

Exploring Hybrid Encryption for Enhanced Security of Electronic Health Record in Cloud Environment

1 Introduction

The purpose of this configuration manual is to offer the short summary of the necessary requirements for building this web application application. It outlines the systematic steps required to successfully develop, run, test, replicate the project. The next sections of this document are organized as follows: Module 2 will be covering the system configuration, Module 3 detailed about the creation of the database and tables, Module 4 explains database connection through the web.config file, and Module 5 addresses deployment on Azure.

2 System Configuration

2.1 Visual Studio & Setup of ASP .Net Environment

C# is the programming language which is utilized for developing the numerous web applications. This project code is developed using Visual Studio 2022 Integrated Development Environment (IDE). Visual Studio 2022 can be freely downloaded and installed from here.

<https://visualstudio.microsoft.com/vs/>

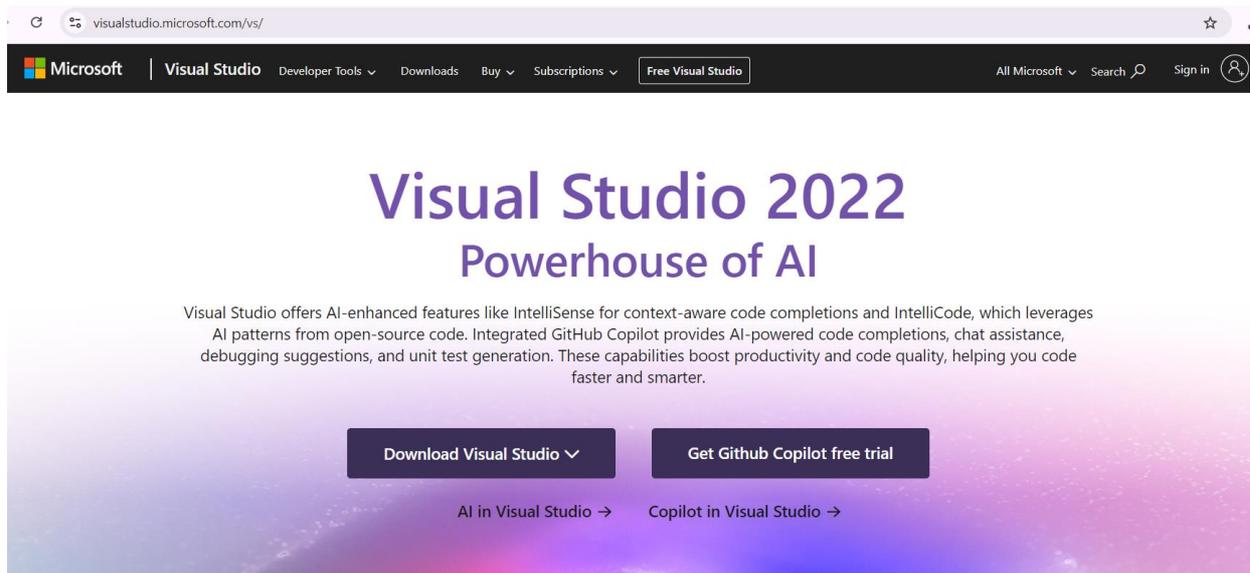


Figure 1: Microsoft Visual Studio official website

It was chosen because it is a free, open-source as well as user-friendly IDE that supports multiple platforms and also allows programming in various languages such as C#, Python, JavaScript, etc. The recommended text editor is Visual Studio 2022 with version 17.10.5. The ASP.NET Framework 4.8 should be downloaded to compile and run the web application.

