AGRI-AI

E AGRICULTURE MANAGEMENT SYSTEM

MODERNIZING AGRICULTURE AND EMPOWERING FARMERS THROUGH TECHNOLOGY

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Introduction

The global population is growing, putting immense pressure on food production systems. Farmers face numerous challenges in meeting this demand, including:

- **Limited access to expertise:** Many farmers lack access to agricultural specialists who can diagnose plant problems, recommend optimal growing practices, and advise on efficient resource use.
- **Lack of real-time data:** Farmers often struggle to make informed decisions due to limited access to real-time weather data and soil data and historical agricultural information.

Our project, **Agri AI**, is designed to leverage AI to provide personalized soil health analysis and crop recommendations. This innovative system offers comprehensive soil testing, real-time status tracking, and intelligent crop selection, and a comprehensive E- Commerce Project aimed at enhancing productivity and sustainability in agriculture.

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Aim of the Project

- To implement a robust ML model to give a correct and accurate real-time prediction of crop in a given state for the particular soil type and climatic conditions.
- To provide Fertilizer Suggestion for best suitable crops in the area so that farmers do not incur any loss.
- To Provide an E-commerce platform to buy their necessary agricultural goods and Tools.

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Modules

- **Farmers Module/User Module:** Get Crop Recommendation, Fertilizer Suggestion and E commerce ,Soil test
- **Admin Module:** Manages admin has complete settings of the website and can manage all kinds of records.

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Technologies Used

- **Front End Technology:** (HTML, CSS, JavaScript, Bootstrap)
- **Programming Language:** (Python)
- **Database:** (My SQL)
- **Frameworks:** (Django)
- **Machine learning Model:** (Random Forest, Logistic Regression, Decision Trees etc.)
- **Data science libraries:** (Pandas, NumPy, ScikKit-learn, Seaborn, Joblib etc.)

OTP Sender Tool: Twillio

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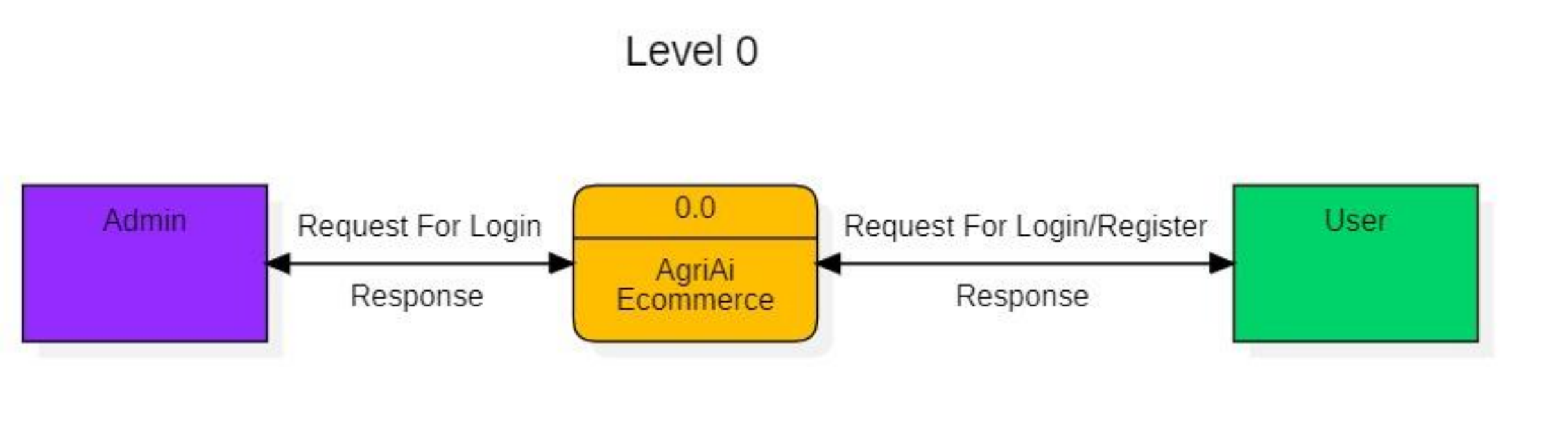
Data Flow Diagram(Level-0)



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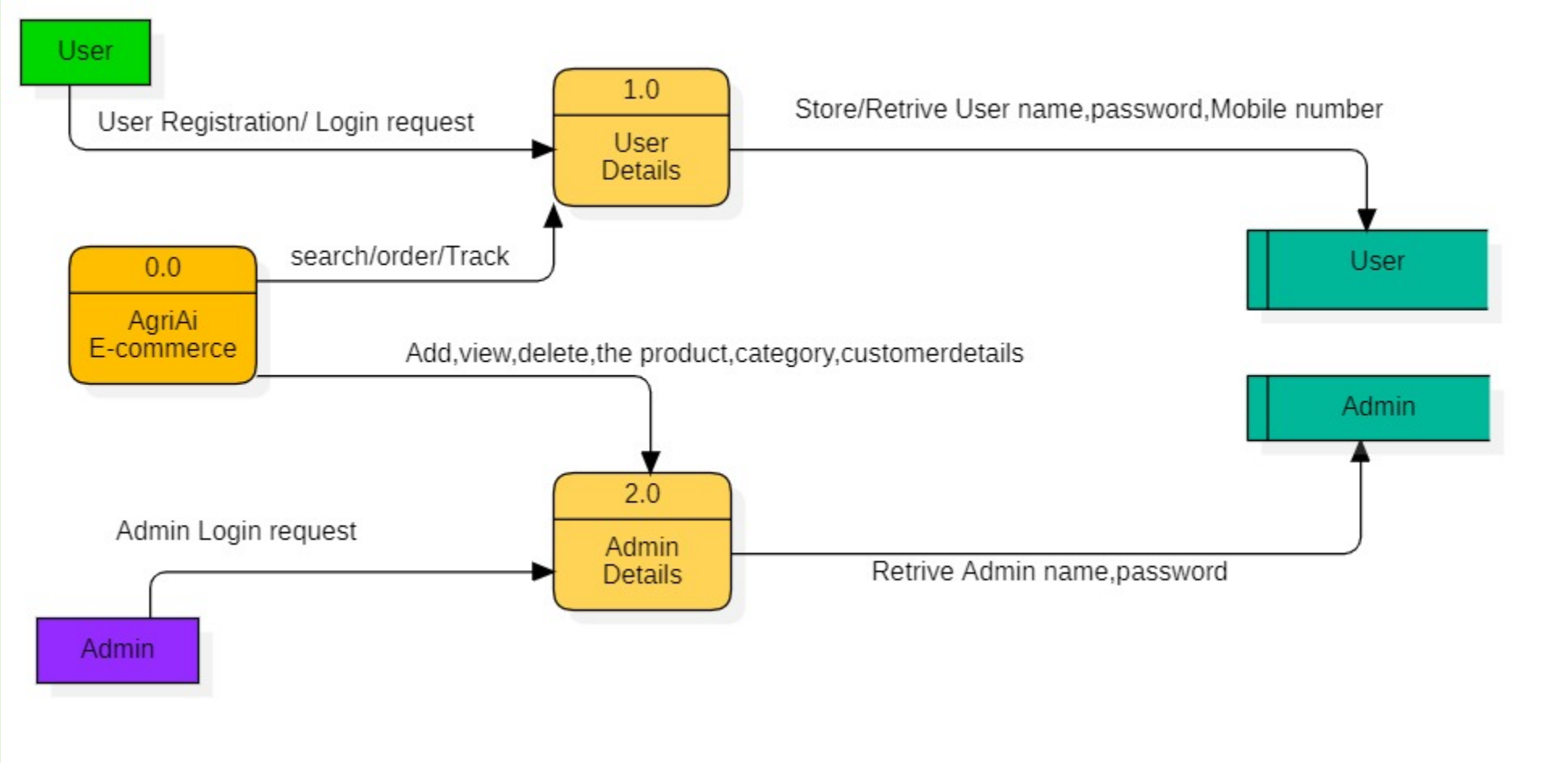
Data Flow Diagram(Level-1)



