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30143862

MS4S21 – Assessment 2

Create a Custom AMI with R Installed

This guide details how a custom Amazon Machine Image (AMI) was created with the R programming language pre-installed, using a standard Ubuntu EC2 instance.

Step 1: Launched the EC2 Template Instance

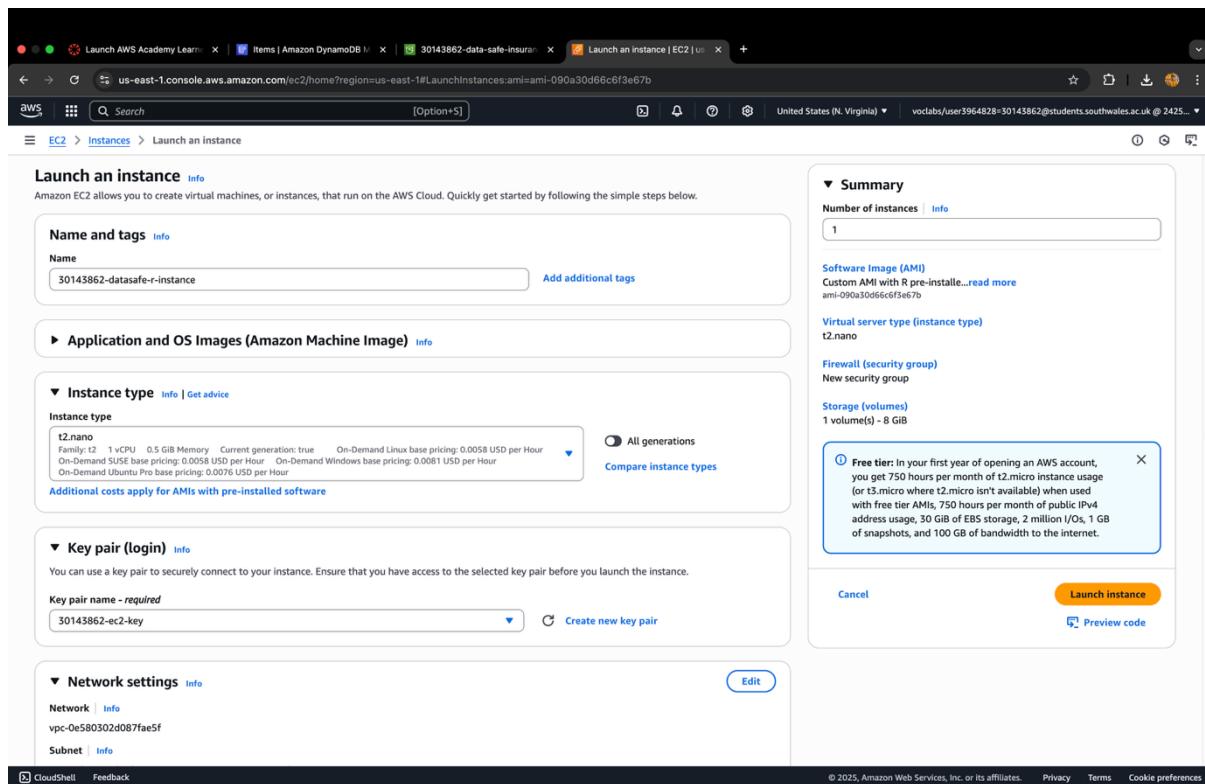
Logged into the AWS Management Console.

Navigated to EC2 > Launch Instance.

Named the instance: 30143862-ec2-template-instance.

Selected AMI: Ubuntu Server 22.04 LTS (Free tier eligible).

Chose instance type: t2.nano.



Created a key pair (30143862-ec2-key.pem)

The screenshot shows the AWS EC2 'Launch an instance' wizard. In the center, a modal window titled 'Create key pair' is open. It asks for a 'Key pair name' (30143862-ec2-key) and provides two options for 'Key pair type': 'RSA' (selected) and 'ED25519'. Below that, it asks for 'Private key file format': 'pem' (selected) and 'ppk'. A note says: 'When prompted, store the private key in a secure and accessible location on your computer. You will need it later to connect to your instance.' At the bottom of the modal are 'Cancel' and 'Create key pair' buttons. To the right of the modal, the 'Summary' section shows: Software Image (AMI) - Canonical, Ubuntu, 24.04, amd64; Virtual server type (instance type) - t2.nano; Firewall (security group) - New security group; Storage (volumes) - 1 volume(s) - 8 GiB. At the bottom right of the summary section are 'Launch instance' and 'Preview code' buttons.

