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1. Architecture

1.1 System Design -

Systems design implies a systematic approach to the design of a system. It may take a bottom-up or top-down approach, but either way the process is systematic wherein it takes into account all related variables of the system that needs to be created—from the architecture, to the required hardware and software, right down to the data and how it travels and transforms throughout its travel through the system. Systems design then overlaps with systems analysis, systems engineering and systems architecture. In this phase, the complex activity of system development is divided into several smaller sub-activities, which coordinate with each other to achieve the main objective of system development.

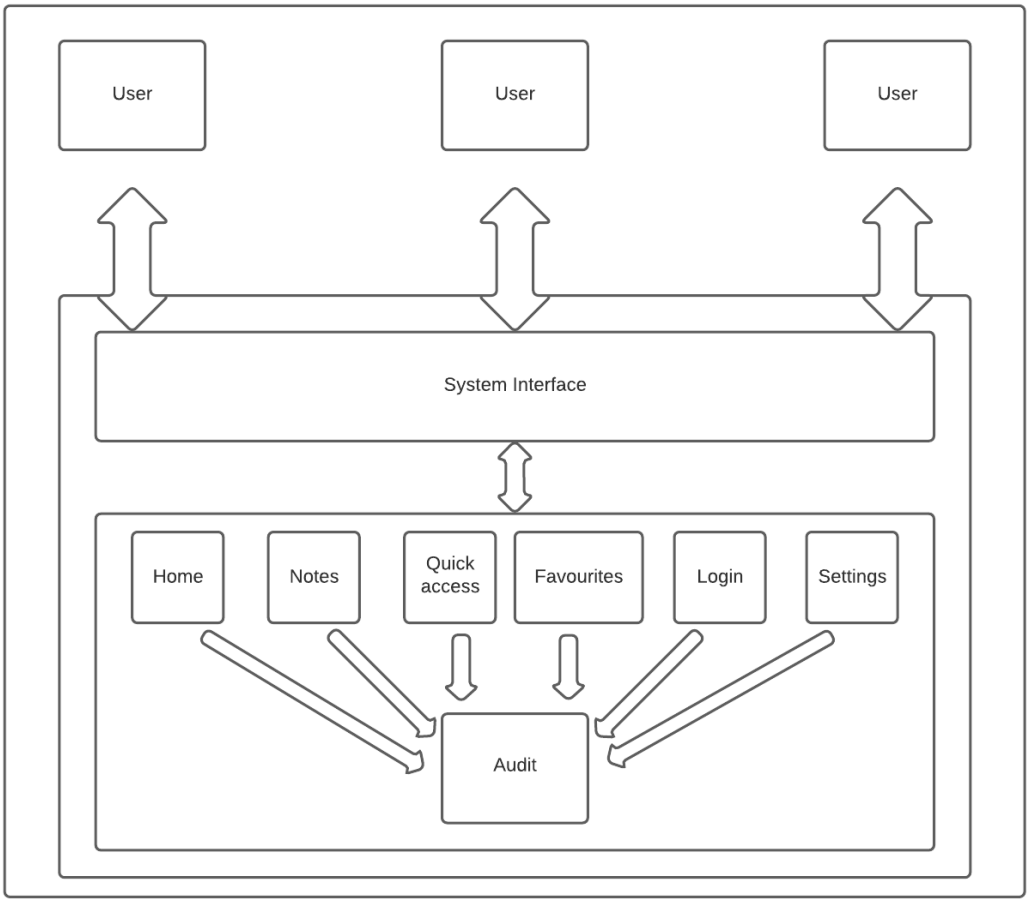

Fig 1: The context diagram shows the main actors interacting with the system.

