Requirement Document: Visual Models for B.Tech Notes Website

1. Introduction

This document outlines the functional requirements for the "B.Tech Notes Website" through visual models. The primary goal is to create a centralized platform for students to browse, filter, and download academic notes. Contributors can upload content via Google Drive, and an Admin will manage the system. The models define the system's scope, actors, interactions, and data flow.

1. Use Case Diagram

1.1. Purpose

To identify and define the interactions between the system's external actors (users, systems) and its core functionalities (use cases).

1.2. Actors

- **Student User:** A user who browses, searches, and downloads notes. They can also contact the admin.
- **Contributor:** A privileged user who can upload new notes by linking to Google Drive files.
- **Admin:** A system administrator who manages the notes repository, responds to user queries, and maintains the system.

UPI Gateway (External System): A future third-party payment service for validating transactions.

1.3. Use Cases

- **Browse Notes:** View a list of available notes**.**
- **Apply Filters:** Filter notes by subject, branch, semester, university, etc.
- **Download Notes:** Download a selected note (redirects to Google Drive).
- **Read Upload Guidelines:** View the rules and process for contributors to upload notes.
- **Upload Notes:** Submit a new note by providing metadata (title, subject, etc.) and a Google Drive link.
- **Submit Contact Form:** Send a message or query to the admin.
- **Process Payments (Future):** Handle the transaction with the UPI gateway for premium access.
- **Access Premium Notes (Future):** Unlock and download notes marked as premium after successful payment.

1.4. Use Case Diagram (Textual Representation & Description)

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|        Website System      |

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| |    Browse Notes      | |

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| |    Apply Filters      | |

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| |    Download Notes      | |

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| | Read Upload Guidelines | |

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| |    Upload Notes      |<----(Extends)---+
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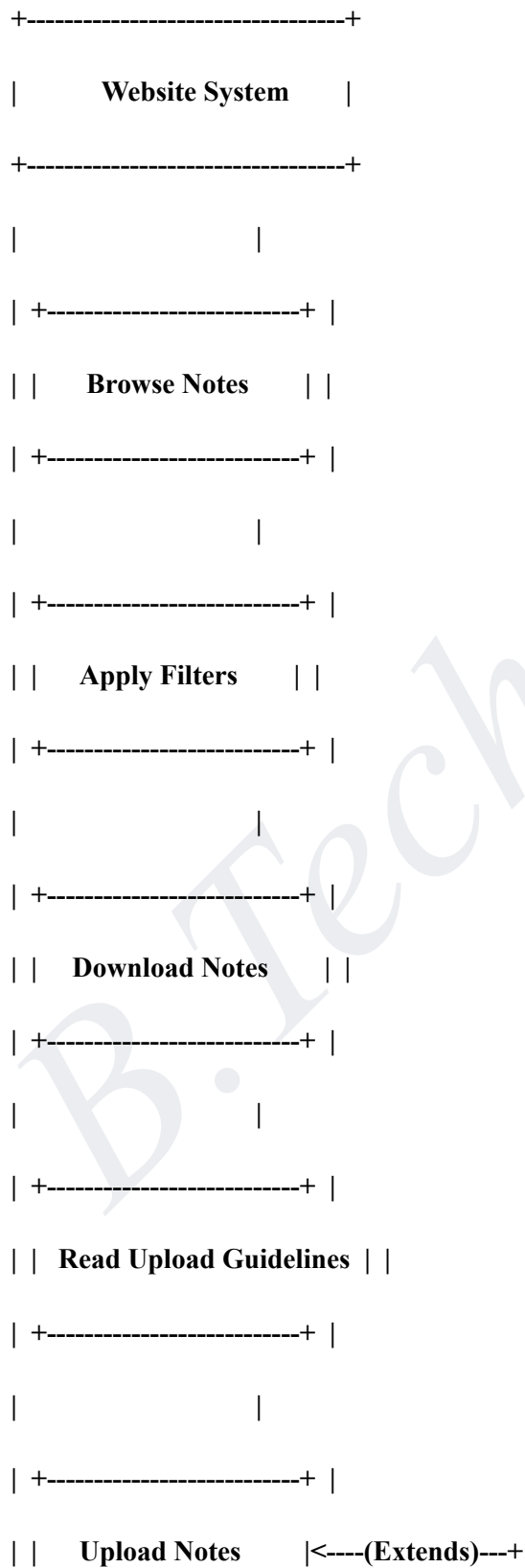
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| |  Submit Contact Form   | |    | Contributor  |

