Task: RDS Lab Launching an RDS Instance and connecting it with EC2 Instance

Step 1 : Log in to RDS Console

=	aws	Services ~	Resource Groups 👻 🔭	众 napster ∖	• Mumbai • Support •
_			Database		
			Amazon RDS	Get started	
			Managed relational database service	Create a new database instance by selecting a database engine with your desired configuration.	
			Easily set up, operate, and scale a relational database in the cloud.	Create database	
				Restore a database from Amazon S3	
				Pricing and costs	
			How it works	Amazon Aurora Pricing	

Step 2 : Click on "Create Database" and select one of the database type. It is recommended to chose MySQL, MariaDB or PostgreSQL if you're in Free Tier. In this lab session we will choose, MySQL.

	aws Services ~	Resource Groups 👻 🤸	\Diamond	naps
≡	Step 2 Choose use case	Select engine		
	Step 3 Specify DB details	Engine options		
	Step 4 Configure advanced settings	Amazon Aurora Amazon Aurora Aurora		
		PostgreSQL Oracle Microsoft SQL Server Image: SQL Server Image: SQL Server		
		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 32 TIB. • Supports General Purpose Memory Ontimized and Burstable Performance instance classes		
		 Supports deteration pose memory optimized, and buildade remonance instance classes. Supports up to 5 Read Replicas per instance, within a single Region or cross-region. 		
		Only enable options eligible for RDS Free Usage Tier Info Cancel Next		





tep 2 hoose use case	Choose use case
itep 3 Specify DB details	Use case Do you plan to use this database for production purposes?
Step 4 Configure advanced Settings	Use case O Production - Amazon Aurora Recommended MySQL-compatible, enterprise-class database at 1/10th the cost of commercial databases.
	Production - MySQL Use Multi-AZ Deployment and Provisioned IOPS Storage as defaults for high availability and fast, consistent performance.
	Dev/Test - MySQL This instance is intended for use outside of production or under the RDS Free Usage Tier.
	Billing is based on RDS pricing 🛂.

Step 3 : Click on next and select "Dev/Test Environment" and click on next

Step 4 : Click on the Free Tier eligible for free tier configuration or you can choose any instance type

	aws Services - Re	source Groups 🗸 🍾	Δ	napster 👻	Mumbai 👻	Support 👻
=	Specify DB details	Estimate your monthly costs for the DB Instance using the AWS Simple Monthly Calculator				
	Step 4 Configure advanced settings	DB engine MySQL Community Edition				
		License model Info				
		general-public-license 🔻				
		DB engine version Info				
		MySQL 5.6.40				
		 Known Issues/Limitations Review the Known Issues/Limitations ☑ to learn about potential compatibility issues with specific database versions. Free tier The Amazon RDS Free Tier provides a single db.t2.micro instance as well as up to 20 GiB of storage, allowing new AWS customers to gain hands-on experience with Amazon RDS. Learn more about the RDS Free Tier and the instance restrictions here. ☑ Only enable options eligible for RDS Free Usage Tier Info 				
		DB instance class Info				
		db.t2.micro — 1 vCPU, 1 GiB RAM				
		Multi-AZ deployment Info				
		Create replica in different zone Creates a replica in a different Availability Zone (AZ) to provide data redundancy, eliminate I/O freezes, and minimize latency splikes during system backups.				
		O No				

Step 5 : Allocate storage for the database, min – 20GiB





Step 6 : Now, tag the DBInstance and give master username and password

DB Instance identifier Into Specify a name that is unique for all DB instances owned by your	AWS account in the current region.
TestDB	
DB instance identifier is case insensitive, but stored as all lower-c characters or hyphens (1 to 15 for SQL Server). First character mu consecutive hyphens.	ase, as in "mydbinstance". Must contain from 1 to 63 alphanumeric Ist be a letter. Cannot end with a hyphen or contain two
Master username Info Specify an alphanumeric string that defines the login ID for the m	naster user.
admin	
Master Username must start with a letter. Must contain 1 to 16 al	phanumeric characters.
Master password Info	Confirm password Info
•••••	•••••
Master Password must be at least eight characters long, as in "mypassword". Can be any printable ASCII character except "/",	

Step 7 : Now choose the custom VPC in your Env if any otherwise go with default one and then choose a new private subnet for DB. Also select to create new Security Group.