Changed storage to 8 GiB gp3.

Configured security group to allow SSH (port 22) from my IP.

The screenshot shows the AWS EC2 'Launch an instance' wizard. On the left, the 'Configure storage' section is visible, showing a 1x 8 GB gp3 volume selected for the root volume. An 'Advanced' button is at the top right of this section. On the right, the 'Network settings' section is visible, showing a new security group named 'launch-wizard-2' with an inbound rule allowing SSH traffic from 'Anywhere'. The 'Edit' button is at the top right of this section. The 'Summary' section on the far right shows: Software Image (AMI) - Custom AMI with R pre-installed; Virtual server type (instance type) - t2.nano; Firewall (security group) - New security group; Storage (volumes) - 1 volume(s) - 8 GiB. At the bottom right of the summary section are 'Launch instance' and 'Preview code' buttons.

Successfully instance launched.

The screenshot shows the AWS EC2 'Launch an instance' page. At the top, there is a green success banner stating 'Successfully initiated launch of instance i-063a7b99b5d52dfa'. Below the banner, there is a 'Launch log' link. A 'Next Steps' section contains several cards with links to other AWS services: 'Create billing and free tier usage alerts', 'Connect to your instance', 'Connect an RDS database', 'Create EBS snapshot policy', 'Manage detailed monitoring', 'Create Load Balancer', 'Create AWS budget', and 'Manage CloudWatch alarms'. At the bottom right of the main content area is a 'View all instances' button.

The screenshot shows the AWS EC2 'Instances' page. The left sidebar is a navigation menu with sections like EC2, Instances, Images, Elastic Block Store, Network & Security, and Load Balancing. The main content area displays a table titled 'Instances (1) Info' with one row for the recently launched instance: '30143862-ec2...' (Instance ID), 'Running' (Status), 't2.nano' (Instance type), 'Initializing' (Status check), 'View alarms' (Alarm status), 'us-east-1b' (Availability Zone), 'ec2-34-227-224-187.co...' (Public IPv4 DNS), and '34.227.' (Public IP). There is also a 'Select an instance' dropdown below the table.

The screenshot shows the AWS EC2 Instances page. On the left, a sidebar navigation includes: Dashboard, EC2 Global View, Events, Instances (selected), Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Images (AMIs, AMI Catalog), Elastic Block Store (Volumes, Snapshots, Lifecycle Manager), Network & Security (Security Groups, Elastic IPs, Placement Groups, Key Pairs, Network Interfaces), and Load Balancing (Load Balancers). The main content area displays a table of instances. A message at the top states: "Currently creating AMI ami-090a30d66c6f3e67b from instance i-063a7b99b5d52dfa4. Check that the AMI status is 'Available' before deleting the instance or carrying out other actions related to this AMI." The table has columns: Name, Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, Public IPv4 DNS, and Public IP. One instance is listed: "30143862-ec2... i-063a7b99b5d52dfa4" (Running, t2.nano, 2/2 checks passed, us-east-1b, ec2-34-227-224-187.compute-1.amazonaws.com, 34.227.224.187). Below the table, a detailed view for instance "i-063a7b99b5d52dfa4 (30143862-ec2-template-instance)" is shown with tabs for Details, Status and alarms, Monitoring, Security, Networking, Storage, and Tags. The Details tab shows: Instance ID (i-063a7b99b5d52dfa4), Public IPv4 address (34.227.224.187), Instance state (Running), Hostname type (IP name: ip-172-31-17-139.ec2.internal), Private IP DNS name (IPv4 only) (ip-172-31-17-139.ec2.internal), Instance type (t2.nano), and Private IPv4 addresses (172.31.17.139). The Public DNS is listed as ec2-34-227-224-187.compute-1.amazonaws.com. At the bottom, there are links for cloudShell, Feedback, and copyright information: © 2025, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences.

