National College of Ireland

Configuration Manual

MSc Research Project
Cloud Computing

Vinay Gunda
Student ID: x23302712

School of Computing
National College of Ireland

Supervisor: Shreyas Setlur Arun

National College of Ireland
Project Submission Sheet
School of Computing

Student Name:	Vinay Gunda
Student ID:	x23302712
Programme:	MSc cloud
Year:	2024-2025
Module:	MSc Research Project
Supervisor:	Shreyas Setlur Arun
Submission Due Date:	11/08/2025
Project Title:	A secure and Efficient Hybrid Cryptographic Framework For Mobile Cloud Systems Using ChaCha20 and Elliptic Curve Cryptographic
Word Count:	1285
Page Count:	13

I hereby certify that the information contained in this (my submission) is information pertaining to research I conducted for this project. All information other than my own contribution will be fully referenced and listed in the relevant bibliography section at the rear of the project.

ALL internet material must be referenced in the bibliography section. Students are required to use the Referencing Standard specified in the report template. To use other author's written or electronic work is illegal (plagiarism) and may result in disciplinary action.

Signature:	Vinay Gunda
Date:	11/08/2025

PLEASE READ THE FOLLOWING INSTRUCTIONS AND CHECKLIST:

Attach a completed copy of this sheet to each project (including multiple copies).	☐
Attach a Moodle submission receipt of the online project submission, to each project (including multiple copies).	☐
You must ensure that you retain a HARD COPY of the project, both for your own reference and in case a project is lost or mislaid. It is not sufficient to keep a copy on computer.	☐

Assignments that are submitted to the Programme Coordinator office must be placed into the assignment box located outside the office.

Office Use Only	
Signature:	
Date:	
Penalty Applied (if applicable):	

Configuration Manual

VINAY GUNDA
X23302712

This guide will help new users set up and run the project. It provides clear, step-by-step instructions for downloading project files, setting up your environment, and running the project. From this guide by following these steps, you can create the project environment or use it as a starting point for your own research.

1. System Requirements
Here, the section describes all the hardware requirements, software of the system, and additional tools needed for this project.

1.1 Hardware Requirements
- **Processor:** Intel(R) Core(TM) i5-2211 CPU @ 1.60GHz 2.11 GHz or similar.
- **Memory (RAM):** 16.0 GB.
- **Storage:** 1.0 TB SSD.

1.2 Software Requirements
- **Operating System:** Microsoft Windows 11.
- **Java Development Kit (JDK):** Version 21.
- **Microsoft SQL Server Management Studio:** Version 22.2.0.

1.3 Tools
- **Android Studio:** Meerkat 2024.3.1.
- **Android Virtual Device (AVD):** Version 36.10.
- **Gradle:** Version 8.10.3.
- **Visual Studio:** Version 2022.

2. Installation and Setup
This section provides detailed instructions for installing the necessary software and setting up the application.

2.1 Installing Android Studio

Android Studio is used for developing the mobile application.
1. Download Android Studio:
Go to the official Android Studio Download Page.
Click the download button to get the installer.
2. Install Android Studio:
Run the downloaded installer.
Choose the location where you want to install Android Studio.
Select the components you want to install (the default options are usually recommended).
Click "Finish" to complete the installation.
3. Configuration:
Open Android Studio.
Follow the setup wizard to complete the initial configuration.
Download any recommended SDK (Software Development Kit) components.
Verify that the Android Virtual Device (AVD) is set up correctly. This allows you to run a virtual Android device for testing.

2.2 Installing Microsoft SQL Server Management Studio

(SSMS) SSMS is used to manage your SQL Server databases.
1. Download The SSMS:

- Visit the official Download Page of SSMS.

- **Download SSMS.**

2. Install SSMS:

- Follow the instructions in the **setup.**

- Click Install and wait for the installation process to finish.

3. Connect to the SQL Server:

- **Enter name** of your SQL server.

- Choose your authentication method (e.g., Windows or SQL Server Authentication) .

- Connect to test and confirm your connection.

2.3 Install V S Code

Visual Studio 2022 is used for the backend API development.

