**VIETNAM NATIONAL UNIVERSITY HO CHI MINH CITY**

**UNIVERSITY OF INFORMATION TECHNOLOGY**

----------ଓ๑ଌ----------

# FINAL REPORT

## Topic:

## Deploy A Web Application To Microsoft Azure

Lecturer: **Tran Thi Dung**

Group: 12

Group members:

1. Le Minh Nha – 20521593
2. Phan Ngoc Yen Nhi – 20521821
3. Nguyen Tu Ngoc – 20521665

Course: NT132.N12.ATCL

Ho Chi Minh City, 21 December 2022

# TABLE OF CONTENT

# TABLE OF FIGURE

# I. INTRODUCTION

## I.1. Overview

### *I.1.1. Microsoft Azure*

Microsoft Azure is a cloud computing platform operated by Microsoft for building, testing, deploying, and managing applications and services via Microsoft-managed data centers. It provides three main types of services: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS).

Microsoft Azure provides more than 200 products and services for three main domains: computing, networking, and storage. It also supports many different programming languages, tools, and frameworks.

### *I.1.2. Web Application*

A Web application is an application program that is stored on a remote server and delivered over the Internet through a browser interface.

The salient features of a web application:

+ Be interactive, adaptive, and constant
+ Be able to solve specific problems, even if just looking for information
+ Has a content management system

A web application should adopt abilities such as usability, adaptability, agility, mobility,…