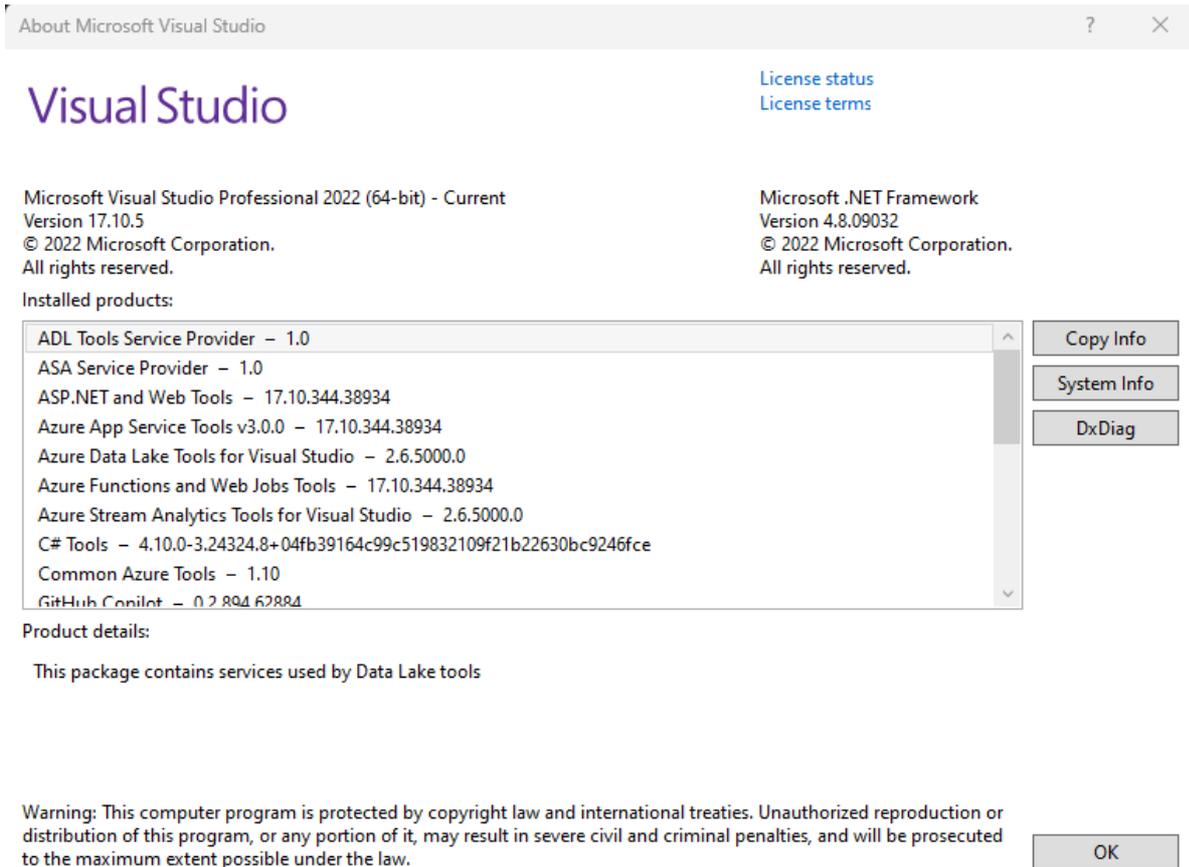


Figure 2: Visual Studio Professional 2022

2.2 Database Server Setup

The project utilizes a Microsoft SQL database to store the application’s data. This technology allows the application to connect - both local as well as cloud-based data storage. The version of Microsoft SQL Management Studio used is 20.2. To establish a connection with the database the user must enter authentication credentials. Various open source versions of the SQL Management tool are available for free download online.