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| |  Process Payments      | |

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| +------------------------+ |

| |  Access Premium Notes  | |

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|      |        |

|    +-------v--------+    |

|    | Student User |    |

|    +--------------+    |

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|    |  Admin   |--------+

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    |        |             |

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    |     |  UPI Gateway   |   |

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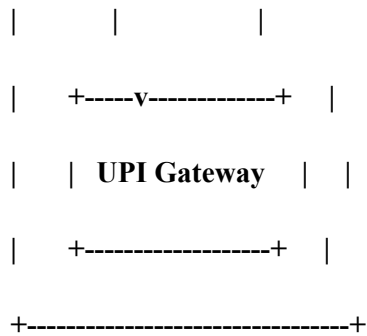
1.5. Use Case Relationships

- **«include»:** Download Notes includes Browse Notes (you must browse to find a note to download).
- **«extend»:** Upload Notes extends Read Upload Guidelines (the contributor is expected to read the guidelines before uploading).

2. Data Flow Diagram (DFD)

2.1. Purpose

To illustrate the flow of data between the system, external entities, and data stores.

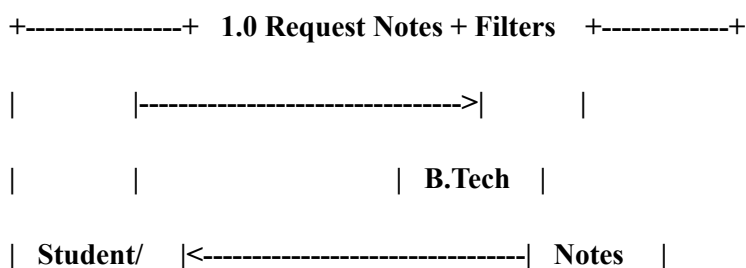### 2.2. Context Level (Level 0) Diagram

This diagram shows the system as a single process and its interactions with external entities.

Entities:

- **Student/Contributor:** The primary user of the system.
- **Admin:** The system manager.
- **Google Drive:** External cloud storage for notes.
- **Email Service:** External service for handling contact form messages.
- **UPI Gateway (Future):** External payment service.

Diagram (Level 0):

text

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    +----------------+  1.0 Request Notes + Filters   +-------------+

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    |       |                              | B.Tech  |

    | Student/   |<--------------------------------| Notes   |
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| Contributor  |  2.0 Display Notes List      |  Website  |

|          |                        |  System  |

|          |  3.0 Download Request      |      |

|          |-------------------------------->|      |

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   |                          |  |  |

   | 4.0 Submit Query/Upload Request      |  |  |

   |-------------------------------------------+|  |  | 5.0 Fetch File

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   |                          |  |          v

   |               6.0 Forward Message    +-----------+ +-------------+

   +---------------------------------------------+|   +----->| Email Svc |  | Google Drive|

                          ||       +-----------+ +-------------+

+---------------+   7.0 Manage Notes/View Queries  ||

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|   Admin    |                  |