The screenshot shows the "Connect to instance" configuration page. The top navigation bar includes: Launch AWS Academy Learn, Items | Amazon DynamoDB M, 30143862-data-safe-insuran, Connect to instance | EC2, 172.31.17.139, and a search bar. The main content area has tabs: EC2 Instance Connect, Session Manager, SSH client (selected), and EC2 serial console. It shows the instance ID: i-063a7b99b5d52dfa4 (30143862-ec2-template-instance). Below are connection instructions: 1. Open an SSH client, 2. Locate your private key file. The key used to launch this instance is 30143862-ec2-key.pem, 3. Run this command, if necessary, to ensure your key is not publicly viewable: chmod 400 "30143862-ec2-key.pem", 4. Connect to your instance using its Public DNS: ec2-34-227-224-187.compute-1.amazonaws.com. An example command is provided: ssh -i "30143862-ec2-key.pem" ubuntu@ec2-34-227-224-187.compute-1.amazonaws.com. A note at the bottom states: "Note: In most cases, the guessed username is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI username." A "Cancel" button is located at the bottom right.

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Step 2: Connected to the Instance via SSH

```
Last login: Wed May 28 12:06:24 on ttys000
|hari@Mac ~ % chmod 400 ~/Downloads/30143862-ec2-key.pem
|hari@Mac ~ % ssh -i ~/Downloads/30143862-ec2-key.pem ubuntu@ec2-184-72-158-199.compute-1.amazonaws.com
The authenticity of host 'ec2-184-72-158-199.compute-1.amazonaws.com (184.72.158.199)' can't be established.
ED25519 key fingerprint is SHA256:PeMPV0DBEICb2+4s9R4UjxYtxV8hnnk7Rhr7d8yWTjw.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-184-72-158-199.compute-1.amazonaws.com' (ED25519) to the list of known hosts.
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.8.0-1029-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

System information as of Wed May 28 11:18:38 UTC 2025

 System load:  0.0          Processes:      104
 Usage of /:   45.2% of 6.71GB  Users logged in:  0
 Memory usage: 43%
 Swap usage:   0%

* Ubuntu Pro delivers the most comprehensive open source security and
  compliance features.

  https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

49 updates can be applied immediately.
5 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Sun May 25 11:53:05 2025 from 194.82.216.84
```

Step 3: Installed R Programming Language

I. Updated package list:

```
ubuntu@ip-172-31-17-247:~$ sudo apt update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
[Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
49 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

Installed R:

```
ubuntu@ip-172-31-17-247:~$ sudo apt install r-base -y
Reading package lists... Done
Building dependency tree... Done
[Reading state information... Done
 r-base is already the newest version (4.3.3-2build2).
 0 upgraded, 0 newly installed, 0 to remove and 49 not upgraded.
```

Verified R installation:

```

ubuntu@ip-172-31-17-247:~$ R

R version 4.3.3 (2024-02-29) -- "Angel Food Cake"
[Copyright (C) 2024 The R Foundation for Statistical Computing
Platform: x86_64-pc-linux-gnu (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

```

Exited R:

```

> q()
Save workspace image? [y/n/c]: y
ubuntu@ip-172-31-17-247:~$ █

```

Successfully Installed R Programming Language (whole code in a screen)

```

Last login: Wed May 28 12:06:24 on ttys000
harisMac ~ % chmod 400 ~/Downloads/38142862-ec2-key.pem
harisMac ~ % ssh -v -i ~/Downloads/38142862-ec2-key.pem ubuntu@ec2-184-72-189-199.compute-1.amazonaws.com
The authenticity of host 'ec2-184-72-189-199.compute-1.amazonaws.com (184.72.189.199)' can't be established.
ED25519 key fingerprint is SHA256:PeMPVWDRBICb2+4s9RAUjxtVhmnk7Rn7z8BywTJw.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/fingerprint)? yes
Warning: Permanently added 'ec2-184-72-189-199.compute-1.amazonaws.com' (ED25519) to the list of known hosts.
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.8.0-1025-aws x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/pro

System information as of Wed May 28 11:18:38 UTC 2025
System load: 0.0      Processes:          104
Usage of /: 45.2% of 6.71GB  Users logged in:   0
Memory usage: 43%           IPv4 address for enx0: 172.31.17.247
Swap usage:  0%
* Ubuntu Pro delivers the most comprehensive open source security and
  compliance features.
  https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