Network & Security	
/irtual Private Cloud (VPC	C) Info rking environment for this DB instance.
VPC_01 (vpc-0057f4c36	idf34f2a9) ▼ C
Only VPCs with a correspondir	ng DB subnet group are listed.
Subnet group Info	which subnets and IP ranges the DB instance can use in the VPC you selected.
Create new DB Subnet G	Group 🔻
Public accossibility Info	
Public accessibility Info	
Public accessibility Info Yes EC2 instances and devices or more VPC security grou	s outside of the VPC hosting the DB instance will connect to the DB instances. You must also select one ups that specify which EC2 instances and devices can connect to the DB instance.
Public accessibility Info Ves EC2 instances and devices or more VPC security grou No	s outside of the VPC hosting the DB instance will connect to the DB instances. You must also select one ups that specify which EC2 instances and devices can connect to the DB instance.
Public accessibility Info Yes EC2 instances and devices or more VPC security grou No DB instance will not have	s outside of the VPC hosting the DB instance will connect to the DB instances. You must also select one ups that specify which EC2 instances and devices can connect to the DB instance. a public IP address assigned. No EC2 instance or devices outside of the VPC will be able to connect.
Public accessibility Info Yes EC2 instances and devices or more VPC security gro. No DB instance will not have Availability zone Info	s outside of the VPC hosting the DB instance will connect to the DB instances. You must also select one ups that specify which EC2 instances and devices can connect to the DB instance. a public IP address assigned. No EC2 instance or devices outside of the VPC will be able to connect.
Public accessibility Info Yes EC2 instances and devices or more VPC security grou No DB instance will not have Availability zone Info ap-south-1a	s outside of the VPC hosting the DB instance will connect to the DB instances. You must also select one aps that specify which EC2 instances and devices can connect to the DB instance. a public IP address assigned. No EC2 instance or devices outside of the VPC will be able to connect.
Public accessibility Info Yes EC2 Instances and devices or more VPC security grou No DB Instance will not have Availability zone Info ap-south-1a	s outside of the VPC hosting the DB instance will connect to the DB instances. You must also select one aps that specify which EC2 instances and devices can connect to the DB instance. a public IP address assigned. No EC2 instance or devices outside of the VPC will be able to connect.
Public accessibility Info Yes EC2 instances and devices or more VPC security grou No DB instance will not have Availability zone Info ap-south-1a VPC security groups Security groups have rules aut	s outside of the VPC hosting the DB instance will connect to the DB instances. You must also select one ups that specify which EC2 instances and devices can connect to the DB instance. a public IP address assigned. No EC2 instance or devices outside of the VPC will be able to connect.



Step 8 : Configure the Database

atabase options	
atabase name Info	
testdb	
ote: if no database name is specifie	t then no initial MySQL database will be created on the DB Instance.
ort Info CP/IP port the DB instance will use	or application connections.
3306	
B parameter group Info default.mysql5.6	▼
B parameter group Info default.mysql5.6 Iption group Info	▼
B parameter group Info default.mysql5.6 Option group Info default:mysql-5-6	▼
B parameter group Info default.mysql5.6 Option group Info default:mysql-5-6	▼
DB parameter group Info default.mysql5.6 Dption group Info default:mysql-5-6 AM DB authentication Info) Enable IAM DB authentication Manage your database user cred	T n entials through AWS IAM users and roles.

And keep everything default and hit create database

Auto	o minor version upgrade Info
• I	Enable auto minor version upgrade Enables automatic upgrades to new minor versions as they are released. The automatic upgrades occur during the maintenance window for the DB instance.
0	Disable auto minor version upgrade
Mair Selec	ntenance window Info .t the period in which you want pending modifications or patches applied to the DB instance by Amazon RDS. Select window
-	
Del	etion protection
Del	etion protection
Del	etion protection Enable deletion protection Protects the database from being deleted accidentally. While this option is enabled, you can't delete the database.
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	Letion protection Enable deletion protection Protects the database from being deleted accidentally. While this option is enabled, you can't delete the database. Amazon RDS requires permissions to manage AWS resources on your behalf. By clicking Launch DB Instance, you grant permission for Amazon RDS to create a service-linked role in AWS IAM that contains the required permissions. Learn more.
	An preference Action protection Enable deletion protection Protects the database from being deleted accidentally. While this option is enabled, you can't delete the database. Amazon RDS requires permissions to manage AWS resources on your behalf. By clicking Launch DB Instance, you grant permission for Amazon RDS to create a service-linked role in AWS IAM that contains the required permissions. Learn more.