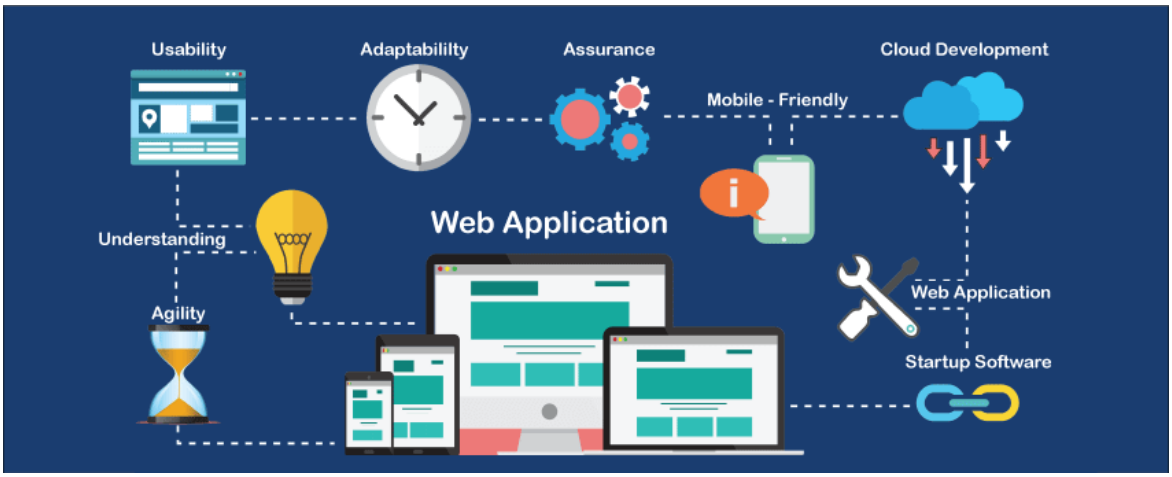


***Figure 1. Features of a web application***

## I.2. Components

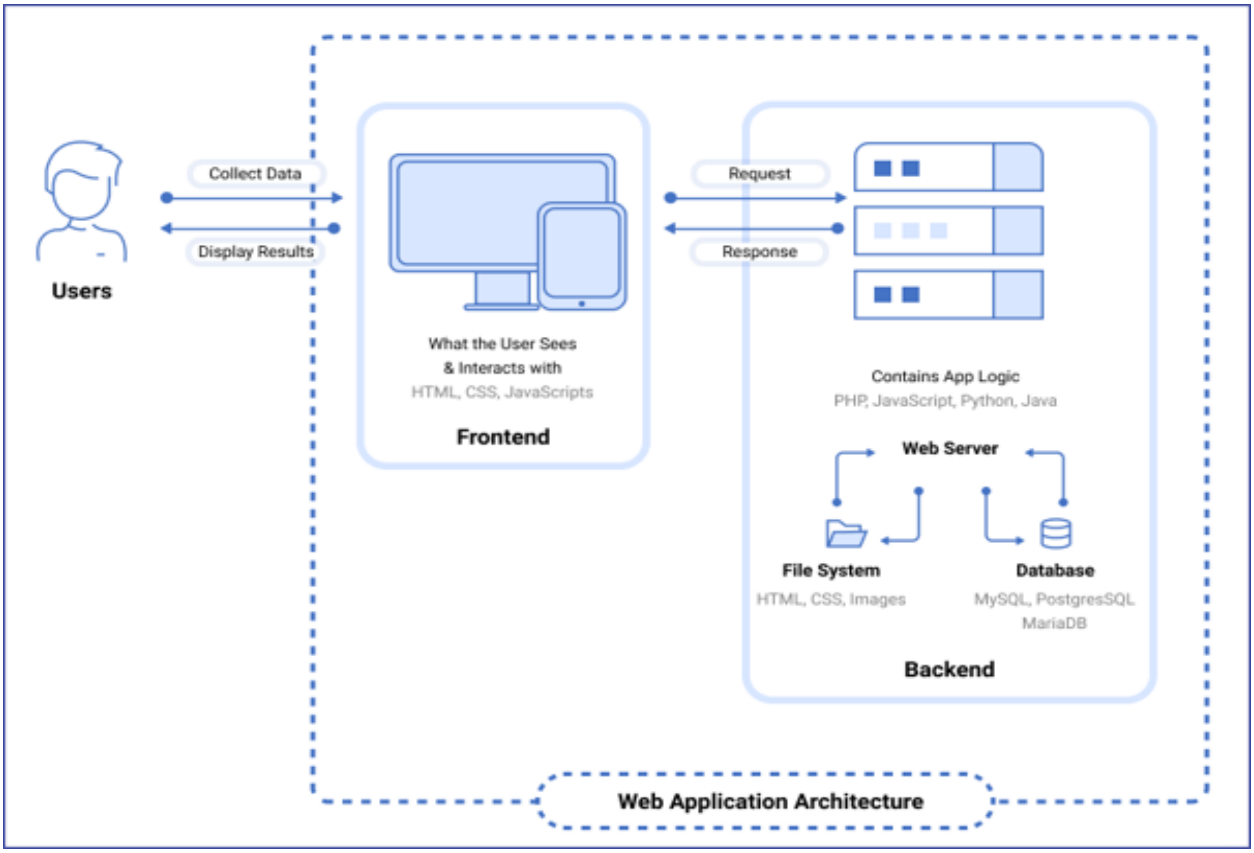


***Figure 2. Components of a web application***

Web application includes two sides: server and client, as it has two main components:

+ User interface components (client-side): These components link with the display, dashboards, notifications, and configuration settings of the web application that contribute to the visual interface of a web application and build the foundation for a good user's experience.

+ Structural components (server-side): mainly comprises of web application server and database server

- Web application server uses Python, Java, PHP, .NET, Node.js, and Ruby for its development. This server supports for multi-layer applications to run smoothly without any manual interference.

- Database server is used to store, retrieve, and offer information or data that is managed by the server and is required for running the web application and user's requests.

Shortly, there are three primary components of a web application, including: user interface as client-side, web application server and database server as server-side.