49 updates can be applied immediately.
6 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Sun May 25 11:53:06 2025 from 104.82.226.84
ubuntu@ip-172-31-17-247:~$ sudo apt update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
49 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
49 packages can be upgraded. Run 'apt install r-base -y'
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
r-base:amd64 4.3.3-2build2 available, 4.3.3-2build2 installed,
 0 upgraded, 0 newly installed, 0 to remove and 49 not upgraded.
ubuntu@ip-172-31-17-247:~$ R
R version 4.3.3 (2024-02-29) -- "Angel Food Cake"
[Copyright (C) 2024 The R Foundation for Statistical Computing
Platform: x86_64-pc-linux-gnu (64-bit)

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R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.
> () 
Save workspace image? [y/n/c]: y
ubuntu@ip-172-31-17-247:~$ █

```

Step 4: Created the Custom AMI

Returned to the EC2 Dashboard.

Selected the instance 30143862-ec2-template-instance.

Clicked Actions > Image and templates > Create image.

The screenshot shows the AWS EC2 Instances page. A modal window at the top indicates that an AMI is currently being created from instance i-063a7b99b5d52dfa4. The main table lists one instance: 30143862-ec2-template-instance (i-063a7b99b5d52dfa4), which is running and has passed 2/2 checks. The Details tab is selected on the instance's configuration page, showing details like Instance ID (i-063a7b99b5d52dfa4), Public IP (34.227.224.187), and Private IP (172.31.17.139). Other tabs include Status and alarms, Monitoring, Security, Networking, Storage, and Tags.

Named the image: 30143862-r-instance.

The screenshot shows the 'Create image' page in the AWS EC2 console. The instance ID is i-063a7b99b5d52dfa4 (30143862-ec2-template-instance). The image name is set to 30143862-r-instance. The 'Reboot instance' checkbox is checked. Under 'Instance volumes', there is one volume listed: /dev/sda1 (EBS, 8 GiB, EBS General Purpose SSD, 3000 IOPS, Delete on termination, Encrypted). A note indicates that a snapshot will be taken during the creation process. Under 'Tags - optional', the 'Tag image and snapshots together' option is selected. The status bar at the bottom shows '© 2025, Amazon Web Services, Inc. or its affiliates.' and links for 'Privacy', 'Terms', and 'Cookie preferences'.

Verified image creation under Images > AMIs.

The screenshot shows the 'Amazon Machine Images (AMIs)' page in the AWS EC2 console. The sidebar shows navigation options like Instance Types, Images, Elastic Block Store, Network & Security, Load Balancing, Auto Scaling, and Settings. The main area displays a table for 'Amazon Machine Images (AMIs)'. There is one entry: Name: 30143862-r-instance, AMI ID: ami-090a30d6c6f3e67b, Source: 242567921539/30143862-r-instance, Owner: 242567921539, Visibility: Private, Status: Available. A note at the bottom says 'Select an AMI'.

Step 5: Enabled Termination Protection

The screenshot shows the AWS EC2 Instances page. On the left, there's a navigation sidebar with sections like Dashboard, EC2 Global View, Events, Instances (selected), Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Images, AMIs, AMI Catalog, Elastic Block Store, Volumes, Snapshots, Lifecycle Manager, Network & Security, Security Groups, Elastic IPs, Placement Groups, Key Pairs, Network Interfaces, and Load Balancing. The main area displays a table of instances, with one row selected: "30143862-ec2... i-063a7b99b5d52dfa4". A modal dialog titled "Change termination (deletion) protection" is open over the instance details. The dialog contains a message: "To prevent your instance from being accidentally deleted, you can enable termination protection for the instance. [Learn more](#)". It shows the instance ID "i-063a7b99b5d52dfa4 (30143862-ec2-template-instance)" and a "Termination protection" section with a checked checkbox labeled "Enable". Below the modal, the instance details are visible, including the instance ID, IPv4 address (34.227.224.187), state (Running), and type (t2.nano). The modal has "Cancel" and "Save" buttons.

Summary

An EC2 instance (30143862-ec2-template-instance) was launched and configured with the R programming language. A custom AMI (30143862-r-instance) was created from this instance. Termination protection was enabled to safeguard both the original and derived instances. This setup allows DataSafe Insurance to deploy R-ready virtual machines efficiently for their analytics tasks.

Step 1: Launch Instance from AMI

The screenshot shows the AWS EC2 console with the 'Images' section selected. A single AMI entry is listed:

Source	Owner	Visibility	Status	Creation date	Platform	Root device type
2567921539/30143862-r-instance	242567921539	Private	Available	2025/05/25 13:01 GMT+1	Linux/UNIX	ebs

Name: 30143862-datasafe-r-instance

Instance type: t2.nano

Key pair: Use 30143862-ec2-key.pem

The screenshot shows the 'Launch an instance' wizard. The configuration steps are as follows:

- Launch an instance**: Summary: Number of instances: 1.
- Software Image (AMI)**: Selected AMI: Custom AMI with R pre-installed (ami-090a30d66c6f5e67b).
- Virtual server type (instance type)**: Selected instance type: t2.nano.
- Firewall (security group)**: New security group.
- Storage (volumes)**: 1 volume(s) - 8 GiB.
- Additional costs apply for AMIs with pre-installed software**: A note about the free tier.
- Key pair (login)**: Key pair name: 30143862-ec2-key.
- Network settings**: Network: vpc-0e580302d087fae5f; Subnet: Subnet 1.
- Buttons at the bottom right**: Cancel, Launch instance, Preview code.

Network: Default VPC

Public IP: ENABLED

Security Group: Allow SSH (port 22)

The screenshot shows the AWS EC2 'Launch an instance' wizard. In the 'Network settings' section, a new security group named 'launch-wizard-2' is being created. It includes an inbound rule for SSH traffic from anywhere. In the 'Configure storage' section, an 8 GB gp3 volume is selected. On the right, the 'Summary' panel shows one instance being launched with a custom AMI and t2.nano instance type. A note about the free tier is displayed.

Step 2: Connect via SSH