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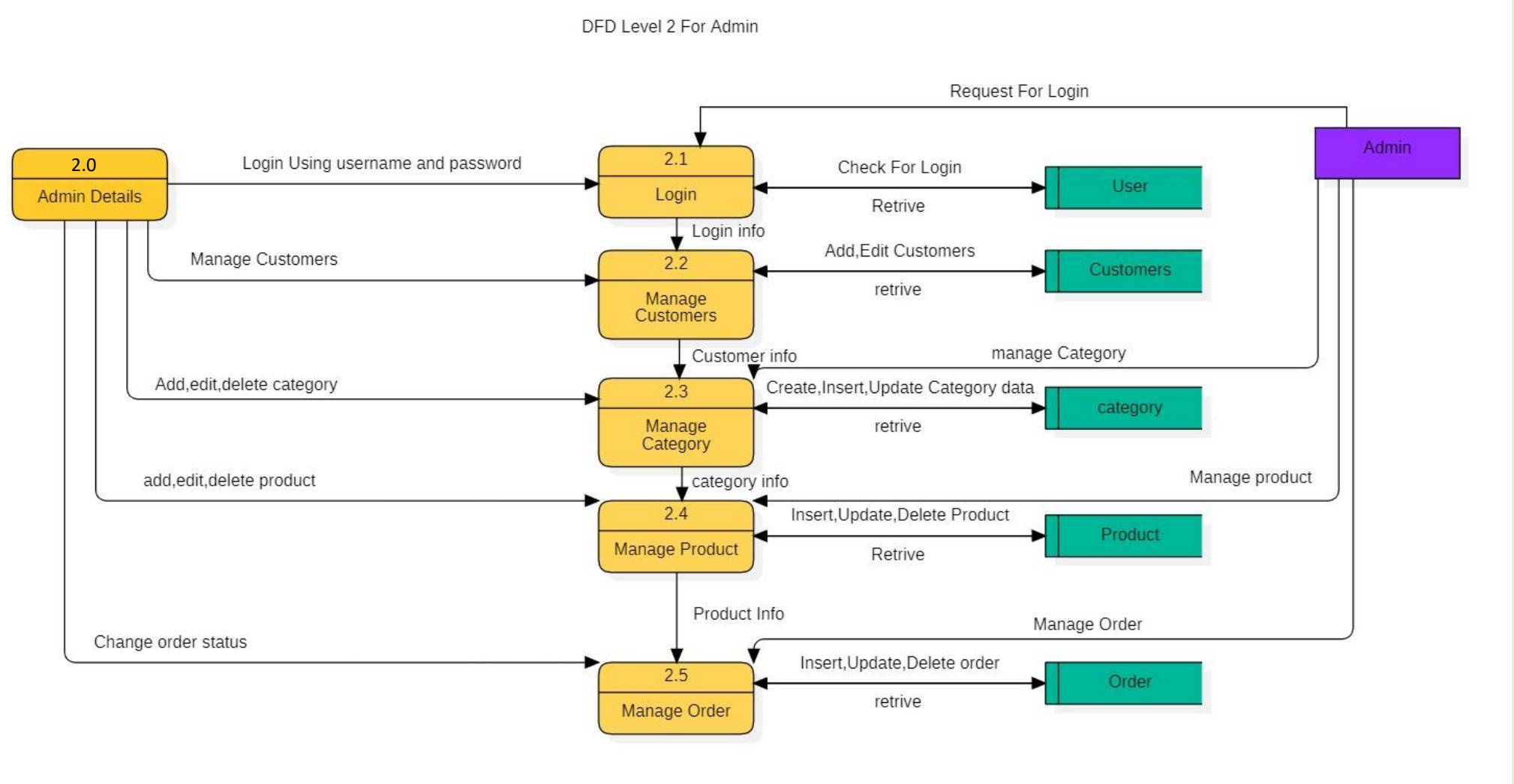
Data Flow Diagram(Level-2)



