance.

admin

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.
- Self managed** Create your own password or have RDS create a password that you manage.

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

Master password Info

Password strength Very strong

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

Confirm master password Info

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CloudShell Feedback

Screenshot of the AWS RDS 'Create database' configuration page for MySQL.

Instance Type: db.t3.2xlarge

Storage: 2000 GiB (General Purpose SSD)

Engine: MySQL 8.0

Character Set: UTF-8mb4

Collation: utf8mb4_0900_ai_ci

Deletion Protection: Enabled

Master User: **root**

Master Password: **XXXXXXXXXX** (Very strong)

Confirm Master Password: **XXXXXXXXXX**

Self-managed: Create your own password or have RDS create a password that you manage.

MySQL Information:

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- 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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Instance Configuration:

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

DB instance class: [Info](#)

Hide filters:

- Show instance classes that support Amazon RDS Optimized Writes [Info](#)
- Include previous generation classes

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Storage

Storage type [Info](#)
Provisioned IOPS SSD (io2) storage volumes are now available.

General Purpose SSD (gp2)
Baseline performance determined by volume size

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

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Additional storage configuration

Storage autoscaling [Info](#)
Provides dynamic scaling support for your database's storage based on your application's needs.

Enable storage autoscaling
Enabling this feature will allow the storage to increase after the specified threshold is exceeded.

Connectivity [Info](#)

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.

Virtual private cloud (VPC) [Info](#)
Choose the VPC. The VPC defines the virtual networking environment for this DB instance.

Lab VPC (vpc-08de6d9fa5e56d3eb)
4 Subnets, 2 Availability Zones

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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.

lab-db-subnet-group
2 Subnets, 2 Availability Zones

Public access [Info](#)

Aurora and RDS > Create database

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
Choose existing VPC security groups

Create new
Create new VPC security group

Existing VPC security groups

Choose one or more options

DB-SG X

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](#).

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Aurora and RDS > Create database

Database options, encryption turned on, backup turned on, backtrack turned off, maintenance, CloudWatch Logs, delete protection turned off.

Database options

Initial database name Info

inventory

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
Creates a point-in-time snapshot of your database

⚠ Please note that automated backups are currently supported for InnoDB storage engine only. If you are using MyISAM, refer to details [here](#).

Backup retention period Info

The number of days (1-35) for which automatic backups are kept.

7 days

Backup window Info

The daily time range (in UTC) during which RDS takes automated backups.

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Aurora and RDS > Create database

CloudShell Feedback Search United States (N. Virginia) vocabs/user3904332=s224001588@deakin.edu.au @ 5349-5278-7023

2 Subnets, 2 Availability Zones

MySQL

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Screenshot of the AWS RDS Create Database wizard.

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.

Estimated monthly costs

DB instance	12.41 USD
Storage	2.50 USD
Total	14.71 USD

This billing estimate is based on on-demand usage as described in [Amazon RDS Pricing](#). Estimate does not include costs for backup storage, IOs (if applicable), or data transfer.

Estimate your monthly costs for the DB Instance using the [AWS Simple Monthly Calculator](#).

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Cancel **Create database**

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Screenshot of the AWS RDS console showing the creation of a new database named "inventory-db".

The top navigation bar shows the URL: `us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#databases:`

The main interface displays the "Databases (1)" section. A message box indicates that the database is "Creating" and provides a link to "View credential details".

DB identifier	Status	Role	Engine	Region ...	Size	Recommendations
inventory-db	Creating	Instance	MySQL Community	us-east-1a	db.t3.micro	

The bottom section shows the "inventory-db" database details page. The "Summary" tab is selected, displaying basic information like DB identifier, Status (Creating), Role (Instance), Engine (MySQL Community), and Region & AZ (us-east-1a).

The "Connectivity & security" tab is active, showing details for Endpoint, Networking, and Security.

