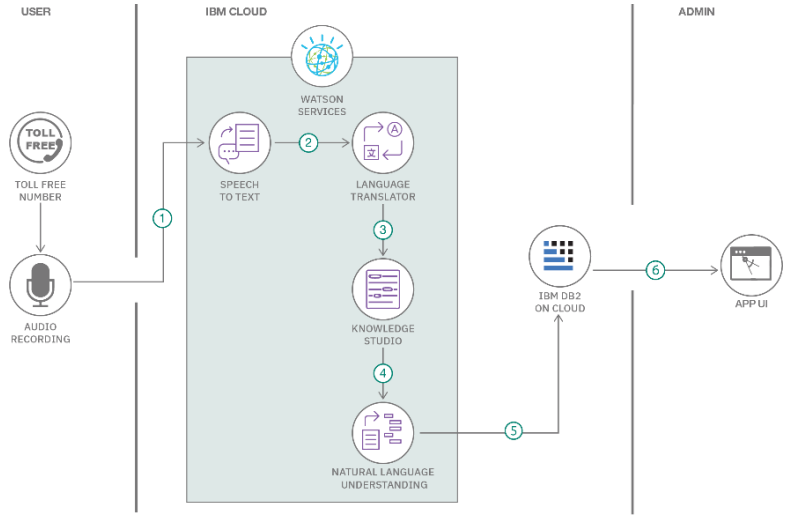
Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	27 October 2023
Team ID	Team-591900
Project Name	Alzheimer’s Disease Prediction
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Problem Statement:-Designing a Machine Learning-Based Software for Early Alzheimer's Disease Prediction and Diagnosis.



Guidelines:

- Collaborate with medical experts and researchers.
- Prioritize data privacy and ethical considerations.
- Collect diverse and high-quality patient data.
- Develop and validate machine learning models.
- Create a user-friendly web interface.
- Ensure scalability and system performance.
- Implement robust security measures.
- Integrate with medical devices and external data sources.
- Ensure high system availability and redundancy.
- Conduct rigorous testing and validation.
- Stay updated with Alzheimer's research.
- Provide training and support for users.
- Maintain compliance with healthcare regulations.
- Foster research collaborations.
- Focus on machine learning model explainability.
- Encourage feedback and continuous improvement.

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web Based interface for user Interaction.	HTML, CSS, JavaScript
2.	Application Logic-1	Core Application Logic	Python , Flask ,Django
3.	Application Logic-2	Additional Application Logic	Python , Flask ,Django
4.	Application Logic-3	More Application Logic	Python , Flask ,Django
5.	Database	Store Structured Patient Data	PostGreSQL, MySQL , Other RDBMS
6.	Cloud Database	Cloud hosted Patient Data Service	Amazon RDS , Google Cloud SQL, Azure SQL
7.	File Storage	Repository For Unstructured Data	Amazon S3 , Google Cloud Storage,Azure
8.	External API-1	Integration With External Healthcare APIs	RESTful APIs , GraphQL
9.	External API-2	Integration With External Healthcare APIs	RESTful APIs , GraphQL
10.	Machine Learning Model	Core ML Model For Alzheimer's Prediction	Python, scikit-learn, Tensorflow , PyTorch
11.	Infrastructure (Server / Cloud)	Server/Cloud Hosting For the Application:	AWS , Google Cloud , Azure or other cloud.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Utilizes Open- Source frameworks for development , facilitating collaboration and reducing costs.	Django , Flask , React , Angular
2.	Security Implementations	Implements robust security measures to safeguard patient data and maintain confidentiality	Encryption and access control Authentication.

3.	Scalable Architecture	Adopts a scalable architecture to accommodate a growing volume of patient data and users.	Microservices , containerization and load balancing
4.	Availability	Ensures high availability for Uninterrupted access.	Redundancy , failover mechanisms , cloud provider features
5.	Performance	Optimizes system performance to provide timely results and a seamless user experience.	Caching , efficient , algorithms , hardware acceleration.

References:

1. **https://www.thehealthfeed.com/health-conditions/alzheimers-disease-symptoms?ueid=eca68f29-45e3-43c3-98f1-cdf7523d866**
2. **https://www.questionsanswered.net/article/understanding-alzheimer-treatment-options?ueid=eca68f29-45e3-43c3-98f1-cdf7523d8662**
3. **https://www.faqtoids.com/knowledge/interpreting-results-alzheimer-s-test-questions-reveal?ueid=eca68f29-45e3-43c3-98f1-cdf7523d8662**
4. **https://www.thehealthfeed.com/healthy-living/living-with-dementia-patients?ueid=eca68f29-45e3-43c3-98f1-cdf7523d8662**