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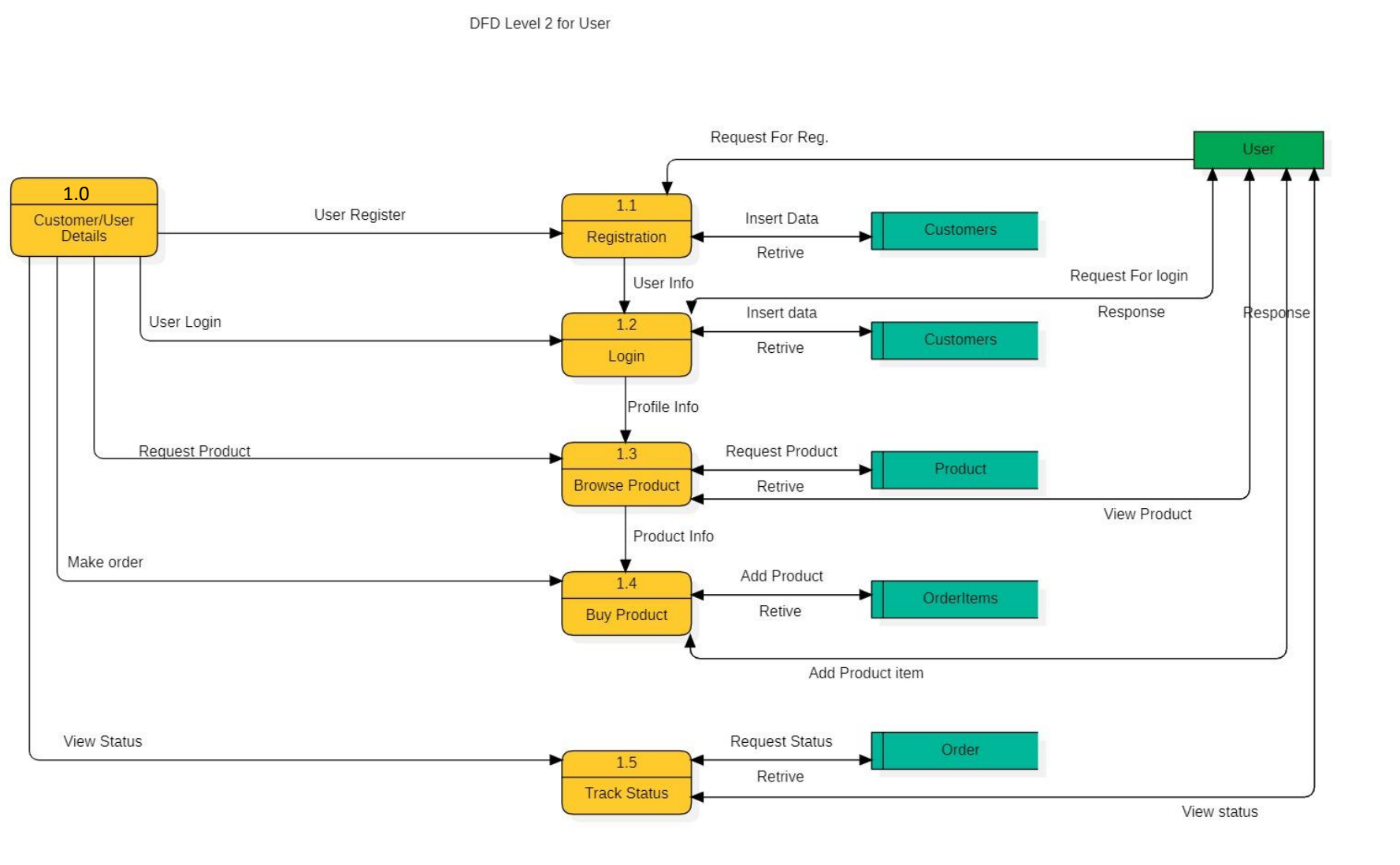
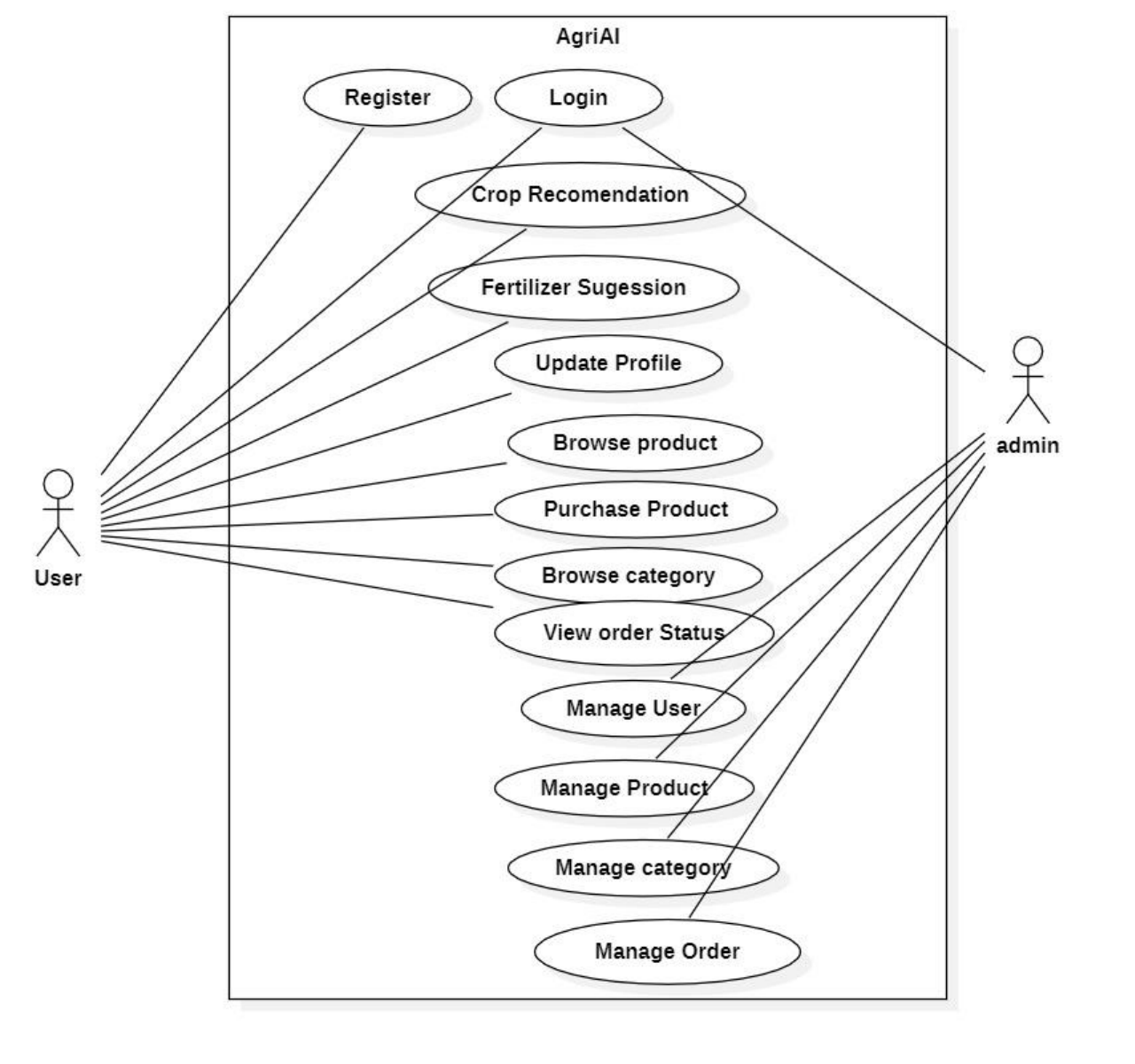
Data Flow Diagram(Level-2)



