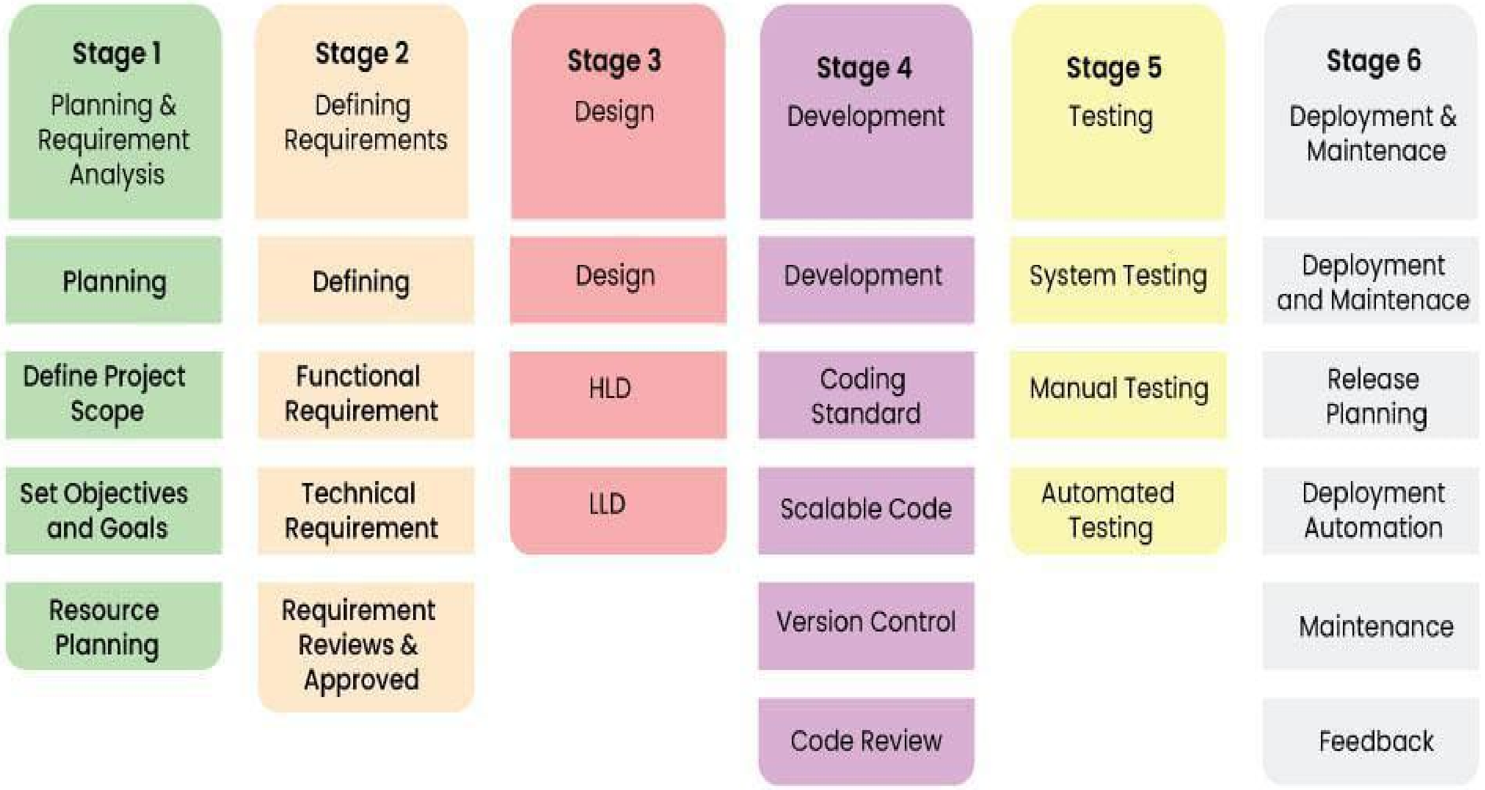
Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	17 June 2025
Team ID	LTVIP2025TMID29152
Project Name	SmartSDLC – AI-Enhanced Software Development Lifecycle
Maximum Marks	4 Marks

Technical Architecture:

The technical architecture of a Smart SDLC (Software Development Life Cycle) involves integrating various technologies and methodologies to streamline the development process, enhance collaboration, and improve software quality. It leverages tools and practices from Agile, DevOps, and cloud computing to create a more responsive and efficient development environment.

Architecture Layout:



Stage 1 Planning & Requirement Analysis	Stage 2 Defining Requirements	Stage 3 Design	Stage 4 Development	Stage 5 Testing	Stage 6 Deployment & Maintenace
Planning	Defining	Design	Development	System Testing	Deployment and Maintenace
Define Project Scope	Functional Requirement	HLD	Coding Standard	Manual Testing	Release Planning
Set Objectives and Goals	Technical Requirement	LLD	Scalable Code	Automated Testing	Deployment Automation
Resource Planning	Requirement Reviews & Approved		Version Control		Maintenance
			Code Review		Feedback

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with the system(e.g. Web, Mobile App, Chatbot.)	HTML/CSS,JavaScript / React Js.
2.	Application Logic-1	Core logic:Authentication,role based access,session handling.	Python,Node.js(FastAPI),JWT.
3.	Application Logic-2	Chat-bot interaction and AI query handling.	OpenAI GPT,Langchain,
4.	Application Logic-3	PDF classification,sentiment analysis,summarization logic.	Python(transformers,NLTK,scikit-learn).
5.	Database	User data,feedbback,session logs.	postgreSQL,mongoDB.
6.	Cloud Database	Scalable managed database service.	Firebase firestore,AWS RDS,google could SQL.
7.	File Storage	File upload for PDfs,code,test cases.	AWS S3,google cloud storage,firebase storage.
8.	External API-1	For 0Auth integration's(google,LinkedIn).	Google 0Auth API,LinkedIn API.
9.	External API-2	Feedback and sentiment analysis API.	open-AI API,GitHub API,REST APIs.
10.	Machine Learning Model	Code summrizer,bug fixer,test case generator.	GPT-based condex,T5,huggingface transformers.
11.	Infrastructure (Server / Cloud)	Deployment and scaling across platforms.	Docker,kubernetes,,GCP app enginel,github actions.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used for frontend,backend,and AI models.	React.js,node.js,python(fastAPI),hugging face transformers,tensorflow,flask
2.	Security Implementations	All access control and security measures used.	JWT,0Auth2,HTTPS.
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Cloud run,microservices,API gateway.
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	AWS/GPT load balancer.
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Lazy loading,framer motion,cloudfront.