Assignment 1 - Mini Network

Overview  
Assignment to build a mini-network for a business based on the two figures in the problem using Cloud Formation.  
Infrastructure as Code.   
  
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Github Repository: <https://github.com/L00177579/CFAssignment1>

For IP address context on the figures below containing EC2 instances:

JumpBox:

* Public IP: 3.81.80.175
* Private IP: 10.10.3.55

FrontEnd:

* Public IP: 18.212.146.92
* Private IP: 10.10.4.26

Application:

* Public IP: None
* Private IP: 10.10.1.76

Database:

* Public IP: None
* Private IP: 10.10.1.92

For the figures on checking the IP Address:

* NAT Gateway Elastic Public IP: 3.212.192.247
* Front End Public IP: 3.93.2.66
* Front End Private IP: 10.10.4.18
* Database Private IP: 10.10.1.231

Conclusion  
The purpose of this assignment was to implement a mini network for a business based on the supplied figures. In this conclusion I will discuss the research, best practices, templating, security, testing, issues, and high availability applied to the resulting network. Additionally I will briefly touch on a comparison to a competitor product in Azure: Bicep/ARM.

References & Bibliography  
*Compare Repositories - OpenHub* (2022) Available at: <https://www.openhub.net/repositories/compare>   
(Accessed 22 October 2022).

Kadivar, N (2018) *Top 10 Version Control Systems*. Available at: <https://hackernoon.com/top-10-version-control-systems-4d314cf7adea>  
(Accessed 21 October 2022).

Appendices  
  
Figure 1 - EC2 Instances, the top two instances have public IPV4 addresses.

  
Figure 2 - At the bottom the main stack, above that the nested stacks.

  
Figure 3 - SSH into Jump Server EC2 instance using PuTTY and private key.

  
Figure 4 - Trying to SSH onto the other public IP address on the Front End EC2 instance.

  
Figure 5 - Using scp command to copy the private key onto the Jump Box for use in connecting to other EC2 instances.

  
Figure 6 - SSH into another EC2 instance from the jump box.

  
Figure 7 - Using curl to access HTTP public resources.

  
Figure 8 - curl command doesn't complete on Jump Server due to ports 80/443 not being open.

  
Figure 9 - Front End EC2 instance Apache webserver accessing Database EC2 Instance MySQL database using port 3306.

  
Figure 10 - Using curl to return the public IP Address of the front end EC2 instance. In this case it has it's own public IP.

  
Figure 11 - Elastic IP Assigned to the NAT Gateway

  
Figure 12 - Using curl to return the public IP Address of the database EC2 instance.  
In this case it's going through the NAT Gateway.