Use Case Diagram



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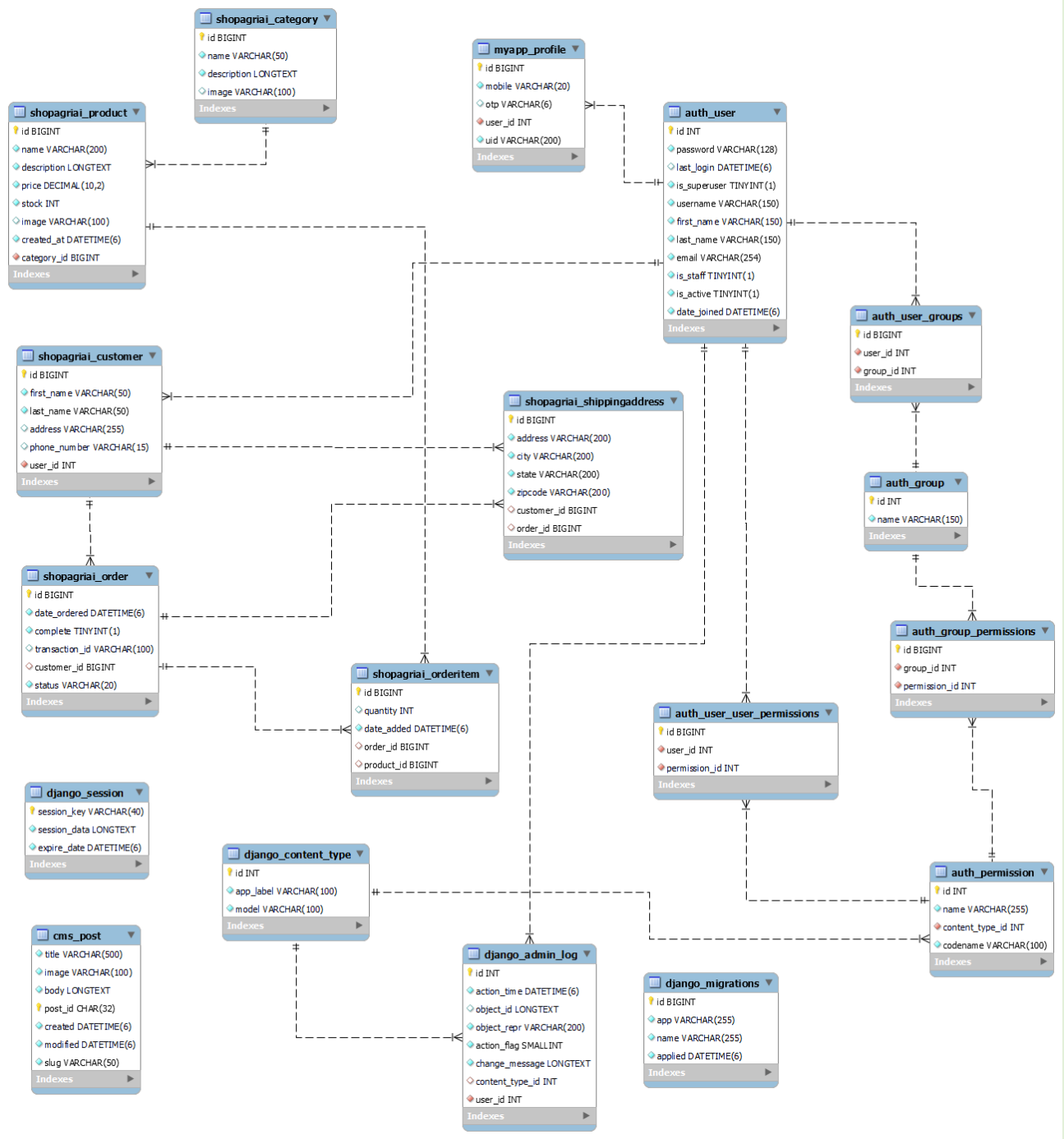
Database Schema



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Dataset Used For Crop Recommendation

1	N	P	K	temperature	humidity	ph	rainfall	label
2	90	42	43	20.87974371	82.00274423	6.502985292	202.9355362	rice
3	85	58	41	21.77046169	80.31964408	7.038096361	226.6555374	rice
4	60	55	44	23.00445915	82.3207629	7.840207144	263.9642476	rice
5	74	35	40	26.49109635	80.15836264	6.980400905	242.8640342	rice
6	78	42	42	20.13017482	81.60487287	7.628472891	262.7173405	rice
7	69	37	42	23.05804872	83.37011772	7.073453503	251.0549998	rice
8	69	55	38	22.70883798	82.63941394	5.70080568	271.3248604	rice
9	94	53	40	20.27774362	82.89408619	5.718627178	241.9741949	rice
10	89	54	38	24.51588066	83.5352163	6.685346424	230.4462359	rice
11	68	58	38	23.22397386	83.03322691	6.336253525	221.2091958	rice
12	91	53	40	26.52723513	81.41753846	5.386167788	264.6148697	rice
13	90	46	42	23.97898217	81.45061596	7.50283396	250.0832336	rice
14	78	58	44	26.80079604	80.88684822	5.108681786	284.4364567	rice
15	93	56	36	24.01497622	82.05687182	6.98435366	185.2773389	rice
16	94	50	37	25.66585205	80.66385045	6.94801983	209.5869708	rice
17	60	48	39	24.28209415	80.30025587	7.042299069	231.0863347	rice