1. **Download V S Code:**

- Visit the official **V S Code Download Page.**

- Click the download button for Visual Studio.

2. Install V S Code:

- Run the downloaded installer.

- When prompted, select the necessary **workloads** for this project. Make sure to choose **ASP.NET and** the **web Technology.**

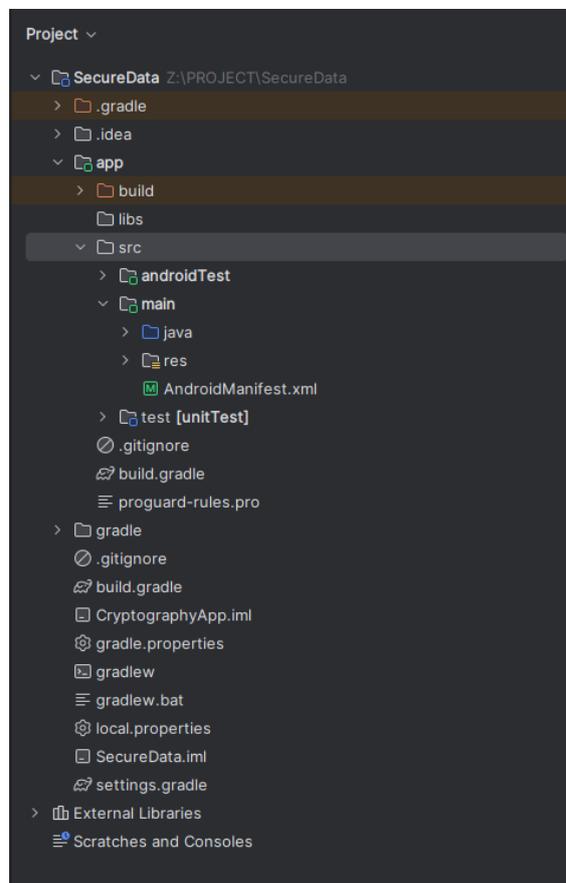- Click "Install" and wait for the installation to complete.

3. Application Setup

Figure 1.1: File List

This section covers setting up the project application itself.

1. Go to **Android Studio:**

Open the project folder in Android Studio.

2. **Create an Android Virtual Device (AVD):**

- In the Android Studio, open manager from the right toolbar.

3

- Click the "+" icon to implement or create a virtual device.

- Select a device (e.g., Pixel 7) and choose the Android version image you want to use.

- Click "Finish."

- Your new AVD will appear in the Device Manager.

- Select and click the "Start" (▶) button to launch the emulator.
3. **Log In to the Application:**

- Once the application opens on the emulator, **log in using** your **password. If** you are a new user, you will need to register first and then log in.
4. **Upload Files to Cloud:**

- On the application's dashboard, you will see two options.

- After uploading, you can view and download the file.
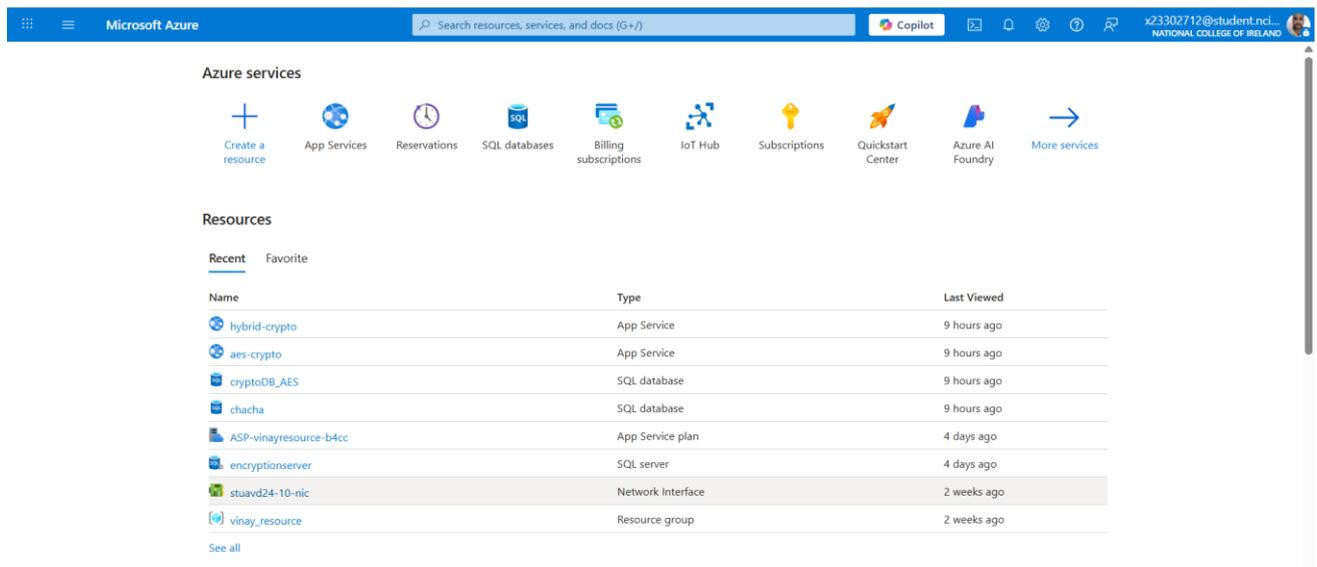
Figure 1.2: Azure DashBoard