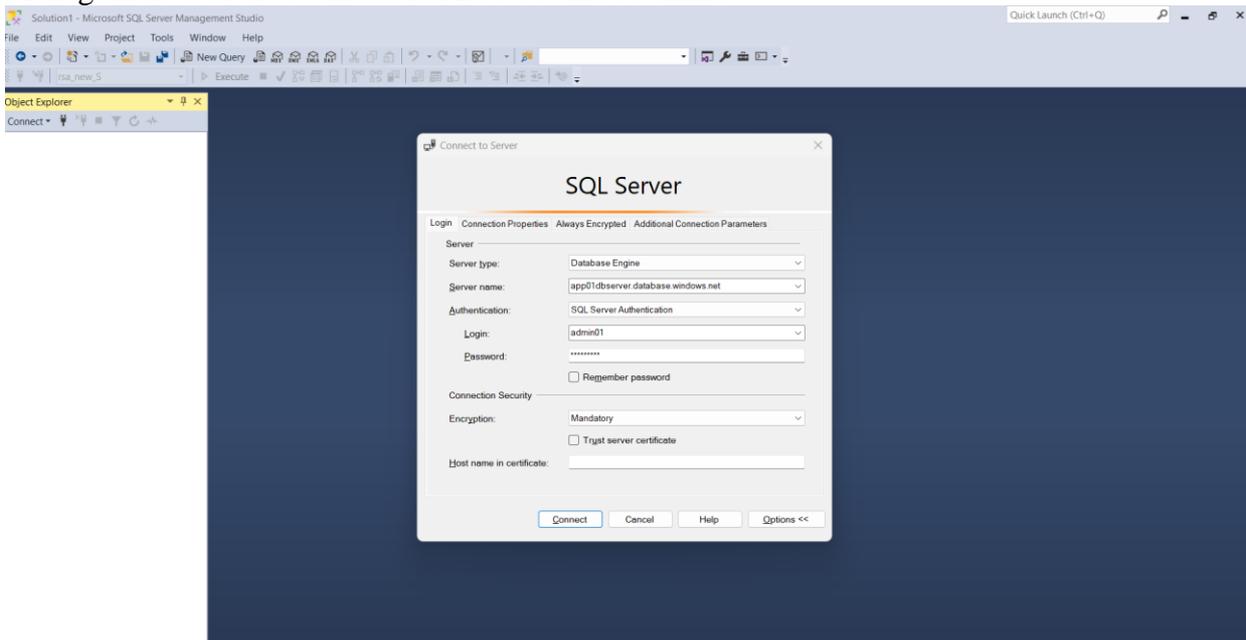


Figure 3: SQL Server Management Studio

2.3 Hardware specifications

- RAM: 8 GB
- Processor: Intel Core i5
- Hard Disk Drive: 10GB HDD

2.4 Software specifications

- OS Used: Microsoft Windows 11
- Language: C# , ASP.Net framework
- IDE used: Visual Studio 2022

3 Database & Tables Creation

In the code repository on GitHub, the folder DB contains **new_latest.sql** file. Using that database and tables are created on MS SQL Server.

https://github.com/Rashmi-coder125/PGP-Encryption_TEST

4 Database connection using web.config

The application connects to local as well as the cloud databases using a web.config file.

```
<configuration>
  <appSettings>
    <add key="ChartImageHandler" value="storage=file;timeout=20;dir=c:\TempImageFiles\"/>
  </appSettings>
  <connectionStrings>
    <add name="dbConnection" connectionString="Data Source=app01dbserver.database.windows.net;Initial Catalog=psa_new_S;User ID=admin01;Password=Admin@123;Encrypt=True;TrustServerCertificate=True" providerName="System.Data.SqlClient" />
  </connectionStrings>
</configuration>
```

Figure 4: Database Connection web.config file

5 Cloud Deployment

5.1 New Web App Creation on Azure

This web application is deployed into the Azure cloud. Windows Azure supports development in nearly any language & also offers cloud based public services. This application utilizes the Windows Azure cloud service. Firstly, log in to the cloud environment. Select the App Service to create a new application in the Azure cloud. Once the application is deployed a cloud access URL is provided.