It will take some time to launch the Database Instance. Wait till the status becomes Available

Databases	C Group resources C Modify Actions ▼ Restore from S3	Create database
Q Filter databases		< 1 > ©
DB identifier	▲ Role ▼ Engine ▼ Class ▼ Status ▼	CPU Current activ

Step 8 : Now launch a EC2 Instance in the same VPC

1. Ch	cose AMI 2. Choos	e Instance Type	3. Go	onfigure Instance	4. Add Storage	5. Add Tags	6. Config	jure Security Group	7. Review				
Ste Config more.	p 3: Configu	re Instan uit your require	ements.	etails You can launch mi	ultiple instances f	rom the same AMI	l, reques	st Spot instances t	o take advantage of	f the lower pr	icing, assign a	an access management rol	ie to the instance, and
	Number	of instances	(i)	1		Launch into Auto	Scaling	Group (j)					
	Purch	asing option		Request Spot	t instances								
		Network	(i)	vpc-b685a5de	default (default)		¢C	Create new VP	с				
		Subnet	(i)	subnet-e2af11a 4090 IP Address	ae default1b De ses available	efault in ap-south-	1L \$	Create new sui	onet				
	Auto-ass	ign Public IP	(i)	Use subnet set	tting (Enable)		\$						
	Place	ement group	(i)	Add instance	to placement gro	oup							
	Capacity	Reservation	()	Open			¢C	Create new Ca	pacity Reservation				
		IAM role	(j)	None			¢C	Create new IAM	1 role				
	Shutdo	wn behavior	(i)	Stop			\$						
	Enable termination	on protection	i	Protect again	st accidental tern	nination							
		Monitoring	(i)	Enable Cloud Additional charg	Watch detailed m ges apply.	nonitoring							
		Tenancy	(j)	Shared - Run a Additional charg	a shared hardware ges will apply for o	e instance dedicated tenancy.	\$						
										Cancel	Previous	Review and Launch	Next: Add Storage

Step 9 : Now you must be having two security group : 1 for EC2 Instance and Another of RDS Instance that both are created automatically.

Here you need to copy the EC2 Instance Private IP and add a route in RDS Security Group to allow or you can add the Security Group ID of EC2 Instance.

aws Services	s 👻 Resource Gro	ups v 🔭	·		\Diamond	napster 👻 Mumbai 👻 Support 👻
EC2 Dashboard Events	Create Security Grou	Actions *				∆ -≎ ♥ Ø
Tags	Q Filter by tags and a	attributes or search by keyword				
Reports	Name -	Group ID	Group Name	- VPC ID	- Owner	- Description
		sg-0121eaca69531de53	default	vpc-0057f4c36df34f2a9	528552327319	default VPC security group
		sg-036ed3c5caeb8b40b	rds-launch-wizard	vpc-b685a5de	528552327319	Created from the RDS Management Consc
Launch Templates		sg-06b7d64ac8ea1a38e	SG	vpc-0057f4c36df34f2a9	528552327319	Sg for Linux
Spot Requests	Security Group: sg-03	36ed3c5caeb8b40b		0.0.0		
Reserved Instances	Description Inbo	ound Outbound Tags				
Capacity Reservations	Edit					
AMIs	Type (i)	Protocol (i)	Port Range (i)	Source (i)	Description (i)
Bundle Tasks	MYSQL/Aurora	TCP		3306	sg-0a8418c76c4bb7804 (M	yWebSC
ELASTIC BLOCK STORE						
Volumes						





Type (i)	Protocol (i)	Port Range (i)	Source (i)	Description (i)
MYSQL/Auror \$	TCP	3306	Custom \$ 172.31.6.201/32	e.g. SSH for Admin Desktop
NOTE: Any edits mad	e on existing rules wi oped for a very brief p	ill result in the edited rule period of time until the n	e being deleted and a new rule created with the new deta ew rule can be created.	ils. This will cause traffic that depends