```
Last login: Wed May 28 12:06:24 on ttys000
[hari@Mac ~ % chmod 400 ~/Downloads/30143862-ec2-key.pem
[hari@Mac ~ % ssh -i ~/Downloads/30143862-ec2-key.pem ubuntu@ec2-184-72-158-199.compute-1.amazonaws.com
The authenticity of host 'ec2-184-72-158-199.compute-1.amazonaws.com (184.72.158.199)' can't be established.
ED25519 key fingerprint is SHA256:PeMPV0DBEICb2+4s9R4UjxYtxV8hnk7Rhr7d8yWTjw.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-184-72-158-199.compute-1.amazonaws.com' (ED25519) to the list of known hosts.
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.8.0-1029-aws x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/pro

System information as of Wed May 28 11:18:38 UTC 2025

 System load: 0.0          Processes:          104
 Usage of /:   45.2% of 6.71GB   Users logged in:    0
 Memory usage: 43%           IPv4 address for enX0: 172.31.17.247
 Swap usage:  0%
 
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 compliance features.

 https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

49 updates can be applied immediately.
5 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Sun May 25 11:53:05 2025 from 194.82.216.84
```

Step 3: Create an R Script File

```
Last login: Wed May 28 13:02:12 on ttys000
[hari@Mac ~ % nano 30143862_script.R
hari@Mac ~ %
```