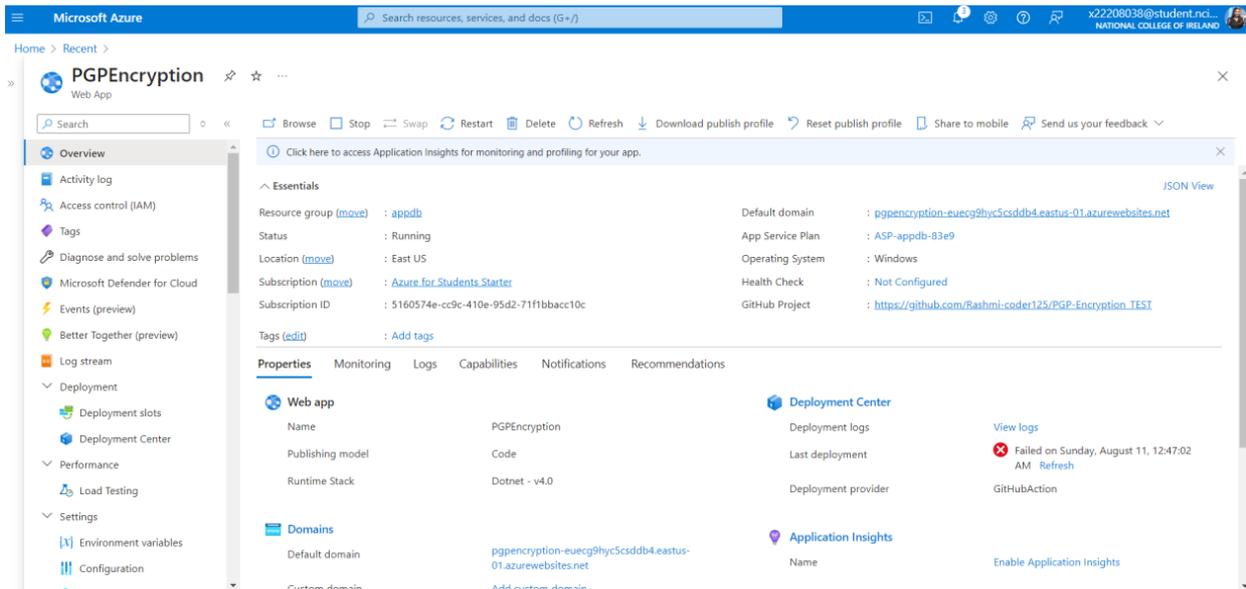


Figure 5: Application Deployment in Cloud

5.2 Create Cloud Database

The screenshot below illustrates the option to create the database in the Azure Cloud. Note that the database connection details varies on the different cloud platforms.