## I.3. Operation

### *I.3.1. Operation of a web application*

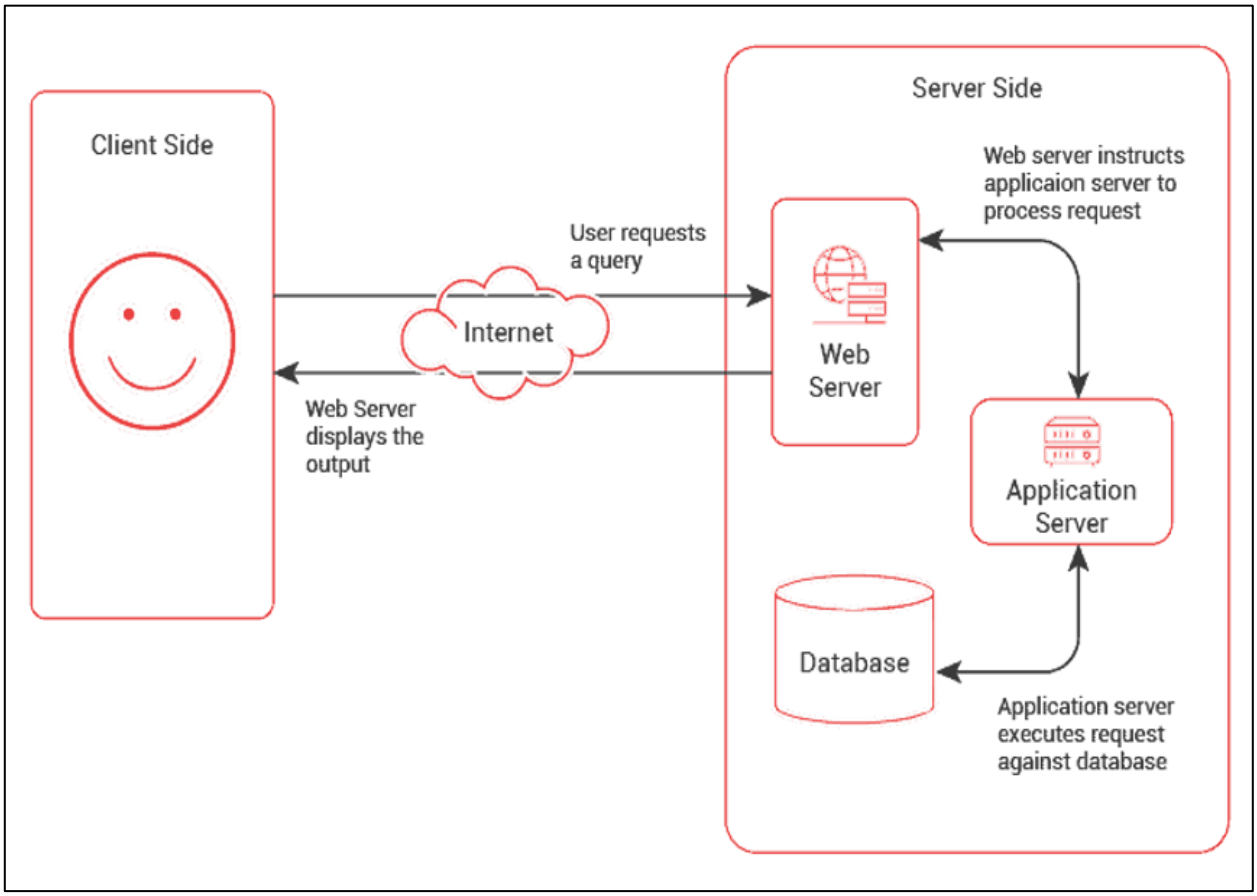


***Figure 3. Operation of a normal web application***

- At first, user makes a request to the Web Server by connecting the Internet through the application's user interface.
- Then, the Web Server sends this request to the Web Application Server.
- Web Application Server executes the requested tasks and acquires data from the Database Server.

- Next, the Web Application Server sends response back to the Web Server according to the processed data.
- The Web Server responds the requested tasks to the client by network-connected devices.
- Finally, the requested information appears on the user's screen.

