Phase3 - E-commerce Application Development in IBM Cloud Foundry

Introduction:

Welcome to the second installment of our journey in building an E-commerce application within the IBM Cloud Foundry ecosystem. In Part 1, we laid the foundation by introducing the concept of E-commerce in conjunction with IBM Cloud Foundry's robust hosting and deployment capabilities. In this part, we will delve deeper into the actual development process, continuing our exploration of the symbiotic relationship between E-commerce and IBM Cloud Foundry.

Building upon the knowledge and insights from Part 1, we will take a hands-on approach to the development of our E-commerce application. Throughout this segment, we will provide step-by-step guidance, best practices, and practical tips for creating an E-commerce platform that can thrive in the dynamic online marketplace.

Key topics to be covered in this phase of our project include:

1. Application Architecture: We will discuss the architectural design of our E-commerce application, emphasizing scalability, security, and performance. This includes considerations for microservices, databases, and front-end frameworks.

2. Database Integration: We will explore how to effectively integrate databases within the IBM Cloud Foundry environment, ensuring seamless data management, efficient inventory tracking, and personalized customer experiences.

3. User Interface Development: User experience (UX) and user interface (UI) design are critical components of any E-commerce application. We will guide you through the creation of visually appealing and user-friendly interfaces to engage your customers.

4. Payment Gateways and Security: In the online shopping world, security and payment processing are paramount. We will delve into the integration of secure payment gateways and the implementation of robust security measures to protect your customers' data.

5. Deployment and Monitoring: Once your E-commerce application is ready, we will show you how to deploy it within the IBM Cloud Foundry environment. Furthermore, we will discuss monitoring and scaling strategies to ensure that your application can handle increased traffic and demands.

Our goal in Part 2 is to equip you with practical knowledge, tools, and resources to successfully develop, deploy, and manage your E-commerce application in IBM Cloud Foundry. By the end of this segment, you will be well-prepared to take the next steps in creating a thriving online business and delivering a superior shopping experience to your customers.

1. Create an IBM Cloud Account:
　　　If you don't have an IBM Cloud account, sign up for one. You can do this by visiting the [IBM Cloud website] (**https://cloud.ibm.com/registration**) and following the registration process.

**2. Choose the Appropriate Database Service:**
　　　Select the IBM Cloud Database service that best suits your project's needs. As mentioned earlier, you can choose between Db2 or MongoDB, depending on your dataset and requirements.

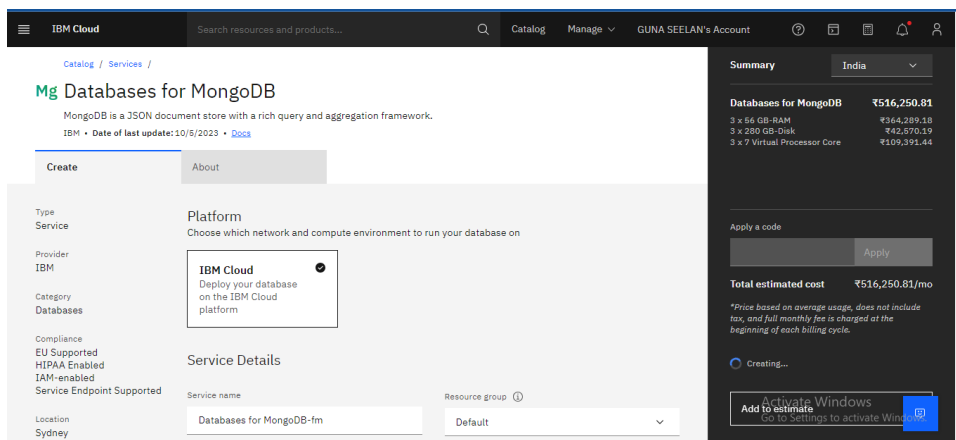**3. Set Up a Database Instance:**
　For Db2:
- ♦ Log in to your IBM Cloud account.
- ♦ From the IBM Cloud dashboard, click on the "Create Resource" button.