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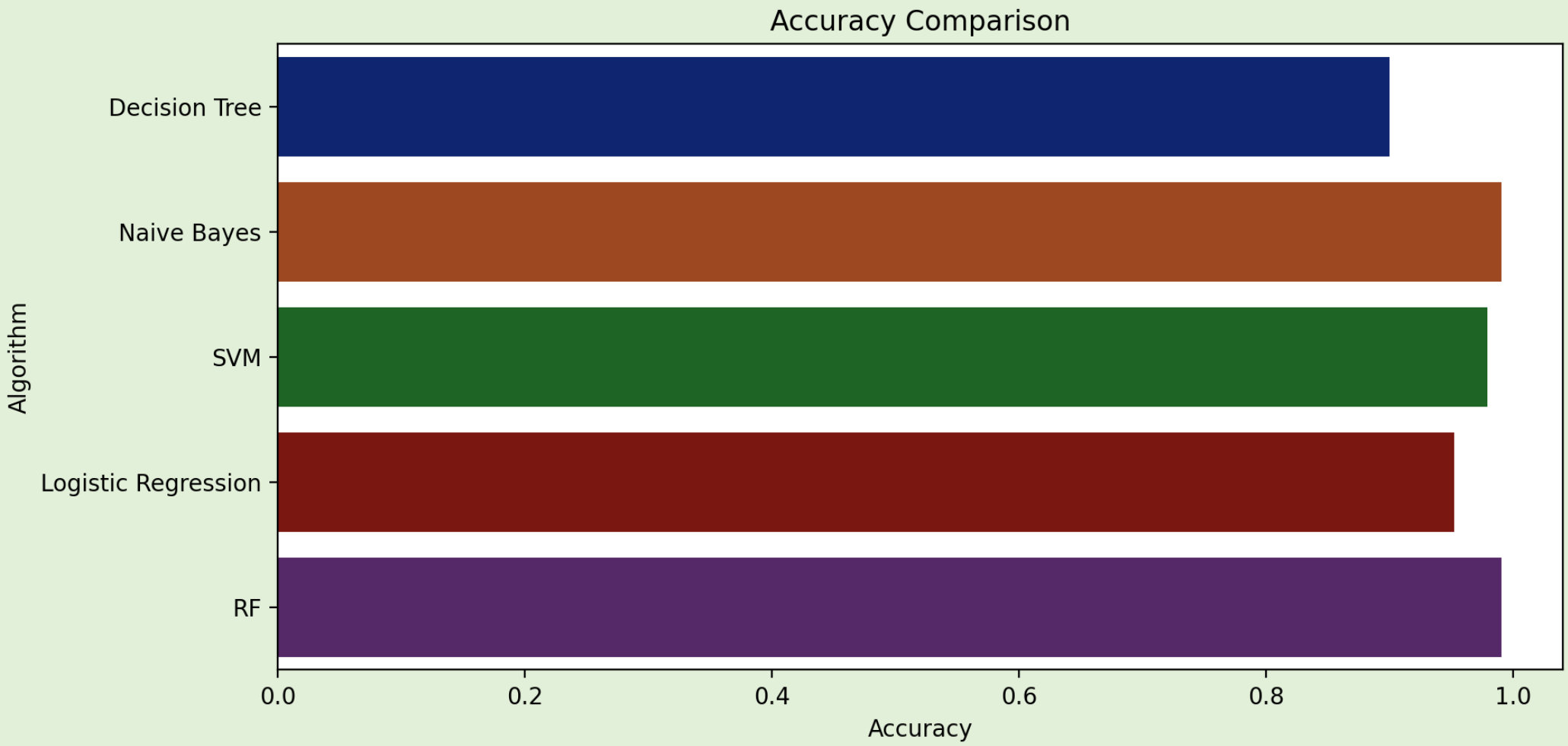
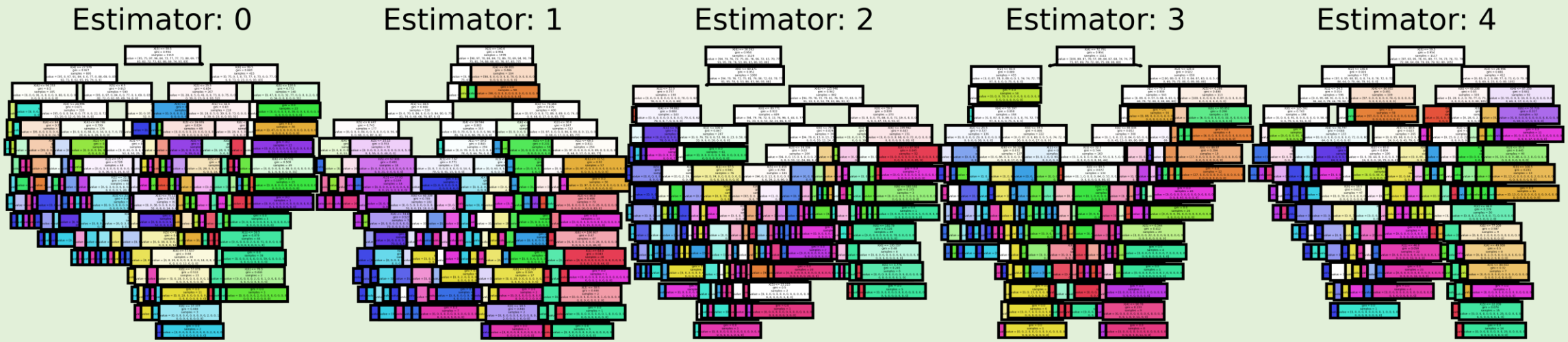
Algorithm Comparison