4. Server and Database Setup
This section details the setup for the server and database.
1. **Create a SQL Database Server:**

- (If you haven't already) Download Microsoft SQL Server Management Studio (SSMS), **Follow Section** 2.2.

- Create a SQL Database Server.

4

2. **View User Data:**

- All submitted user information and files can be viewed in the database.
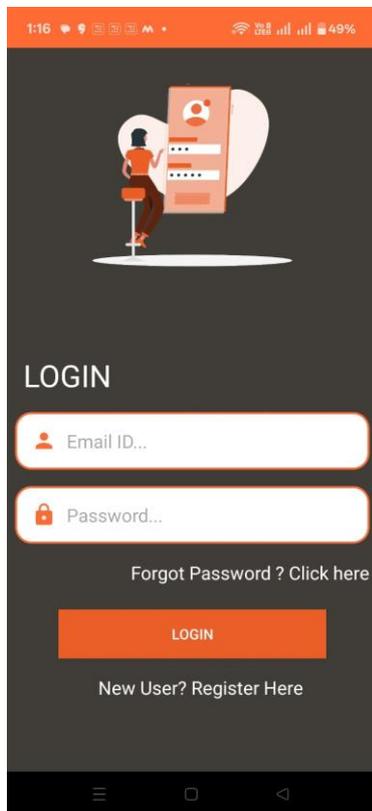
Figure 1.3: User Login
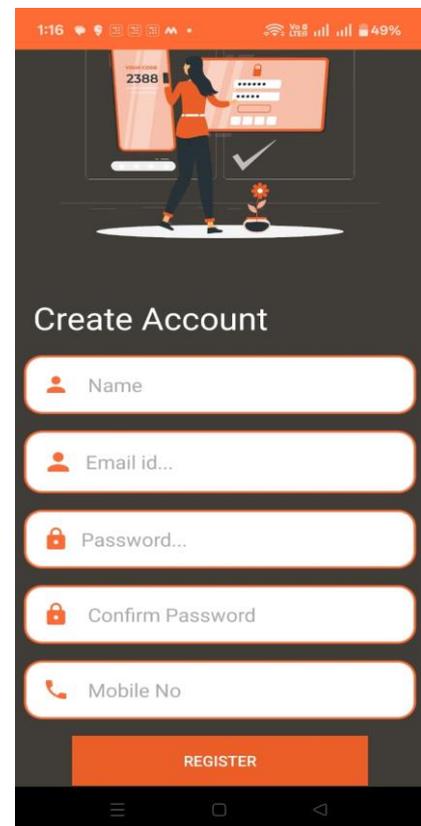
Figure 1.4: Registration

5. WebService API Setup

This project uses a RESTful API to connect the mobile application to the **cloud**.

1. **Backend Script:**

- There is backend script file, named cryptographyServices , is included **in the project**'s zip filr.