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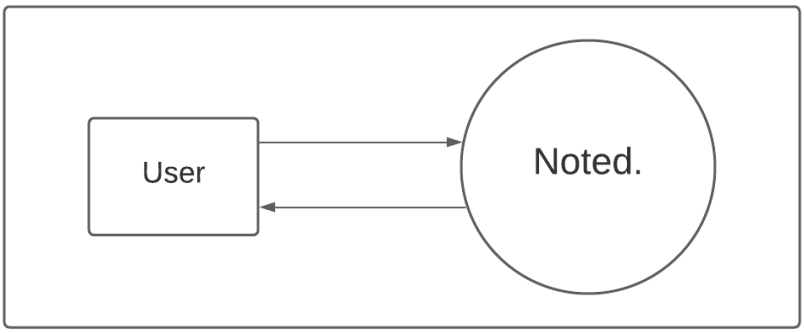

Fig 2: Context diagram for UUIs

2. Data Design

2.1 Data Flow Diagrams -

2.1.1 0 Level DFD:

Level 0 DFD captures various entities external to the system and interacting with it. Data flow occurring between the system and the external entities. Level 0 DFD is also called context diagram. A context diagram establishes the context of the system, i.e. data sink and data sources.

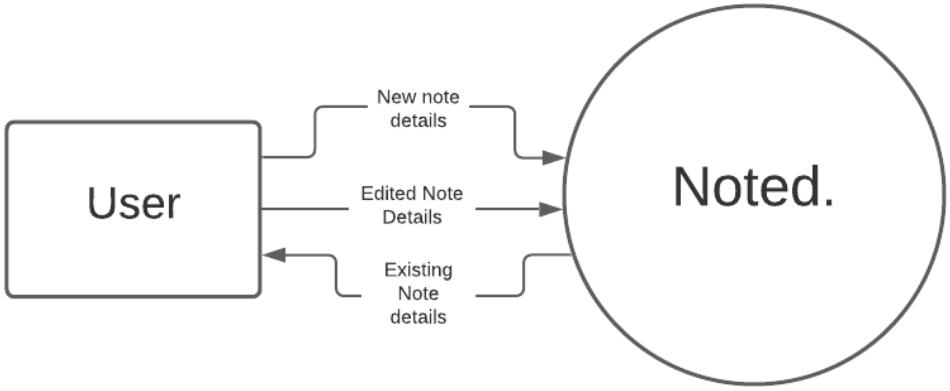

Fig 3: Level 0 DFD

2.1.2 1 Level DFD:

The application is decomposed into major functions and components.

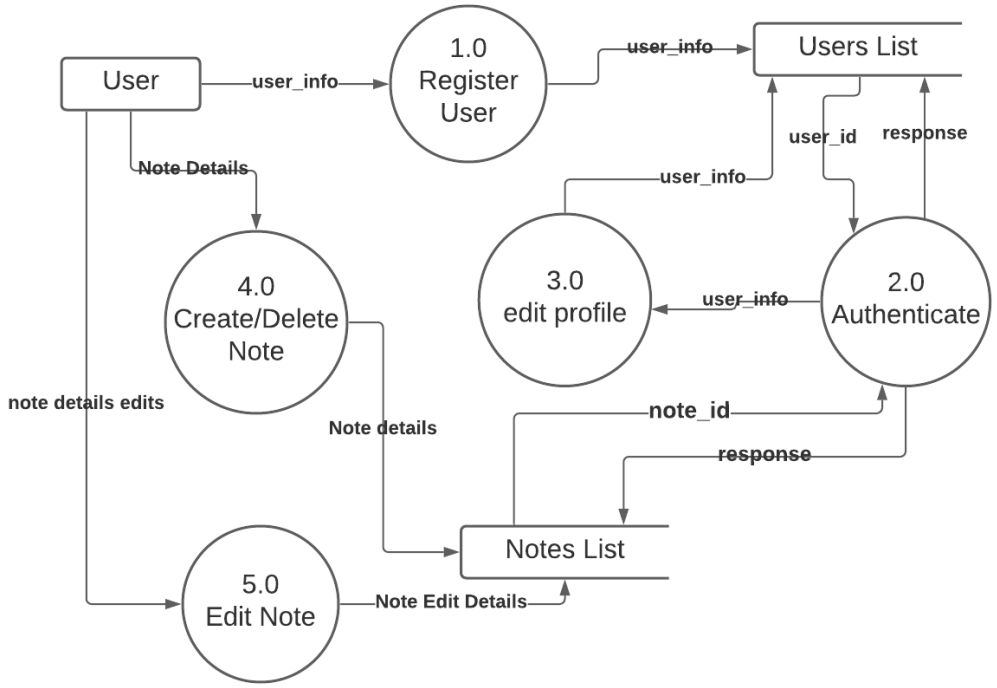

Fig 4: Level 1 DFD

2.1.3 2 Level DFD:

The function ‘Edit Note’ is decomposed into different underlying functions.