Random Forest Visualisation



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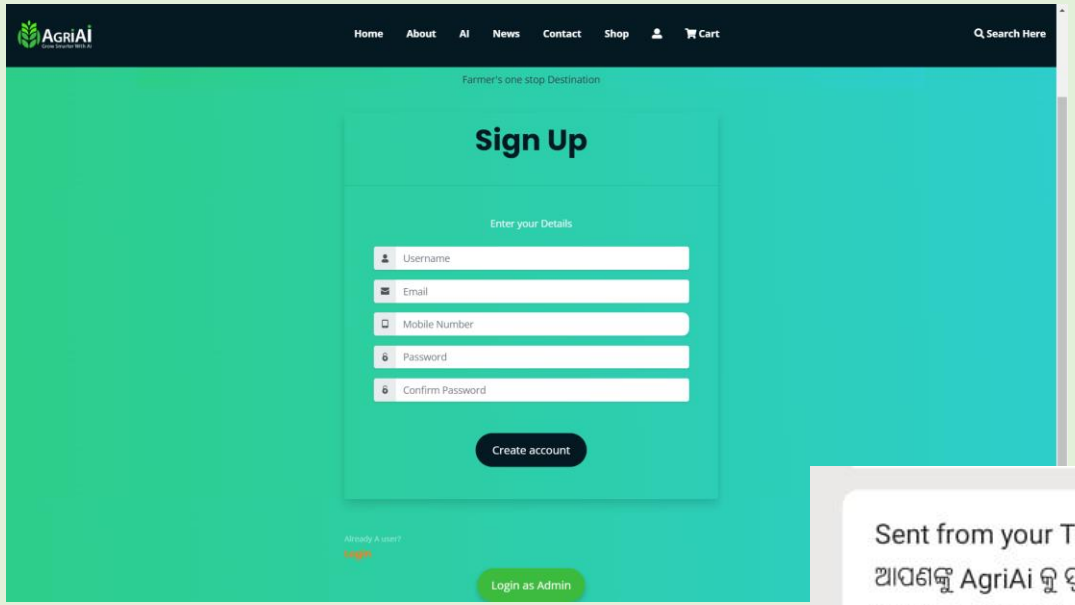
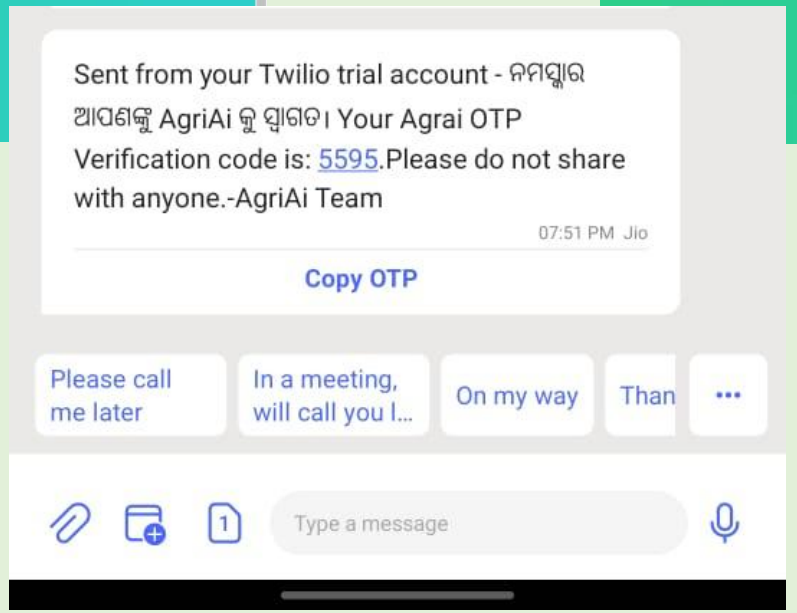
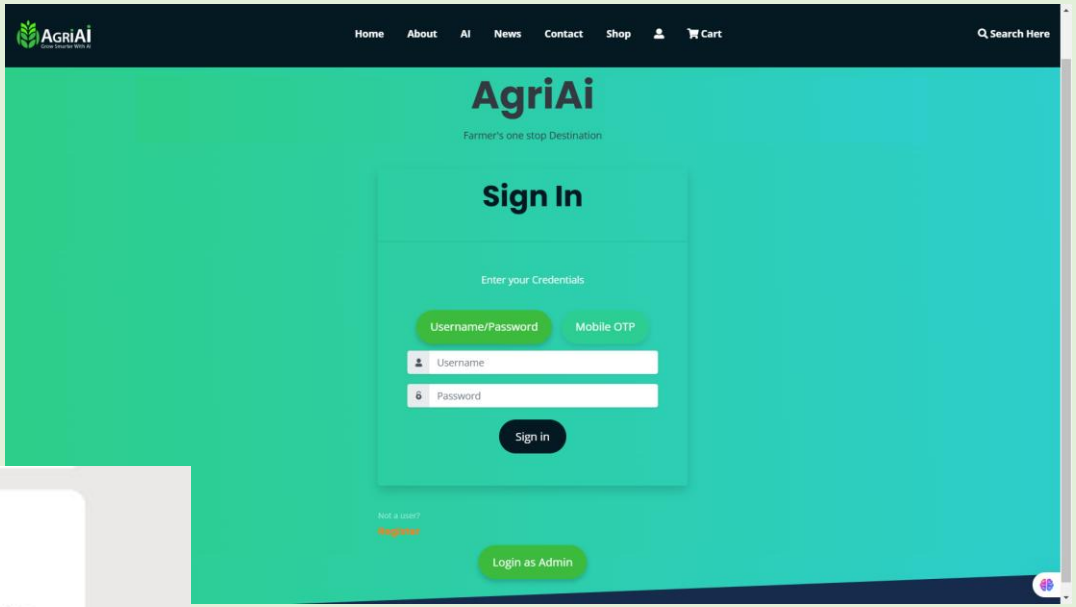
Snapshot