- open this folder, ensure you have Visual Studio 2022 installed (refer to Section 2.3).

- Prior to running the API, make sure the libraries are downloaded on your system.

2. **Run the API Service:**

- Click the **Start button** to run the API service.

- **The Web.config** file have **the configuration** settings **for connecting** to the database.
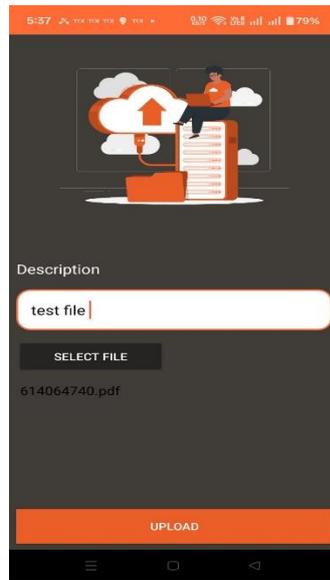
Figure 1.5: Home   Figure1.6 : Upload Data   Figure 1.7: Download Data
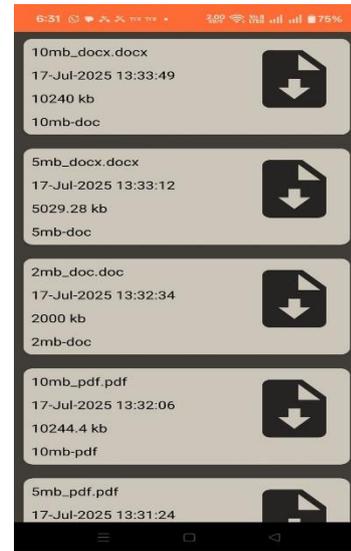
6. Deployment on Cloud (Azure)

This section explains how to deploy the project on the Azure Cloud platform.

1. Create an Azure Account:

- Create an account in the Azure Cloud your personal or institutional email.

- Once created, the Azure dashboard will display various cloud services offered by Microsoft Azure.

2. Configure App Service:

- Configure the App service within Azure.

