Department of Electrical and Computer Engineering
Cloud Computing EE 655/755

Assignment #4
Virtual Machine, Cloud DB, and REST API

Due Date: Friday, April 26, 2024

1. Create a Virtual Machine (VM) on Azure
2. Install Node.js on the Virtual Machine. Install additional tools (if necessary), such as text editor
3. Write a NodeJS program to implement a REST API using the Express server to handle REST API requests with the following endpoints:

    - Create a new product:
      Method: POST
      Endpoint: /products
      Description: Adds a new product to the inventory. The request body should include the name, price, and quantity of the product.

    - Retrieve all products:
      Method: GET
      Endpoint: /products
      Description: Retrieves a list of all products in the inventory. This can also support query parameters to filter the list based on certain criteria, such as price ranges or quantities.

    - Retrieve a single product
      Method: GET
      Endpoint: /products/:id
      Description: Retrieves detailed information about a specific product using its unique identifier (e.g., product ID).

- Update a product:
  Method: PUT
  Endpoint: /products/:id
  Description: Updates the details of an existing product, such as changing its name, price, or quantity. The request body should include the attributes of the product that are to be updated.

- Delete a product
  Method: DELETE
  Endpoint: /products/:id
  Description: Removes a product from the inventory using its unique identifier.

4. Create an SQL Database on Azure that has a table called products with the following coluns: name, price, and quantity.
5. Ensure that the database is only accessible from the Virtual Machine.
6. Test the API Using Postman from your PC to make requests to the public IP of the VM. Validate responses for CRUD operations on the inventory.

Submission Requirements:

- Provide the source code for the Node.js application.
- Include screenshots of the Postman tests.
- Submit a brief report describing the functionality of the API and any challenges encountered.

Evaluation Criteria:

- Correct implementation of the virtual machine and network settings.
- Functionality of the Node.js application and REST API.
- Proper configuration and security of the SQL database.
- Clarity and completeness of the documentation and tests.