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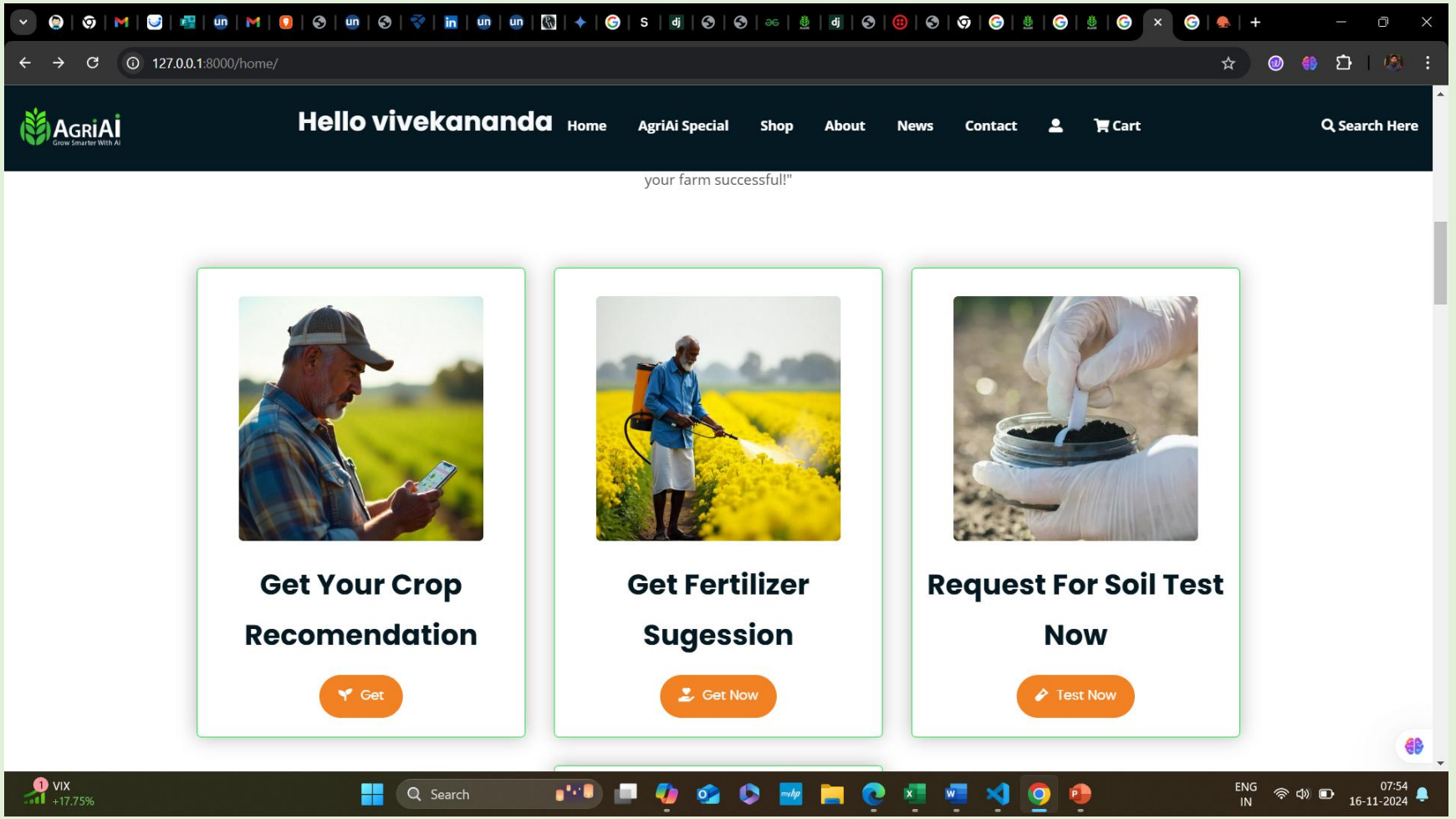

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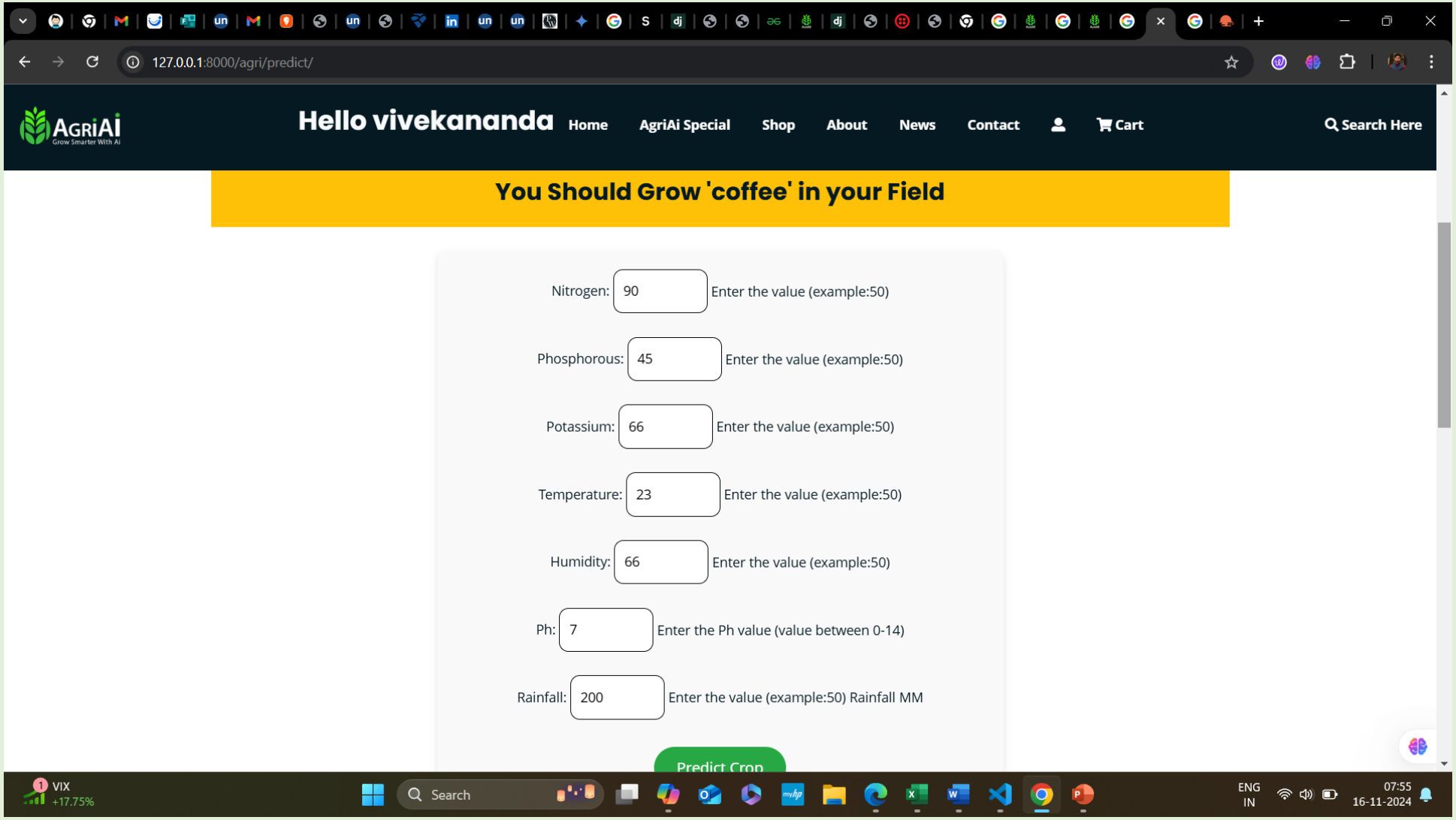