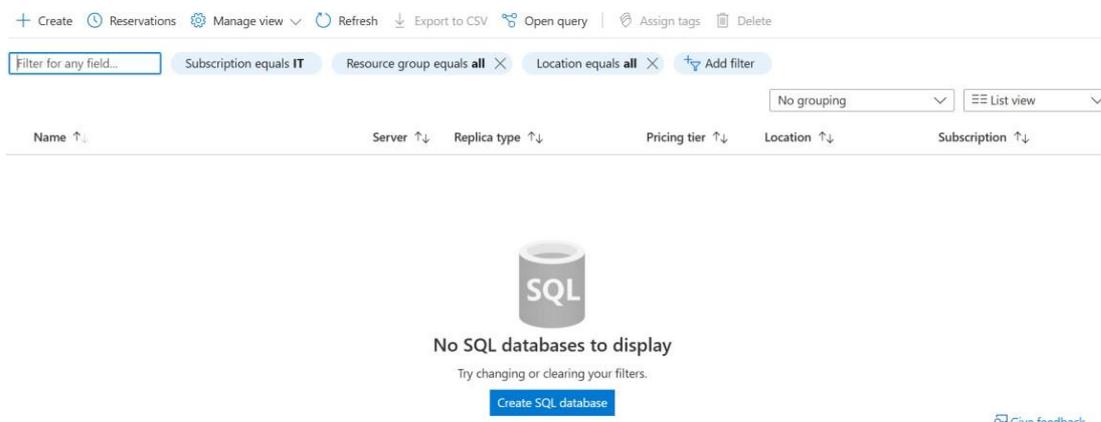


Figure 6: Create Cloud Database

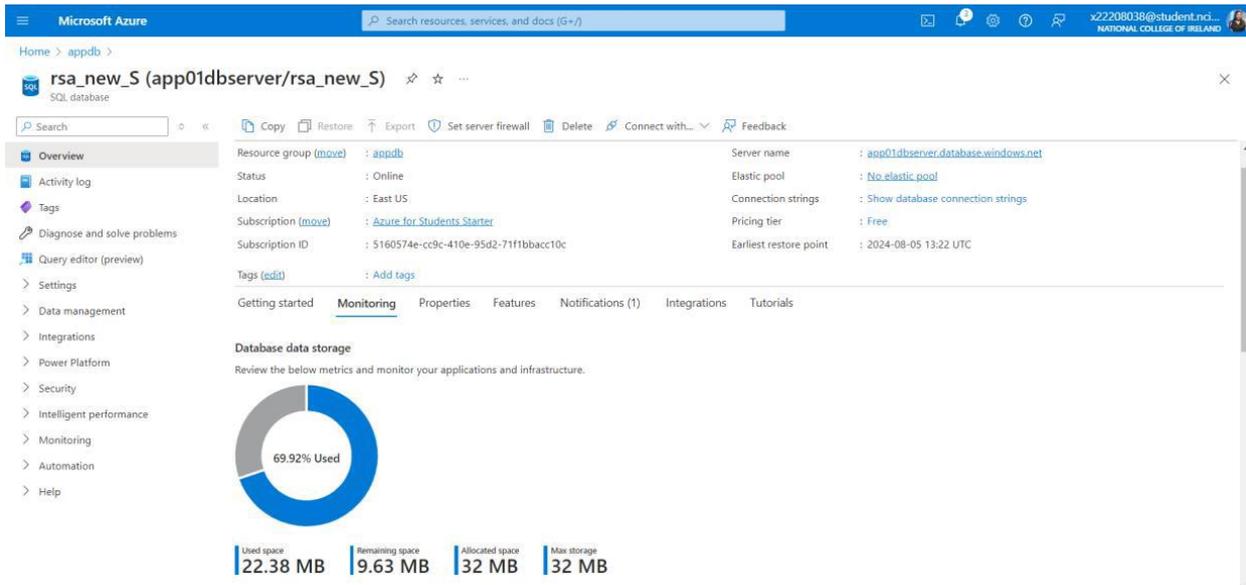


Figure 7: Database created for Application in Cloud

5.3 Publish Updated details in Cloud Environment

Any updates to this current codebase should also be published to the cloud. Local changes can be updated in the azure cloud environment. Figures 7 & 8 below illustrate the option to publish changes from a local machine to the azure cloud environment.