```
ubuntu@ip-172-31-17-247:~$ sudo apt update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
[Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
49 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

```
ubuntu@ip-172-31-17-247:~$ sudo apt install r-base -y
Reading package lists... Done
Building dependency tree... Done
[Reading state information... Done
 r-base is already the newest version (4.3.3-2build2).
0 upgraded, 0 newly installed, 0 to remove and 49 not upgraded.
```

```
ubuntu@ip-172-31-17-247:~$ R

R version 4.3.3 (2024-02-29) -- "Angel Food Cake"
[Copyright (C) 2024 The R Foundation for Statistical Computing
Platform: x86_64-pc-linux-gnu (64-bit)

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R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.
```

```
> q()
Save workspace image? [y/n/c]: y
ubuntu@ip-172-31-17-247:~$
```

```
Last login: Wed May 28 11:18:24 on ttys000
har10Mac ~ % chmod 400 ~/Downloads/30143862-e2-key.pem
har10Mac ~ % ssh -i ~/Downloads/30143862-e2-key.pem ubuntu@ec2-184-72-199-199.compute-1.amazonaws.com
The authenticity of host 'ec2-184-72-199-199.compute-1.amazonaws.com (184.72.198.199)' can't be established.
ED25519 key fingerprint is SHA256:PaHgWYU1co24sR4dJxJtxvDmnk7mTc7d0yfT%.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-184-72-199-199.compute-1.amazonaws.com' (ED25519) to the list of known hosts.
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.6.0-1025-aws x86_64)

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 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/pro

System information as of Wed May 28 11:18:38 UTC 2024

System load: 0.0      Processes:          104
Usage of /:  45.2% of 6.71GB  Users logged in:   0
Memory usage: 43%      IPv4 address for enx0: 172.31.17.247
Swap usage:  0%

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5 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Sun May 28 11:18:08 2024 from 194.82.216.84
ubuntu@ip-172-31-17-247:~ % sudo apt update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu focal-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
49 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@ip-172-31-17-247:~ % sudo apt install r-base -y
Reading package lists... Done
Building dependency tree... Done
Building state information... Done
Reading state information... Done
r-base is already the newest version (4.3.3-2Build2).
0 B of 0 B downloaded, 0 to remove and 49 not upgraded.
ubuntu@ip-172-31-17-247:~ % R
R version 4.3.3 (2024-02-29) -- "Angel Food Cake"
Copyright (C) 2024 The R Foundation for Statistical Computing
Platform: x86_64-pc-linux-gnu (64-bit)

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Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

> q()
Save workspace image? [y/n/c]: y
ubuntu@ip-172-31-17-247:~ %
```

```
File: 30143862_script.R
#at('30143862. R has been installed successfully for DataSafe Insurance Analytics!\n')

Get Help      WriteOut      Read File      Prev Pg      Cut Text      Cur Pos
Exit         Justify       Where Is      Next Pg      UnCut Text     To Spell
```

Step 4: Run the Script with R

```
[hari@Mac ~ % ssh -i ~/Downloads/30143862-ec2-key.pem ubuntu@3.80.127.201
The authenticity of host '3.80.127.201 (3.80.127.201)' can't be established.
ED25519 key fingerprint is SHA256:4y1WGgBaSJ2rdfQCcNZh47vv5L9UjpVQb/I6hrJDp2Y.
This host key is known by the following other names/addresses:
  ~/.ssh/known_hosts:1: ec2-34-227-224-187.compute-1.amazonaws.com
  ~/.ssh/known_hosts:4: 34.227.224.187
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '3.80.127.201' (ED25519) to the list of known hosts.
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.8.0-1029-aws x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/pro

System information as of Wed May 28 12:24:30 UTC 2025

System load: 0.01          Processes: 108
Usage of /: 45.2% of 6.71GB Users logged in: 0
Memory usage: 43%          IPv4 address for enX0: 172.31.17.139
Swap usage: 0%

* Ubuntu Pro delivers the most comprehensive open source security and
  compliance features.

https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

44 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Sun May 25 13:32:43 2025 from 194.82.216.84
[ubuntu@ip-172-31-17-139:~$ nano 30143862_script.R
[ubuntu@ip-172-31-17-139:~$ Rscript 30143862_script.R
30143862. R has been installed successfully for DataSafe Insurance Analytics!
ubuntu@ip-172-31-17-139:~$ ]
```

Step 5: Enable Termination Protection

The screenshot shows the AWS EC2 Instances page with three instances listed:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS
30143862-ec2-template-instance	i-065a7b99b5d52dfa4	Running	t2.nano	2/2 checks passed	View alarms	us-east-1b	ec2-3-80-127-201.com.
30143862-datasafe-r-instance	i-08057f2ef13edf391	Stopped	t2.nano	-	View alarms	us-east-1b	-
30143862-datasafe-web-instance	i-006839652d2ae0044	Stopped	t2.nano	-	View alarms	us-east-1a	-

A modal dialog titled "Change termination (deletion) protection" is open over the second instance. The dialog contains the following text:

To prevent your instance from being accidentally deleted, you can enable termination protection for the instance. [Learn more](#)

Instance ID: [i-08057f2ef13edf391 \(30143862-datasafe-r-instance\)](#)

Termination protection: Enable

At the bottom right of the dialog are "Cancel" and "Save" buttons.

The main page also includes a sidebar with navigation links such as Dashboard, EC2 Global View, Events, Instances, Images, Elastic Block Store, Network & Security, and Load Balancing.