### *I.3.2. Operation of a web application on Azure*

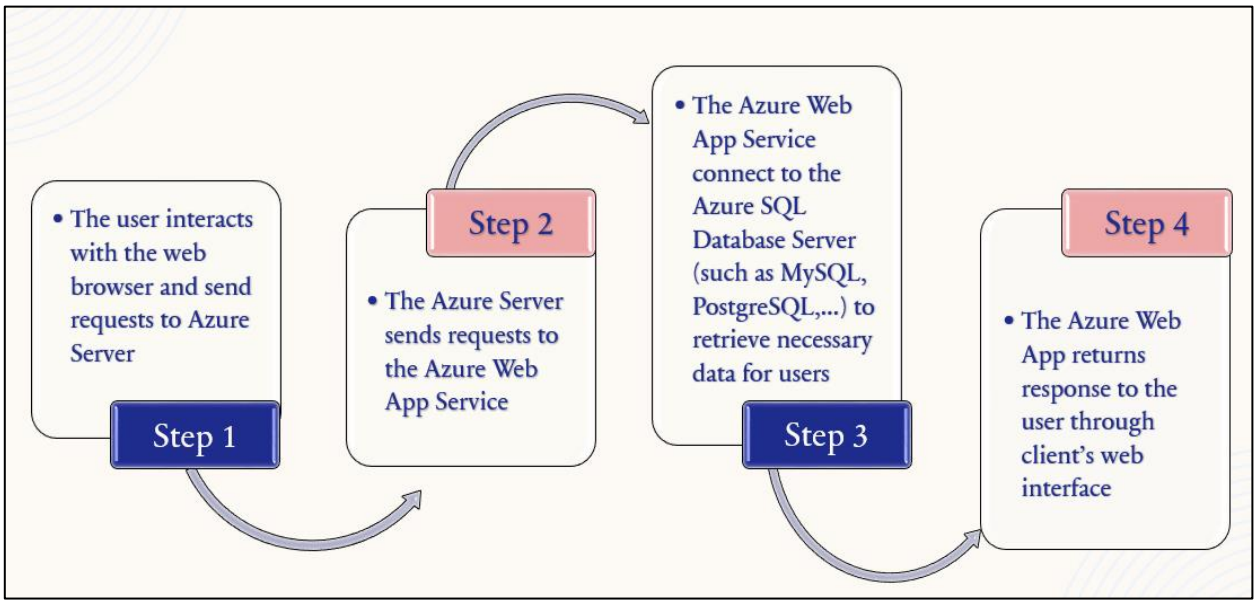


***Figure 4. Operation of a web application on Azure***

Most of the steps are similar to the steps involved in operating a normal web application. But the difference here is that it uses Azure's services. When users make a request to the Azure Web Application Service, it will make a connection to Azure SQL Database Server to retrieve data to response to users' requests.

- At first, user makes a request to the Azure Web Application Server by connecting the Internet through the application's user interface.
- Then, the Azure Web Application Server sends this request to the Azure Web Application Service.
- Azure Web Application Service executes the requested tasks by making a connection to the Azure SQL Database Server to retrieve necessary data.

- Next, the Web Application Service sends response back to Azure Web Application Server according to the processed data.
- The Web Application Server responds the requested tasks to the client by network-connected devices.
- Finally, the requested information appears on the user's screen.

# II. IMPLEMENTATION

## II.1. Topology

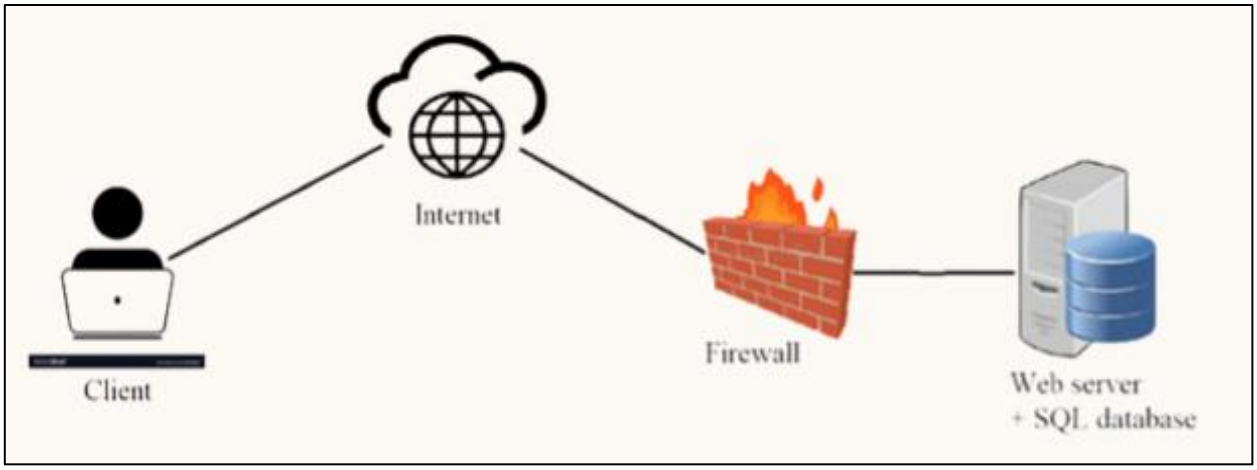


***Figure 5. Topology of a web application***

The topology includes four agents:

- Client server
- The Internet
- Azure web application firewall
- Web server and SQL database server

The Web server hosts the Web application by connecting to the Database server. After passing the firewall policy, the server publishes the Web application to the Internet. The client will be able to access the Web application through the browser with public IP address.

## II.2. Installation

To publish a web application on the Internet, we need two main services: Visual Studio for source code and Azure Web App Service for deploying. Besides, we also use the CI/CD process via GitHub Action and connect to PostgreSQL Database Server to upload source code and database from Visual Studio to Azure Web App Service.

### *II.2.1. Source code on Visual Studio*

- Web application is used for:
    - View restaurant reviews and detailed feedback from customers.
    - Add personal feedback about the visited restaurants.
- Programming language:
    - Django Framework 4.1.3
    - Python 3.10.8
- Function of web application:
    - Add new restaurants, new reviews, …
    - View detailed reviews of different restaurants or customers' feedback.