Step 10 : Now SSH to your EC2 Instance.

```
👂 🔵 🍵 🔝 Downloads — root@ip-172-31-6-201:/home/ec2-user — ssh -i MumbaiKeyPair.pem ec2-user@52.66.52.167 — 80×24
Last login: Mon Mar 11 11:22:24 on ttys000
Lalits-MacBook-Air:~ lalitjhawar$ cd Downloads/
Lalits-MacBook-Air:Downloads lalitjhawar$ ssh -i MumbaiKeyPair.pem ec2-user@52.6
6.52.167
The authenticity of host '52.66.52.167 (52.66.52.167)' can't be established.
ECDSA key fingerprint is SHA256:A9qjRvMrNzbYXjO4zWgMUnFAWvTZITsTkUwcvGvvFPE.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '52.66.52.167' (ECDSA) to the list of known hosts.
                      Amazon Linux 2 AMI
https://aws.amazon.com/amazon-linux-2/
5 package(s) needed for security, out of 8 available
Run "sudo yum update" to apply all updates.
-bash: warning: setlocale: LC_CTYPE: cannot change locale (UTF-8): No such file
or directory
[ec2-user@ip-172-31-6-201 ~]$ sud osu
-bash: sud: command not found
[ec2-user@ip-172-31-6-201 ~]$ sudo su
[root@ip-172-31-6-201 ec2-user]#
```



Step 1 1: Now Install PHP and Apache server to test our connection. Command : "*yum install httpd php php-mysql -y*"



Step 12 : Once installed, start the server and create test PHP page Command : "*service httpd start"*

"echo "<?php phpinfo();?>" > /var/www/html/index.php"



PHP Version 5.4.16			
System	Linux ip-172-31-6-201.ap-south-1.compute.internal 4.14.97-90.72.amzn2.x86_64 #1 SMP Tue Feb 5 20:46:19 UTC 2019 x86_64		
Build Date	Sep 1 2018 05:49:25		
Server API	Apache 2.0 Handler		
Virtual Directory Support	disabled		
Configuration File (php.ini) Path	/etc		
Loaded Configuration File	/etc/php.ini		
Scan this dir for additional .ini files	/etc/php.d		
Additional	/etc/php.d/curl.ini, /etc/php.d/fileinfo.ini, /etc/php.d/json.ini, /etc/php.d/mysqlnd.ini,		

If you see this output, then it means – Apache and PHP has been successfully installed.





Step 14 : Now we will create one PHP File that connects to our database. Code:

Replace username, password, hostname and db name with actual paramters Note : Hostname is your RDS Endpoint.

aws Services - I	lesource Groups 🗸 🔭		Ĺ	្ក napster ֊ Mumbai ֊ Support ֊	
Amazon RDS ×	Summary	Summary			
Dashboard					
atabases	DB Name	CPU	Info	Class	
erformance Insights	testdb	1.67%	⊘ Available	db.t2.micro	
inapshots	Role	Current activity	Engine	Region & AZ	
Automated backups	Instance	0 Connections	MySQL	ap-south-1b	
teserved instances					
Subnet groups Parameter groups	Connectivity & security Monit	oring Logs & events Config	uration Maintenance & backups	Tags	
option groups	Connectivity & security	Connectivity & security			
events					
vent subscriptions	Endpoint & port	Networking	Secur	ity	
latifications	Endpoint	Availability zone	VPC se	curity groups	
VUIILauons		an-south-1h	rds-lau		
	testdb.cfjmmzvhexdp.ap-south- 1.rds.amazonaws.com	VPC	(active	(sg-0e6a/cec1td10c251)	
	testdb.cfjmmzvhexdp.ap-south- 1.rds.amazonaws.com Port	VPC default (vpc-b685a5	de) Public	accessibility	
	testdb.cf/mmzvhexdp.ap-south- 1.rds.amazonaws.com Port 3306	VPC default (vpc-b685a5 Subnet group	(active de) Public Yes	accessibility	

Here you'll find the RDS Endpoint copy and paste in the code.

```
[root@ip-172-31-6-201 ec2-user]# cd /var/www/html/
[root@ip-172-31-6-201 html]# vi database.php
```





Now save the file with ESC+Collan+wq

Step 15 : Now go to browser and after your Instance public Ip write "ip/database.php"



Connected to MySQL