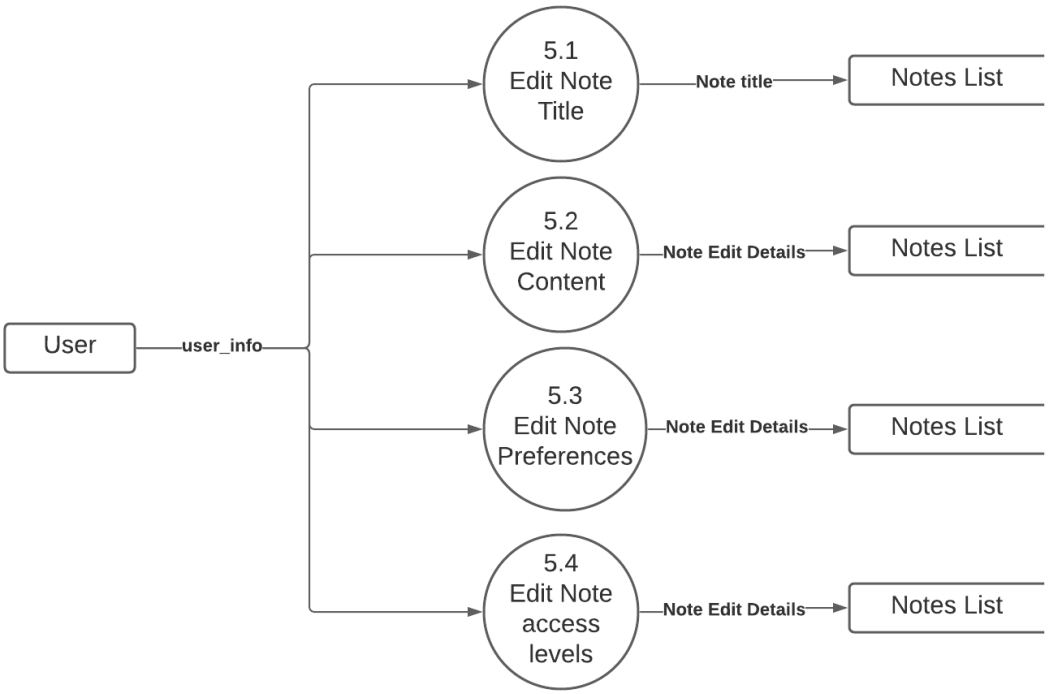

Fig 5: Level 2 DFD

2.2 Data Dictionary -

	FIELD	TYPE	Description	NULL
user_info	user_id	int(100)	Unique user id	no
	user_name	varchar(100)		no
	email_address	varchar(100)		no
	profile_picture	URL		no
	date_joined	timestamp	Date of joining platform	no
	last_login	timestamp	User's last active time	no
response	response	boolean	Check for authentication	No
note_info	note_id	int(10)	Unique note id	No
	note_title	varchar(100)		No
	user_id	int(10)	User ID of the note owner	No
	access_control_id	int20)		
access_control_list	access_control_id	int(20)		
	note_id	int(10)	Node ID	No
	user_list	int(10)	User ID of user with access to the note	No
	access_level	int	One of three levels(edit, view, comment)	

3. Software Interface Design

3.1 User Interface Design -

UI is designed according to standard UI design principles.