Endpoint: -

Networking:

- Availability Zone: us-east-1a
- VPC: Lab VPC (`vpc-08de6d9fa5e56d3eb`)
- Subnet group: lab-db-subnet-group
- Subnets: -

Security:

- VPC security groups: DB-SG (`sg-07cd57d9459289aba`)
- Active: Yes
- Publicly accessible: No
- Certificate authority: rds-ca-rsa2048-g1

Other tabs include Monitoring, Logs & events, Configuration, Zero-ETL integrations, Maintenance & backups, and Data.

TASK 2-

The screenshot shows a web browser window with several tabs open. The active tab is 'awsacademy.instructure.com/courses/104153/assignments/1147520/module_item_id=9702641'. The page title is 'ACAv3EN-US-L... > Assignments > Guided lab: Creating an Amazon RDS Database'. The main content area contains the following text:

Earlier, you will have received the **Database Endpoint** so that the application knows how to connect to a database.

20. Return to the **AWS Management Console**, but do not close the application tab.
(You will return to it soon).

21. From the **Services** menu, choose **RDS** to open the RDS console.

22. In the left navigation pane, choose **Databases**.

23. Choose **Inventory-db**.

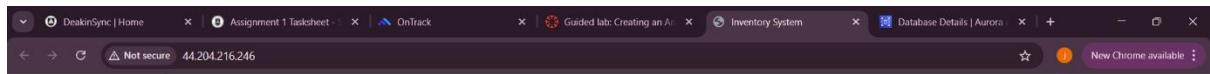
24. Go to the **Connectivity & Security** section and copy the **Endpoint** to your clipboard.

It should look similar to this example: *inventory-db.crxwbgqad61a.rds.amazonaws.com*

On the right side of the screen, there is a sidebar titled 'Cloud Access' with the following information:

- AWS CLI:** Show
- Cloud Labs**
 - Remaining session time: 02:42:42(163 minutes)
 - Session started at: 2025-03-31T01:37:20-0700
 - Session to end at: 2025-03-31T04:37:20-0700
 - Accumulated lab time: 00:17:00 (17 minutes)
- ips -- public:44.204.216.246, private:10.0.0.232
- SSH key** Show Download PEM
- Download PPK**
- AWS SSO** Download URL

The browser's taskbar at the bottom shows various pinned icons, including Microsoft Office applications like Word, Excel, and PowerPoint, as well as other tools like File Explorer, Task Manager, and a video player.



Successfully created database **inventory-db**

You can use settings from **inventory-db** to simplify configuration of suggested database add-ons while we finish creating your DB for you.

Summary	Status	Role	Engine	Recommendations
DB identifier inventory-db	Backing-up	Instance	MySQL Community	
CPU	Class db.t3.micro	Current activity 0 Connections	Region & AZ us-east-1a	

Connectivity & security

Endpoint & port	Networking	Security
Endpoint inventory-db.c7vd6paf3ka.us-east-1.rds.amazonaws.com	Availability Zone us-east-1a	VPC security groups DB-SG (sg-07cd57d9459289aba) Active
	VPC	

The screenshot shows the AWS Aurora and RDS console with the following details:

- Endpoint & port**: Endpoint copied (highlighted with a green box).
 - Port: 3306
- Networking**:
 - Availability Zone: us-east-1a
 - VPC: Lab VPC (vpc-08de6d9fa5e56d3eb)
 - Subnet group: lab-db-subnet-group
 - Subnets:
 - subnet-0d26cfb5d584dcbb
 - subnet-0655cb84c205e0a6b
 - Network type: IPv4
- Security**:
 - VPC security groups:
 - DB-SG (sg-07cd57d9459289aba) (highlighted with a green box, status: Active)
 - Publicly accessible: No
 - Certificate authority: rds-ca-rsa2048-g1
 - Certificate authority date: May 26, 2061, 09:34 (UTC+10:00)
 - DB instance certificate expiration date: March 31, 2026, 19:54 (UTC+11:00)
- Connected compute resources (0)**: Info

At the bottom, there is a CloudShell feedback bar and a standard browser footer.