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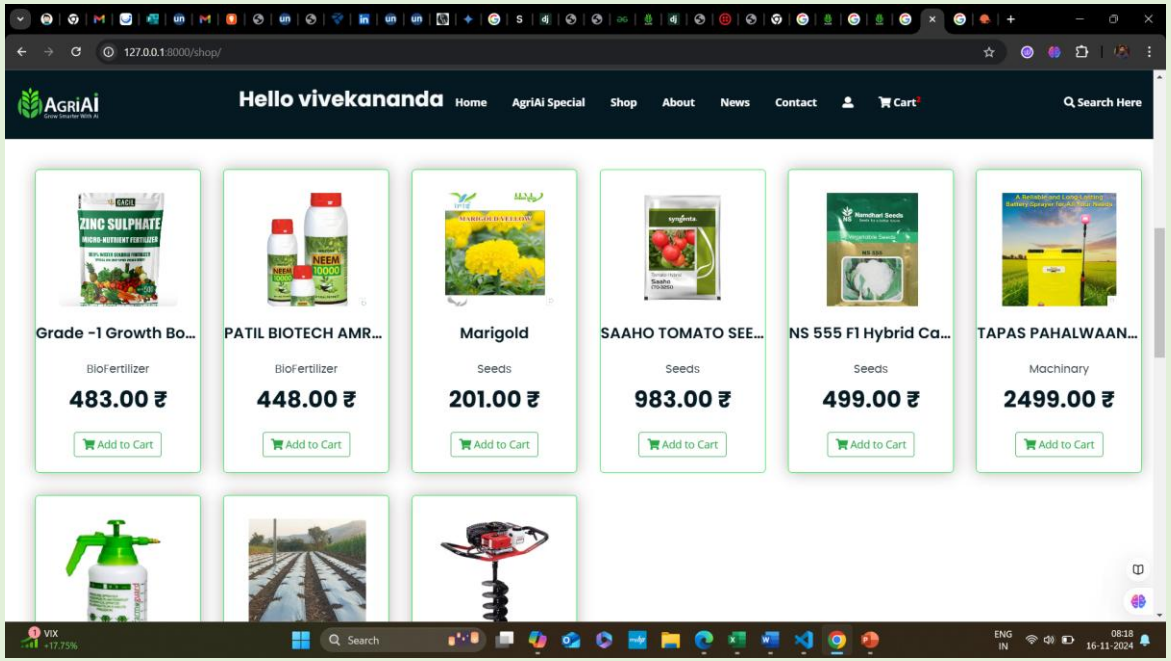
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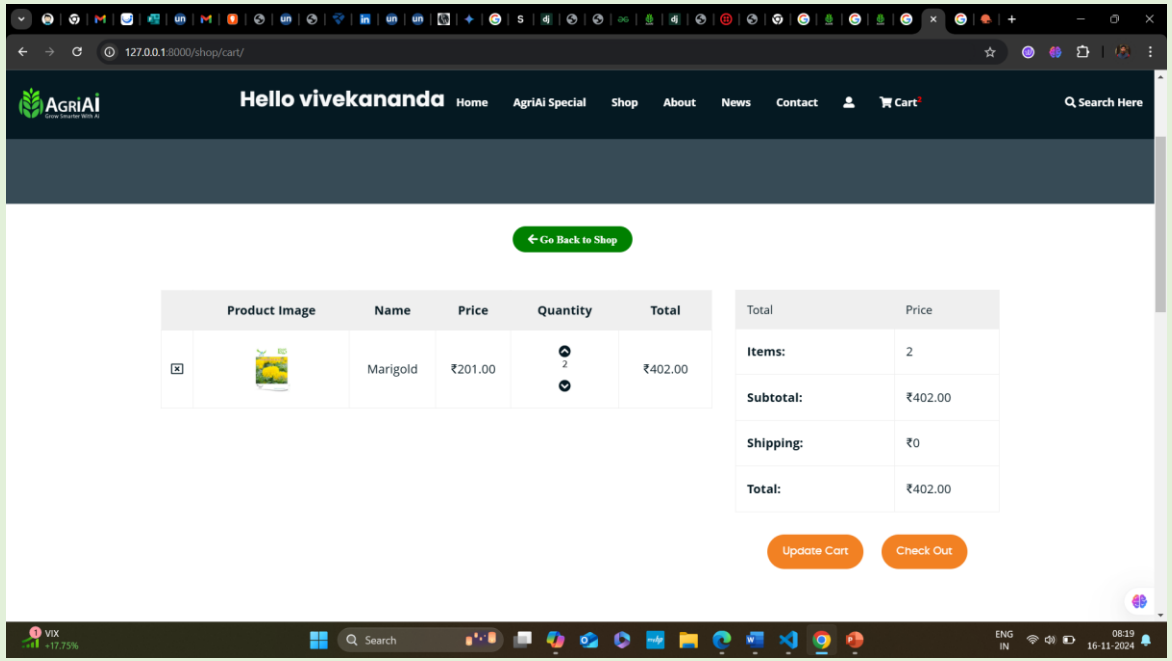
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Future Scope

1.Advanced AI and Machine Learning

Predictive Analytics:

Enhanced Personalization:

2. IoT Integration

Real-Time Monitoring:

Automated Irrigation Systems:

4. User Experience Enhancements

Mobile Application:

Multilingual Support:

5. Community and Social Features

Expert Consultations:

6. Data Analytics and Reporting

Advanced Analytics Dashboard:

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THANK YOU

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