- **The simplicity principle:** Users can navigate through the website with relative ease. The UI is minimalistic and easy on the eye.
- **The visibility principle:** Every function is clearly visible to the user and can be easily accessed.
- **The structure principle:** Elements on the page are organized such that related elements are grouped together, and unrelated elements or/and a group of elements are kept separate, at a distance from each other.
- **The feedback principle:** The design ensures and validates users' actions and selections.
- **The reuse principle:** Certain names and elements have been reused to increase the ease of use and reduce ambiguity.

Additional design implementations:

- **User choice**: The application allows the user to customize certain elements to their preference.

3.2 Description -

- **"Landing"** page is the first page the user sees. Users can either login to the web application, or head to the **Home** page if already signed-in. Users can create a note without logging in as well.
- **"Login/Register"** page is the webpage where existing users can login and new users can register themselves and make an account.
- **"Home/Dashboard"** page is the link the user is brought to after logging in. From here, the user can access all functionalities of the website i.e. creating, editing and sharing their note(s). This page is the effective dashboard for the user where they have access to all their notes, favourites, settings and other functionalities.
- **"Create a note"** page is the page where users can create a note without logging in. It can be accessed from the Landing page.
- "**Edit profile"** is the page that allows the user to edit their user profile details.

3.3 Web Pages in a Tree -

The system's web pages are presented in the form of a tree in the figure below. These cover the necessary functionalities of the application. The user will come to the landing page and from there on can decide to login or register or move to the homepage/dashboard if already logged in. The user can also create a note without logging in and the landing page will take them to a

note workspace with reduced functionality where the user can work without registration. The logged-in user can view the note details page from the note workspace which contains details like update history, creation date etc.

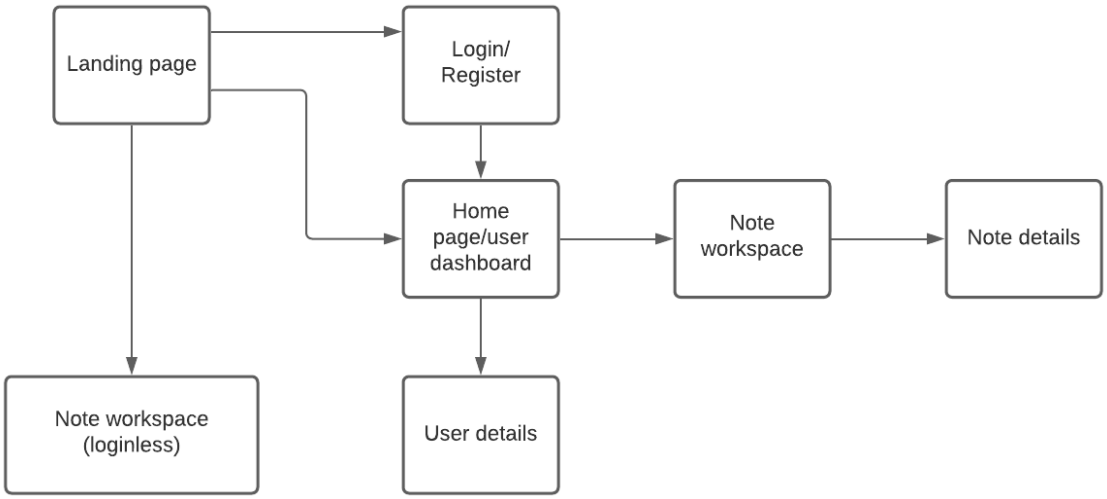

Fig 6: Representation of web pages in form of a tree

4. Modules

4.1 Module Wise Description -

Module	Operation
start-up()	Renders the landing page once the user visits the website.
register()	Facilitates registration of new users by taking user info as input while using google authentication. After user creation and validation, sends the user to the home page.
login()	Takes in user info, authenticates it and sends the user to the homepage if validated.
edit_profile(user_id)	Takes the user id as a parameter, and updates the user profile as per the input from the user.
create_note(note_title)	Takes note title, body and other details and creates a new note in the database assigns it to the user ID of the user or session Id as applicable.
edit_note(note_id)	Takes note id as a parameter, and makes changes to the note according to the user input.
delete_note(note_id)	Takes in the note ID and deletes the entry in the database

	and sends a note deletion confirmation to the user.