- ♦ In the catalog, select "Databases" and then "Db2."
- ♦ Follow the on-screen instructions to configure your Db2 database instance, including specifying the instance name, region, and other settings.
- ♦ Create the instance.
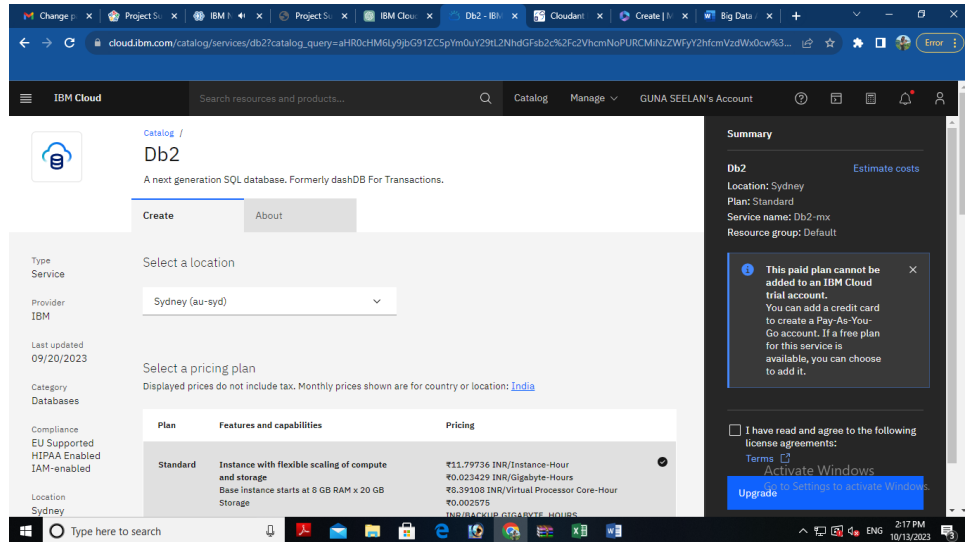
For MongoDB:

- ♦ Log in to your IBM Cloud account.
- ♦ From the IBM Cloud dashboard, click on the "Create Resource" button.
- ♦ In the catalog, select "Databases" and then "MongoDB."
- ♦ Follow the on-screen instructions to configure your MongoDB database instance, including specifying the instance name, region, and other settings.
- ♦ Create the instance.

4. Develop Queries or Scripts:

After setting up your database instance, you can start developing queries or scripts to explore and analyze your dataset. The type of queries and scripts you write will depend on the nature of your dataset and your analysis goals. You can use SQL for Db2 or MongoDB's query language for MongoDB.

Creating Service Credentials the IBM DB2 database

♦ In the resource list screen of IBM Cloud, click on the DB2 service (displayed under Services and software category) that you created
♦ From the service page, select the menu option "**Service Credentials**" to create / access the credentials of the db2 database
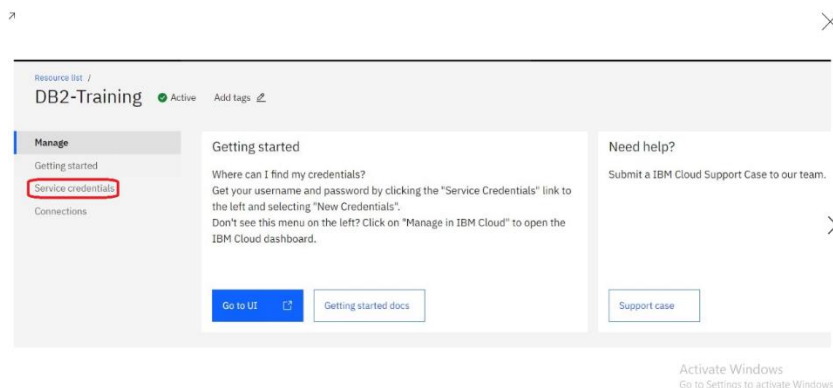
♦ Click on **New Credential** button in the Service Credential page to create a new credential
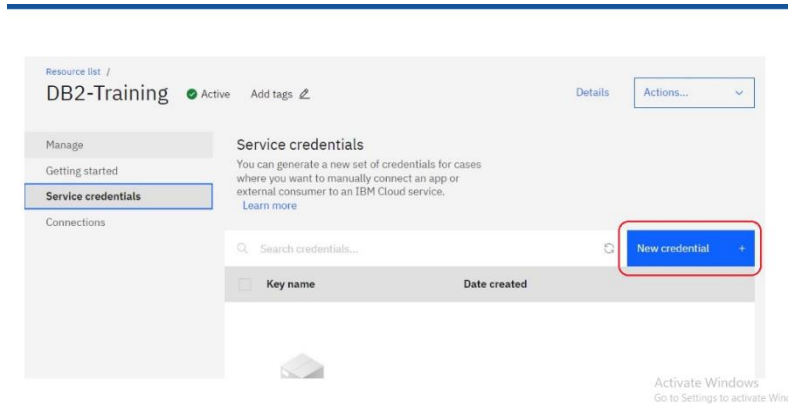
♦ Provide the any name for service credential (e.g. **appCred**) and click on **Add**