6
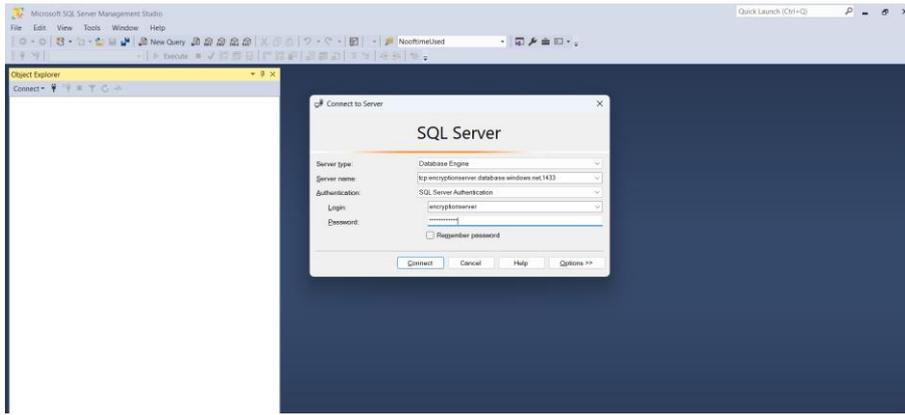
Figure 1.8:   SQL Server
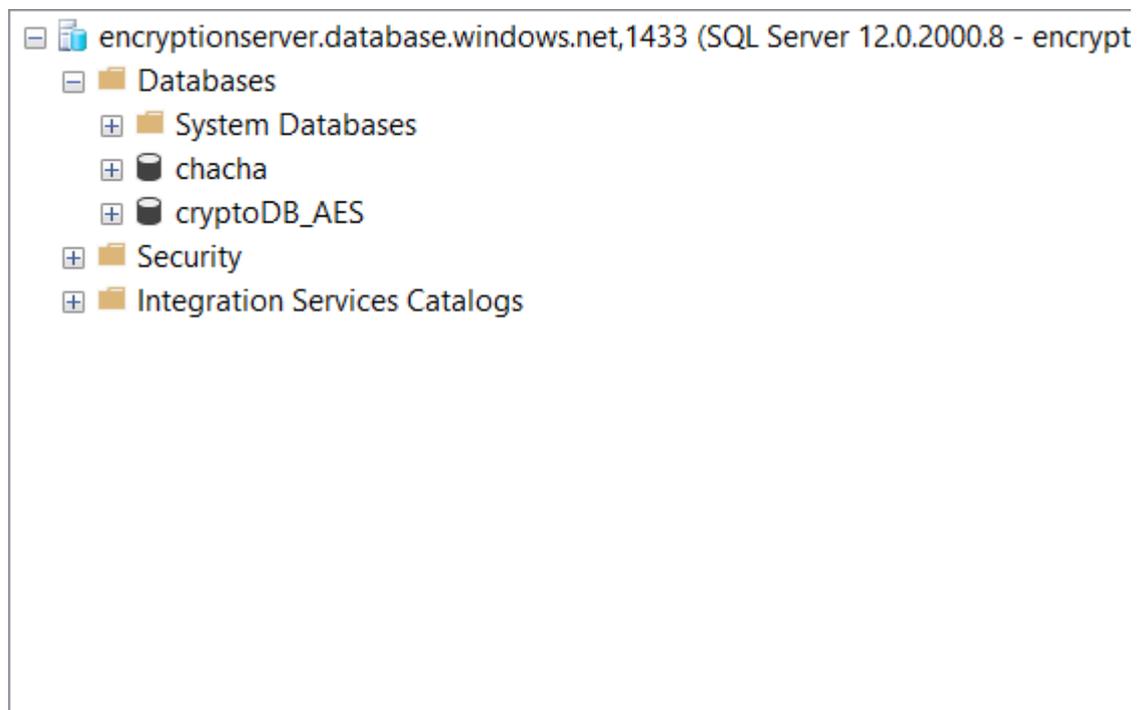
1. Databases on the SQL Server.

```
SQLQuery1.sql - tcp...ryptionserver (78))  ⊐ ×
⊟SELECT TOP (1000) [UserID]
       ,[Name]
       ,[EmailID]
       ,[Password]
       ,[MobileNo]
   FROM [dbo].[mstUser]
```

100 %   ▾ ◂

⊞ Results ▤ Messages

	UserID	Name	EmailID	Password	MobileNo
1	1	test	sbomble58@gmail.com	test@123	9594309676
2	2	raju	gvnlv7768@gmail.com	gunda123	9951776892
3	3	Charan	charancherry5490@gmail.com	123456789	6281657647
4	4	vinay	vinaygunda7768@gmail.com	223344	8978947566
5	5	gunda	gunda9951@gmail.com	995177	8974563210

Figure 1.9: table

8

Figure 1.10: Data table

3. **API Web Service URL:**

- The API Web Service URL will be provided for use in the application.