### *II.2.2. Connection to PostgreSQL Database Server*

## II.3. Configuration

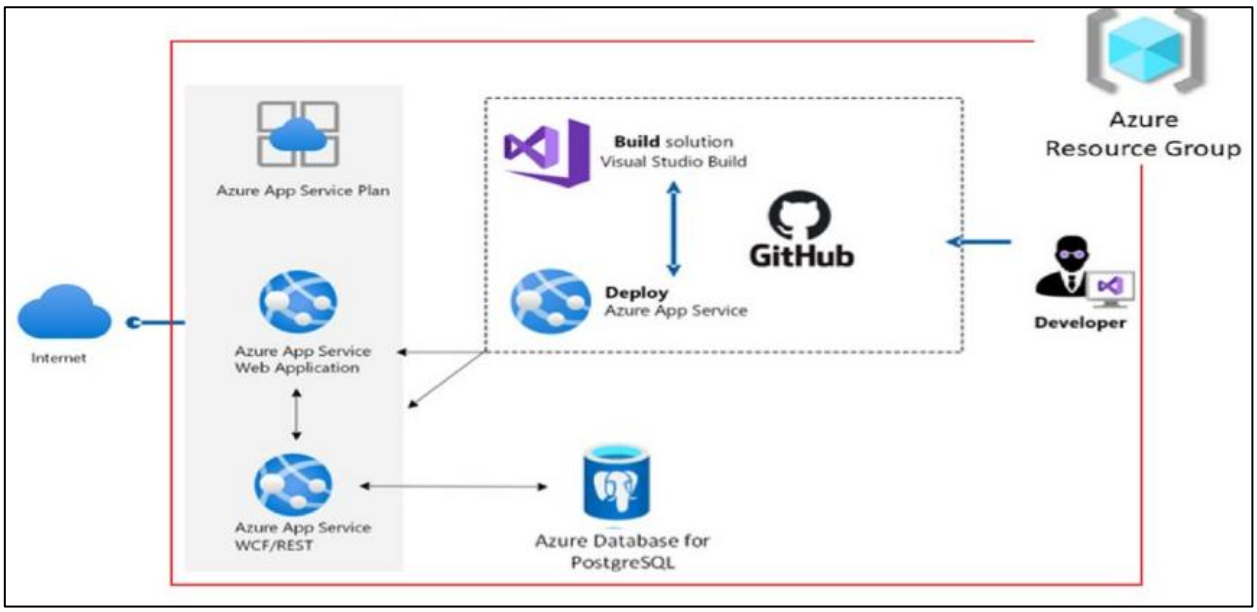


*Figure 6. How to configure a web application to Azure*

The source code in Python after being coded by developers on Visual Studio will be uploaded to GitHub.

Deployment of a web application will be executed on Azure Web Application Service.

- At first, a Resource Group is created - is a container includes all the resources a web application.
- Next, Azure Web Application Service connects to the Azure PostgreSQL Database Server to store the web application's database and retrieve the data when a user requests it.

Finally, all are published on the Internet to create a complete public web application for users.

# III. APPENDIX

## III.1. Task division

| **Lê Minh Nhã 20521690** | **Phan Ngọc Yến Nhi 20521717** | **Nguyễn Tú Ngọc 20521665** |
|---|---|---|
| - Demo implementation<br>- Search documents, theory | - Search paper, documents<br>- Make PowerPoint presentation. | - Fix bugs, code on Python.<br>- Write report |

***Table 1. Work division table***

## III.2. Self-assessment

| **Evaluation criteria** | **Attainment** | **Level of points** | **Points** |
|---|---|---|---|
| **Report format (1 point)** | Enough content report with a uniform format | **4** | **1** |

| | | | |
|---|---|---|---|
| **Presentation (1 point)** | Good presentation from all members, easy to understand the content | **4** | **1** |
| **Theory (2 point)** | Successful presentation of the definition and operating mechanism based on the group's understanding | **4** | **2** |
| **Demonstration (5 point)** | Present basic part and a part of advanced one. | **3** | **3.75** |
| **Quiz after presentation (1 point)** | | | **1** |
| **Minus point**<br>**(you/your in a report - 0.25/1 word)** | | | **0** |
| **Plus point**<br>**(0.25 for the progress/first day presentation)** | | | **0** |
| | | **Total Score** | **8.75** |

***Table 2. Self-assessment table***

### III.3. Answer the questions