♦ New credential gets created and is displayed. Expand the newly to created credential to get the all the details that is required for client application to connect to the database. Note down the value for the following properties separately, which we will use it later to configure our application to connect to this database.

Property Name	Value
Database name	*<database> [e.g. bludb]*
Host name	*<hostname>*
Port	*<port>*
User Name	*<username>*

Password	<password>

```
,
"db2": {
  "authentication": {
    "method": "direct",
    "password": "███████████████",
    "username": "██████████"
  },
}
```

Activate Windows

```
"hosts": [
  {
    "hostname": "fbd88901-ebdb-4a4f-a32e-9822b9fb237b.c1ogj3sd0tgtu0lqde00.databases.appdomain.cloud"
    "port": 32731
  }
```

Activate Windows

3. Setting up IBM DB2 database

♦ In the resource list screen of IBM Cloud, click on the DB2 service (displayed under Services and software category) that you created, if the page is not already opened.

♦ From the service page, select the menu option "**Manage**" and click on Go to UI to launch the DB2 console
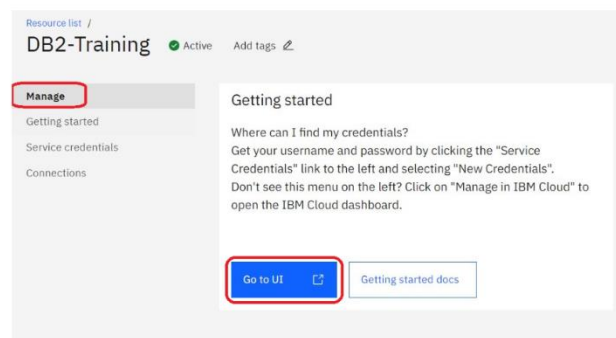
Activate Windows

♦ IBM DB2 on cloud console is opened. To create database objects, click on SQL menu option from the left-side menu.
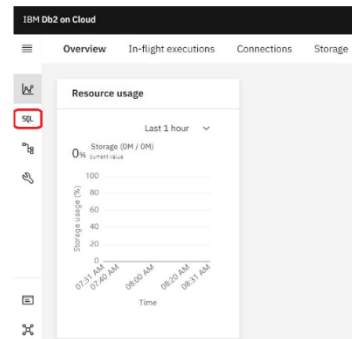
♦ SQL editor is opened up for you. Type the query that you want to execute in the SQL editor and click **Run all**

♦ The status of the query execution is displayed at the bottom of the SQL editor as shown below

The above steps can be followed to create any more database objects in future.