4. **Manage SQL Database in Azure:**

- **Click on it** to view the data stored within.
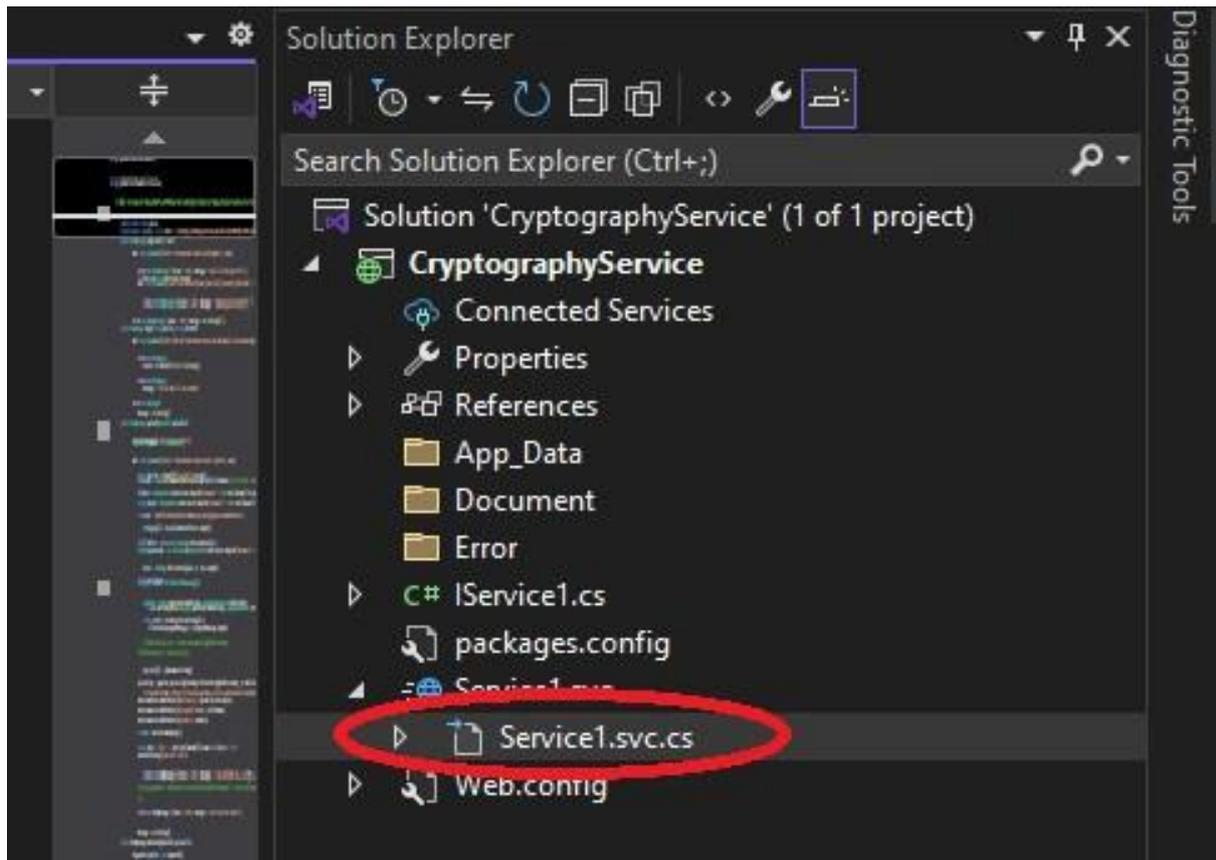

Figure 1.11: Libraries

Figure 1.12: WebAPI service

Create Web App ...

Basics Database Deployment Networking Monitor + secure Tags Review + create

App Service Web Apps lets you quickly build, deploy, and scale enterprise-grade web, mobile, and API apps running on any platform. Meet rigorous performance, scalability, security and compliance requirements while using a fully managed platform to perform infrastructure maintenance. Learn more ⧉