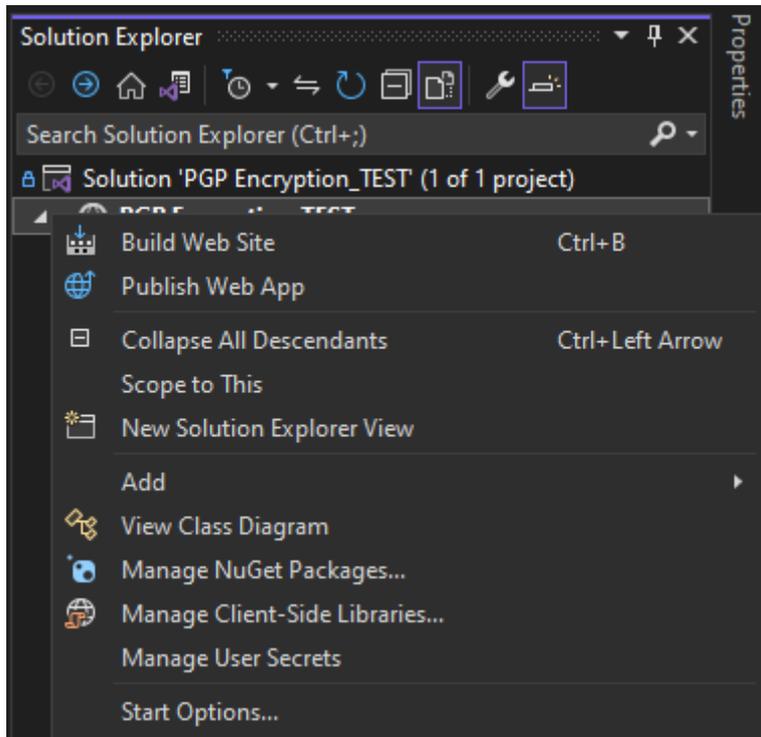


Figure 8: Publish code changes

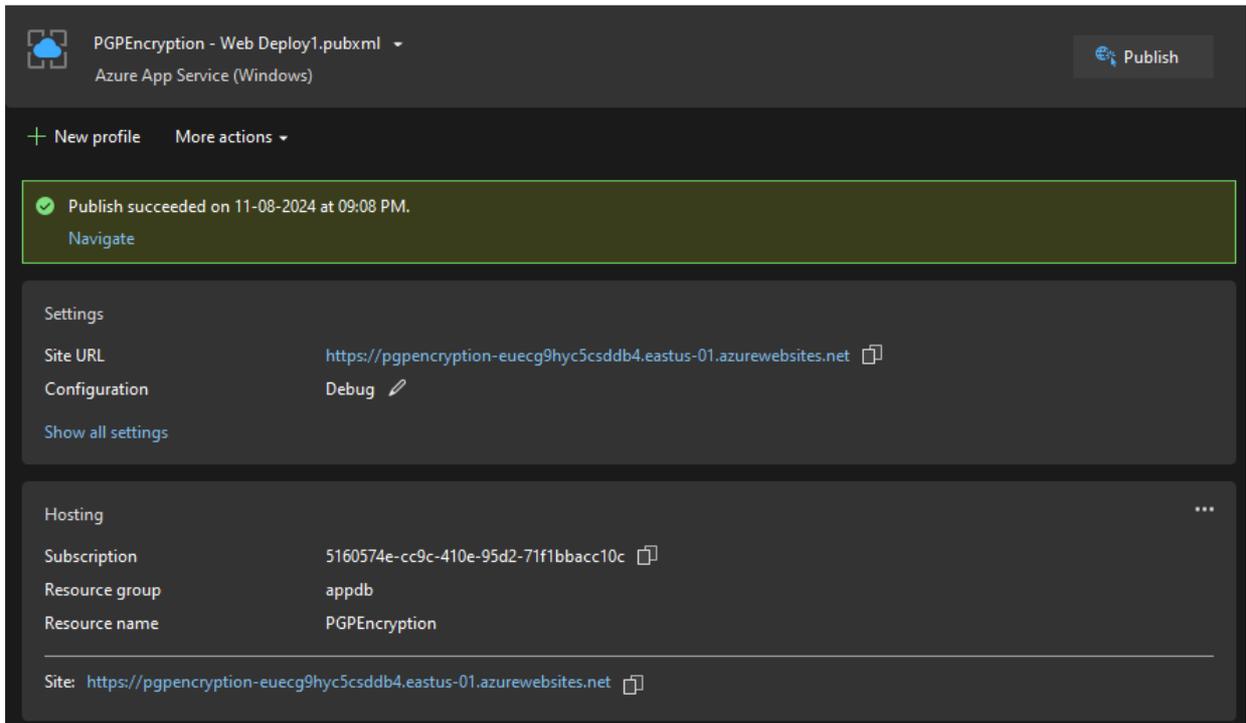


Figure 9: Publish Code Changes in Cloud