3. Developing the frontend

```html
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>eCommerce Shopping</title>
  <!--
    - favicon
  -->
  <link rel="shortcut icon" href="./assets/images/logo/logo.png" type="image/x-icon">
  <!--
    - custom css link
  -->
  <link rel="stylesheet" href="./assets/css/style-prefix.css">
  <!--
    - google font link
  -->
  <link rel="preconnect" href="https://fonts.googleapis.com">
  <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
  <link href="https://fonts.googleapis.com/css2?family=Poppins:wght@300;400;500;600;700;800;900&display=swap"
    rel="stylesheet">
</head>
<body>
```

```html
<div class="overlay" data-overlay></div>
<!--
  - MODAL
-->
<div class="modal" data-modal>
  <div class="modal-close-overlay" data-modal-overlay></div>
  <div class="modal-content">
    <button class="modal-close-btn" data-modal-close>
      <ion-icon name="close-outline"></ion-icon>
    </button>
    <div class="newsletter-img">
      <img src="./assets/images/newsletter.png" alt="subscribe newsletter" width="474px" height="712px">
    </div>
    <div class="newsletter">
      <form action="#">
        <div class="newsletter-header">
          <h3 class="newsletter-title">Subscribe Newsletter.</h3>
          <p class="newsletter-desc">
            Subscribe the <b>eShopping</b> to get latest products and discount update.
          </p>
        </div>
        <input type="email" name="email" class="email-field" placeholder="Email Address" required>
        <button type="submit" class="btn-newsletter">Subscribe</button>
      </form>
    </div>
  </div>
</div>
```
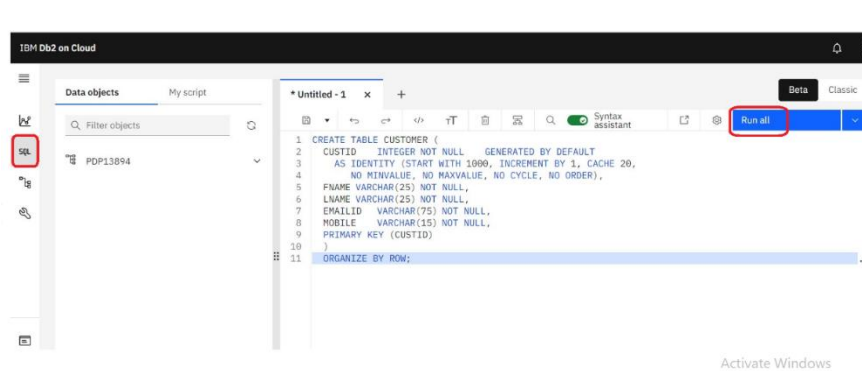
```html
<!--
  - NOTIFICATION TOAST
-->

<div class="notification-toast" data-toast>
  <button class="toast-close-btn" data-toast-close>
    <ion-icon name="close-outline"></ion-icon>
  </button>
  <div class="toast-banner">
    <img src="./assets/images/products/jewellery-1.jpg" alt="Rose Gold Earrings" width="80" height="70">
  </div>
  <div class="toast-detail">
    <p class="toast-message">
      Someone in new just bought
    </p>
    <p class="toast-title">
      Rose Gold Earrings
    </p>
    <p class="toast-meta">
      <time datetime="PT2M">2 Minutes</time> ago
    </p>
  </div>
</div>
<!--
  - HEADER
-->
<header>
  <div class="header-top">
    <div class="container">
```

```html
<ul class="header-social-container">
  <li>
    <a href="https://youtube.com/@dank_bro?si=4SMYO-z9o3I_1x40" target="_blank" class="social-link">
      <ion-icon name="logo-facebook"></ion-icon>
    </a>
  </li>
  <li>
    <a href="https://youtube.com/@dank_bro?si=4SMYO-z9o3I_1x40" target="_blank" class="social-link">
      <ion-icon name="logo-twitter"></ion-icon>
    </a>
  </li>
  <li>
    <a href="https://youtube.com/@dank_bro?si=4SMYO-z9o3I_1x40" target="_blank" class="social-link">
      <ion-icon name="logo-instagram"></ion-icon>
    </a>
  </li>
  <li>
    <a href="https://youtube.com/@dank_bro?si=4SMYO-z9o3I_1x40" target="_blank" class="social-link">
      <ion-icon name="logo-linkedin"></ion-icon>
    </a>
  </li>
</ul>
<div class="header-alert-news">
  <p>
    <b>Free Shipping</b>
    This Week Order Over - ₹550
```

```
        </p>
      </div>
    </div>
  </div>
  <div class="header-main">
   <div class="container">
     <a href="#" class="header-logo">
       <img src="./assets/images/logo/logo.png" alt="Anon's logo" width="120"
height="36">
     </a>
     <div class="header-search-container">
       <input type="search" name="search" class="search-field"
placeholder="Enter your product name...">
       <button class="search-btn">
         <ion-icon name="search-outline"></ion-icon>
       </button>
     </div>
     <div class="header-user-actions">
       <button class="action-btn">
         <ion-icon name="person-outline"></ion-icon>
       </button>
       <button class="action-btn">
         <ion-icon name="heart-outline"></ion-icon>
         <span class="count">0</span>
       </button>
       <button class="action-btn">
         <ion-icon name="bag-handle-outline"></ion-icon>
         <span class="count">0</span>
       </button>
     </div>
```

```html
    </div>