Store	Item	Quantity	
 	Puerto Rico	Amazon Echo	12
 	Paris	Amazon Dot	3
 	Detroit	Amazon Tap	5



The screenshot shows a web application titled "Inventory". At the top, there are several tabs: "DeakinSync | Home", "Assignment 1 Tasksheet - SIT21", "OnTrack", "Inventory System", and "Database Details | Aurora and I...". The main content area has a header with "Inventory" and "Settings". Below this is a table with the following data:

Store	Item	Quantity
Puerto Rico	Amazon Echo	12
Paris	Amazon Dot	3
Detroit	Amazon Tap	5
jasveena1	abc	5
jasveena2	xyz	10

At the bottom of the table is a blue button labeled "+ Add Inventory". A small note at the bottom of the page states: "This page was generated by instance i-0a85f39a84638026b in Availability Zone us-east-1a."

The screenshot shows a guided lab titled "Guided lab: Creating an Amazon RDS Database" from the AWS Academy. The left sidebar contains links for Home, Modules, Discussions, Grades, and Courses. The main content area displays the lab title and submission instructions. The submission section includes a note about optional access to saved secrets via the Secrets Manager console. Below this, there are two numbered steps: 28. Choose "Submit" and choose "Yes" if prompted, and 29. If results don't display after a couple of minutes, return to the top and choose "Grades". A tip at the bottom suggests submitting work multiple times to record the last change. On the right, a sidebar provides session details: "Remaining session time: 02:42:42(163 minutes)", "Session started at: 2025-03-31T01:37:20-0700", "Session to end at: 2025-03-31T04:37:20-0700", and "Accumulated lab time: 00:17:00 (17 minutes)". It also includes download links for "SSH key", "PPK", and "AWS SSO", and a public IP address "AppServerPublicIP 44.204.216.246". Navigation buttons for "Previous" and "Next" are at the bottom.

The screenshot shows a browser window for the AWS Academy platform. The URL is awsacademy.instructure.com/courses/104153/assignments/1147520/module_item_id=9702641. The page title is "Guided lab: Creating an Amazon RDS Database". On the left, there's a sidebar with links like Home, Modules, Discussions, Grades, and Lucid (Whiteboard). The main content area has a "Submitting your work" section with instructions and a submission summary table:

Total score	20/20
[Task 1A] inventory-db found	5/5
[Task 1B] Database engine type	5/5
[Task 1C] Database instance type	5/5
[Task 2] Add Inventory Records	5/5

At the bottom, there are "Submit", "Submission Report", and "Grades" buttons.

Module 6 knowledge check

The screenshot shows a browser window for the AWS Academy platform. The URL is awsacademy.instructure.com/courses/104153/assignments/1147558/module_item_id=9702655. The page title is "Module 6 Knowledge Check". On the left, there's a sidebar with links like Home, Modules, Discussions, Grades, and Lucid (Whiteboard). The main content area shows a "KEYBOARD NAVIGATION" section with "Knowledge check results" and a "Result: Congratulations! You have completed this knowledge check." message. To the right, there's a "Submission" panel showing details: Grade: 80 (100 pts possible), Graded Anonymously: no, and Comments: No Comments. At the bottom, there are "Previous" and "Next" buttons.

QUESTION1 - Which type of subnet (public, private) would you place your RDS instance into? Why?

Place the RDS instance in a private subnet to prevent direct internet access and enhance security. The application server or a bastion host in a public/private subnet can connect to it.

Real-life Example: A web application on an EC2 instance in a public subnet connects to an RDS MySQL database in a private subnet through an allowed security group rule.

QUESTION 2

Describe the Security Group rule you would apply to your RDS instance to allow your application to connect to it, following least privilege.

- Inbound Rule: Allow only the application server's security group to connect on the database port (e.g., 3306 for MySQL).
- Outbound Rule: Typically not needed unless RDS requires external connections.