Hello, Cloud Gurus and welcome to this lecture

which is going to introduce RDS

or Relational Database Service.

Now, relational databases have been around

for many, many years,

and they are at the heart of many applications.

And the data is organized into tables.

So think of a traditional spreadsheet,

where you have rows, which are the data items or records.

And columns which are the fields in the database.

And here is an example of a customer table.

So restoring the customer ID

along with the name, address, and country as well.

And when we talk about a row of data

this is what we mean, and this is a column.

So when should we use an RDS database?

Well, RDS is generally used

for online transaction processing workloads

and it's also known as OLTP.

Now there are a few different database engines

available with RDS

and a few of these will probably be very familiar to you.

So we've got Microsoft SQL Server, Oracle, My SQL,

PostgreSQL, MariaDB,

and Amazon Aurora.

And Aurora is Amazon's own relational database offering.

And it is MySQL and PostgreSQL compatible

but they've made it a lot more performant

than either of those and it scales automatically as well.

So it's meant to be a big improvement

on PostgreSQL and MySQL.

And you can get started with RDS really, really quickly.

And you can be up and running in just a matter of minutes.

So you can launch a multi-AZ database,

complete with fail over capability and automated backups

in just a few minutes.

And this is such a game changer.

And I've actually got a really good friend who has worked

as an Oracle database administrator for many, many years.

And I asked him, how long would it normally take

to manually install Oracle on brand new servers

and configure a basic cluster with replication

to another data center and also configure daily backups.

And he told me that it would normally take around eight days

to get everything configured and tested

and ready for production use.

So a manual install in your own data center

it could take eight days or longer.

So you can see why RDS is one of the most popular services.

And it's really important that you understand the difference

between online transaction processing

and online analytics processing or OLAP.

So OLTP processes data from transactions in real time.

For example, customer orders, banking transactions,

payments, and booking systems.

And think of the last thing that you purchased

on amazon.com, well, that was an OLTP transaction.

And OLTP is all about data processing

and complete large numbers of small transactions

in real time.

Whereas OLAP processes complex queries

to analyze historical data.

For example, analyzing the net profit figures

from the past three years and performing sales forecasting.

So OLAP is all about data analysis

using large amounts of data and complex queries

which may take a long time to complete.

So they are completely different workloads

and as such they require different solutions.

So if you will performing lots of OLTP transactions,

maybe you're processing customer orders,

then it makes it sense to store customer orders

in a relational database like this one.

So then if we need to find out the status

of a specific order, it's gonna be easy

to search the data based on an order number.

Whereas if you were running lots of OLAP queries,

let's say you're working on a net profit analysis.

So for example, you've been asked to produce a report

comparing net profits for call sales

across three different regions.

This is going to involve the analysis

of a large amount of data.

So you'll probably need to work out the sum of the cars

sold in each region,

a unit cost for each region,

the sales price of each car

and the sales price compared to the unit cost.

So it's going to be quite an involved process

and it could be quite a complex task

that takes many hours to complaint.

So OLAP is all about analysis of large amounts of data,

rather than completing a large amount of transactions

in real time.

And it's important understand

that RDS is not suitable for this kind of workload.

So it's not suitable for analyzing large amounts of data.

And instead, you should think about using a data warehouse

like RedShift, which is optimized for OLAP workloads.

So onto my exam tips for RDS and with RDS

you've got a choice

of a number of different types of database engine.

So we've got SQL Server, Oracle, MySQL,

PostgreSQL, MariaDB, and Amazon Aurora

and RDS is designed for OLTP type workloads.

So it's great for processing lots of small transactions

like customer orders, banking transactions,

payments and booking systems.

And think of the last thing you bought on amazon.com.

So that transaction was an OLTP type transaction

and RDS is not suitable for OLAP.

So it's not suitable for online analytics processing.

Instead you should use RedShift for data warehousing

on OLAP tasks like analyzing large amounts of data,

reporting and sales forecasting.

So that's it for this lecture.

If you have any questions, please let me know.

Otherwise, please join me in the next lecture.

Thank you.