Project Details

Select a subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * ⓘ

| Azure for Students | ⌄ |

Resource Group * ⓘ

| (New) Resource group | ⌄ |

Create new

Instance Details

Name

| Web App name |

.azurewebsites.net

🔵 Secure unique default hostname on. More about this update ⧉

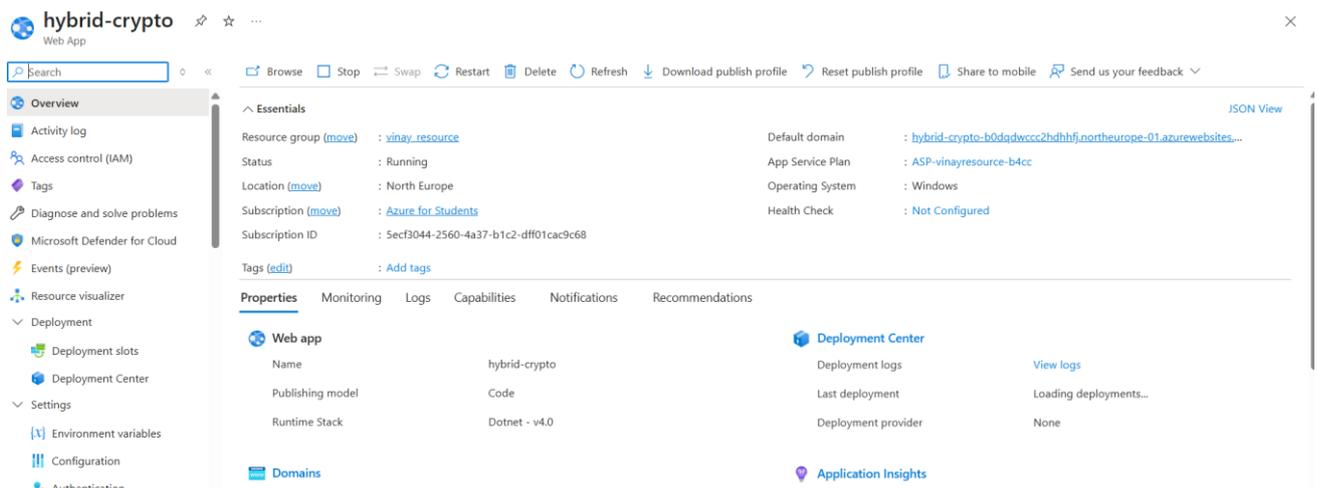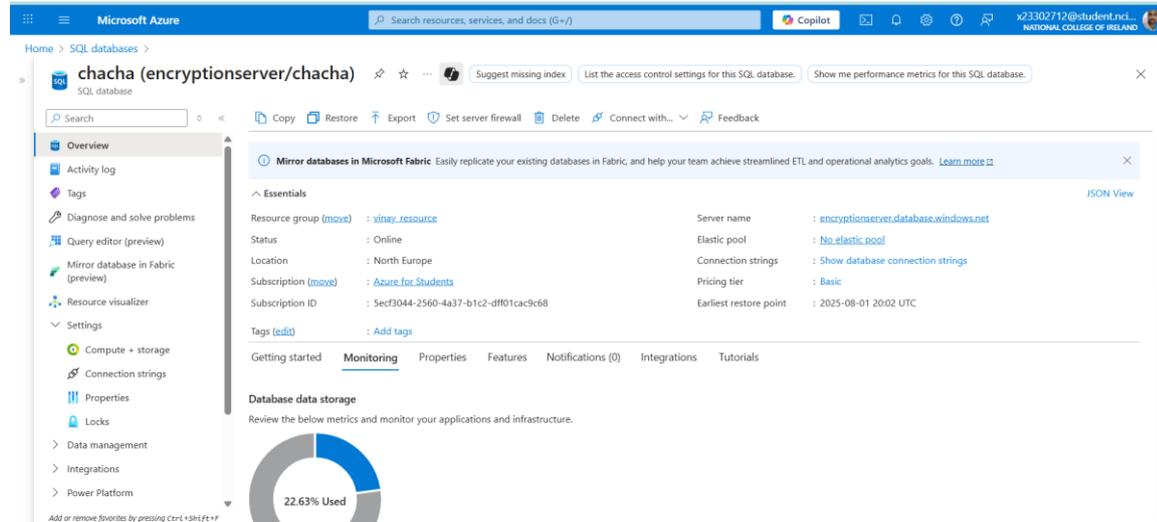Publish *   ⦿ Code   ◯ Container

Figure 1.13: App Service Configuration

Figure 1.14: Domain URL

Create SQL Server:

Figure 1.15: Azure SQL database Dashboard

References

Android Developers (2024). Android studio - developer tools, https://developer. android.com/studio. Accessed: 2024-12-11.

Gradle (2024). Gradle 8.10.2 binary distribution, https://services.gradle.org/ distributions/gradle-8.10.2-bin.zip. Accessed: 2024-12-11.

Microsoft (2024). Visual studio - code editing. redefined., https://visualstudio. microsoft.com/. Accessed: 2024-12-11.

Microsoft Learn (2024). Download sql server management studio (ssms), https://learn.microsoft.com/en-us/sql/ssms/ download-sql-server-management-studio-ssms?view=sql-server-ver16. Accessed: 2024-12-11.

Oracle (2024). Jdk 20 - linux x64 binary, https://download.oracle.com/java/20/ latest/jdk-20_linux-x64_bin.tar.gz. Accessed: 2024-12-11.