  </div>
  <nav class="desktop-navigation-menu">
    <div class="container">
      <ul class="desktop-menu-category-list">
        <li class="menu-category">
          <a href="#" class="menu-title">Home</a>
        </li>
        <li class="menu-category">
          <a href="#" class="menu-title">Categories</a>
          <div class="dropdown-panel">
            <ul class="dropdown-panel-list">
              <li class="menu-title">
                <a href="#">Electronics</a>
              </li>
              <li class="panel-list-item">
                <a href="#">Desktop</a>
              </li>
              <li class="panel-list-item">
                <a href="#">Laptop</a>
              </li>
              <li class="panel-list-item">
                <a href="#">Camera</a>
              </li>
              <li class="panel-list-item">
                <a href="#">Tablet</a>
              </li>
              <li class="panel-list-item">
                <a href="#">Headphone</a>
```

```html
        </li>
        <li class="panel-list-item">
          <a href="#">
            <img src="./assets/images/electronics-banner-1.jpg" alt="headphone
collection" width="250"
              height="119">
          </a>
        </li>
      </ul>
      <ul class="dropdown-panel-list">
        <li class="menu-title">
          <a href="#">Men's</a>
        </li>
        <li class="panel-list-item">
          <a href="#">Formal</a>
        </li>
        <li class="panel-list-item">
          <a href="#">Casual</a>
        </li>
        <li class="panel-list-item">
          <a href="#">Sports</a>
        </li>
        <li class="panel-list-item">
          <a href="#">Jacket</a>
        </li>
        <li class="panel-list-item">
          <a href="#">Sunglasses</a>
        </li>
        <li class="panel-list-item">
```

```html
            <a href="#">
                <img src="./assets/images/mens-banner.jpg" alt="men's fashion"
width="250" height="119">
            </a>
          </li>
        </ul>
        <ul class="dropdown-panel-list">
          <li class="menu-title">
            <a href="#">Women's</a>
          </li>
          <li class="panel-list-item">
            <a href="#">Formal</a>
          </li>
          <li class="panel-list-item">
            <a href="#">Casual</a>
          </li>
          <li class="panel-list-item">
            <a href="#">Perfume</a>
          </li>
    <li class="panel-list-item">
            <a href="#">Cosmetics</a>
          </li>
          <li class="panel-list-item">
            <a href="#">Bags</a>
          </li>
          <li class="panel-list-item">
            <a href="#">
                <img src="./assets/images/womens-banner.jpg" alt="women's fashion"
width="250" height="119">
            </a>
```

```html
      </li>
    </ul>
    <ul class="dropdown-panel-list">
     <li class="menu-title">
      <a href="#">Electronics</a>
     </li>
     <li class="panel-list-item">
      <a href="#">Smart Watch</a>
     </li>
     <li class="panel-list-item">
      <a href="#">Smart TV</a>
     </li>
     <li class="panel-list-item">
      <a href="#">Keyboard</a>
     </li>
     <li class="panel-list-item">
      <a href="#">Mouse</a>
     </li>
```

Conclusion:

In Part 2 of our project, we dove into the practical development of our E-commerce application within the IBM Cloud Foundry environment. We explored key aspects of application architecture, database integration, user interface development, payment gateways, security, deployment, and monitoring. By now, you should have a strong foundation for building a robust and scalable E-commerce platform. Part 2 equips you with the knowledge and tools to create an engaging online shopping experience for your customers while ensuring their data security and a seamless payment process. As we continue our journey, keep in mind that successful E-commerce development is an ongoing process. Part 3 will delve into advanced topics, such as marketing, customer engagement, and optimization, to further enhance your E-commerce application and stay

competitive in the ever-evolving digital marketplace. Stay tuned for the next phase of our project.