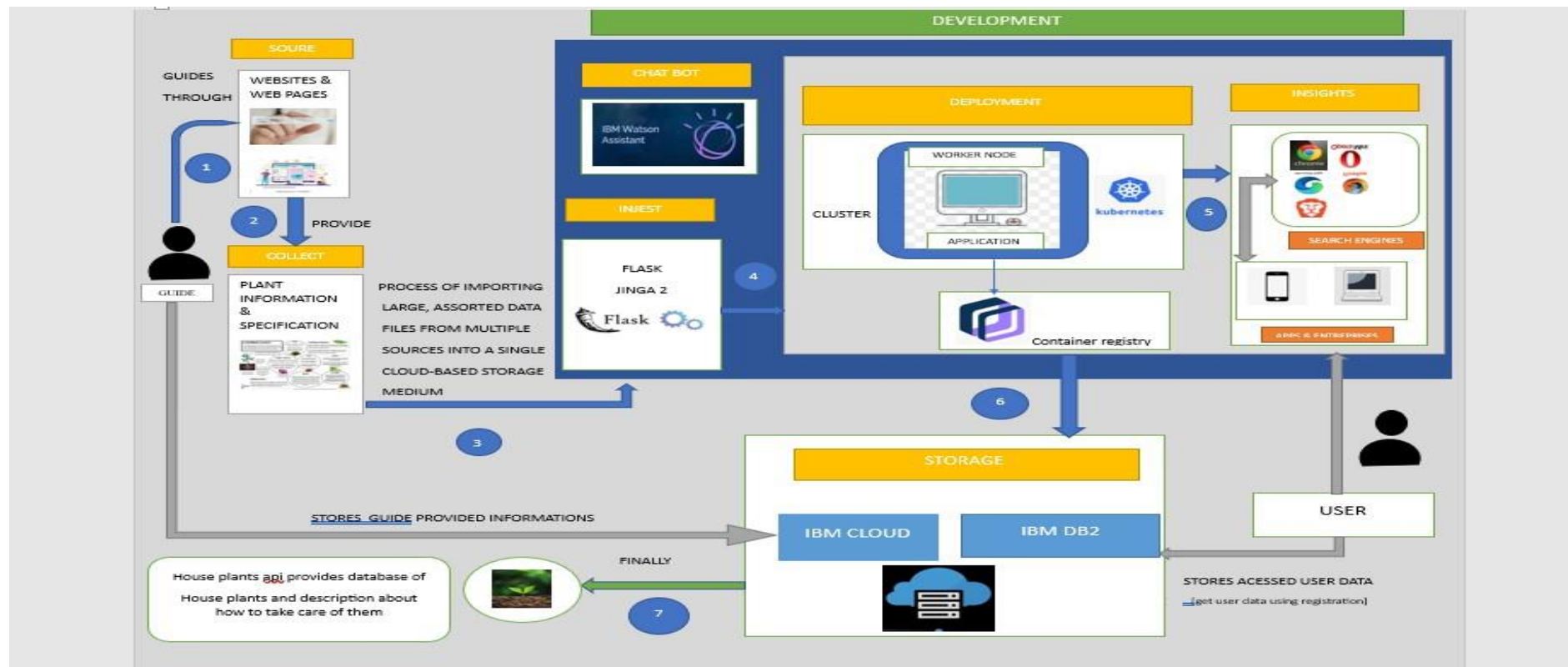


## Project Design Phase-II Technology Stack (Architecture & Stack)

Date	11 May 2023
Team ID	NM2023TMID09181
Project Name	Project – Green Thumbs: A comprehensive Guide to Caring Your Houseplants

### Technical Architecture:



**Table-1 : Components & Technologies:**

S.No	Component	Description	Technology
1.	User Interface	The user will login using his/her email and password and then they can work through Web UI, Website, Chatbot	HTML, CSS, JavaScript, Bootstrap
2.	Application Logic-1	This is a programming language used as a backend purpose this is been used to connect with flask framework and db2 .	Python
3.	Application Logic-2	It is a AI platform which will help our customers to have an interaction with virtual assistants which generates appropriate responses. This assistants are defines using dialog nodes and Watson assistant dialog editor	IBM Watson Assistant
4.	Application Logic-3	Search engines are for ease of user convinence they can easily search and get the relevant responses. They can access them using both mobile and pc/laptop.	Search Engines
5.	Database	Data Type – Char, Varchar, numeric Configuration – “my.cnf”	MySQL
6.	Cloud Database	Database Service on Cloud – they provide a managed database solutions. These cloud database services offer features like automated backups, scalability, high availability, security and integration with other cloud services	IBM DB2, IBM Cloud
7.	File Storage	Using IBM Cloud Storages we can store our files also in our local file system	IBM Block Storage, IBM Cloud Storage Local Filesystem

8.	External API-1	<p>As there is wide range of users for face book and Email id's are used by all.</p> <p>Google is a default search engine as it is easily accessible by everyone.</p> <p>Many professional peoples and students use linkedIn so that they can collaborate and get used.</p>	Facebook, Google, Email and LinkedIn API's
9.	External API-2	<p>This API provides a Comprehensive plant database that includes information on a wide variety of plant species.You can search for a plants and can retrieve details such as care instructions and growth requirements.</p>	Houseplants API
10.	Infrastructure (Server / Cloud)	<p>This Kubernetes is used here to simplify the management of complex container environments and to ensure the efficient utilization of resources.</p> <p>This Kubernetes Cluster is used to manage the cluster and worker nodes where the application workloads are scheduled and executed.</p> <p>This container registry is used here to store , manage and share container images with others in controlled and efficient manner.</p> <p>This appache server is used here for its stability,performance and extensibility,</p>	<p>Kubernetes, Kubernetes Cluster , Container registry - cloud</p> <p>Apache Server</p>

**Table-2: Application Characteristics:**

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Docker, Flask – jinja 2,apache,Kubernetes,DB2 cli using search engines these sources were installed and used each in separate repositories.	Search engines
2.	Security Implementations	User Authentication, Secure data storage, Input Validation, Secure Communication, User input and Content, use of firewalls-these are used for ensuring the security and protection of systems and networks.	UI, Application backend, Database, External API's, SSL certificates
3.	Scalable Architecture	Distributed system	Containers such as docker, Orchestration such as Kubernetes and Apache
4.	Availability	load balancers – this ensures the incoming requests across multiple servers or instances to handle increasing traffic. distributed servers – the workload is distributed across multiple servers to improve performance, scalability and fault tolerance.	Kubernetes Cloud load balancer
5.	Performance	Efficient code and database optimaization Cache – this reduces the load on backend systems and improves response times and enhances overall system performances CDN's – this reduces the latency by serving content from servers and improvise the overall performances and user experience	Programming & scripting languages, Cloud Database, Cloud based storage services