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+---------------+   8.0 Management Actions
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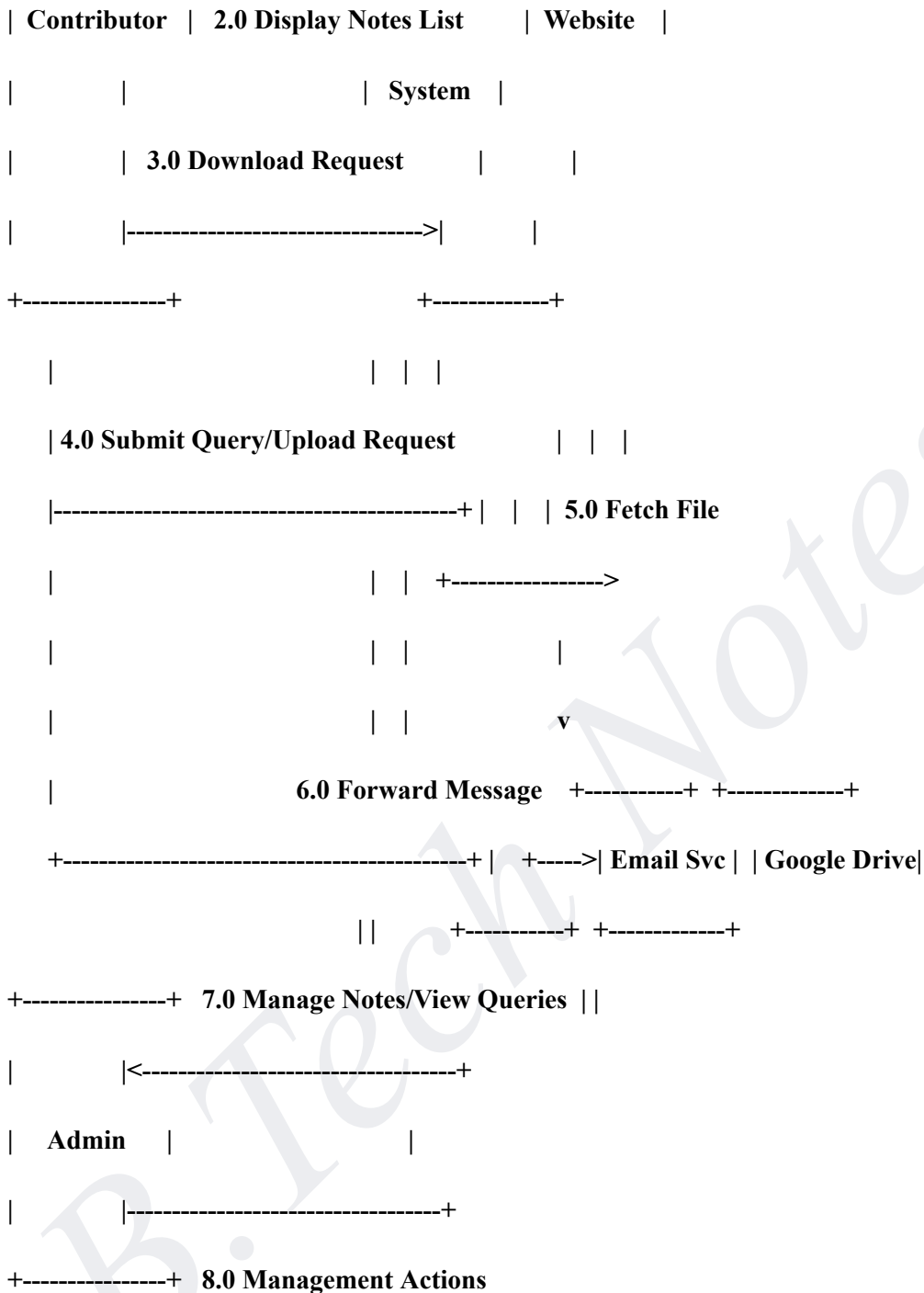
Data Flows:

- **Request Notes + Filters**
- **Display Notes List (Filtered)**
- **Download Request (with File ID)**
- **Submit Query / Upload Request (with metadata & drive link)**
- **Fetch File (Request to Google Drive API)**
- **Forward Message (Query details to Email Service)**
- **Manage Notes/View Queries (Admin command)**
- **Management Actions (e.g., approve, delete, reply)**

2.3. Level 1 DFD Breakdown

This diagram decomposes the main system (Process 0) into its major sub-processes.
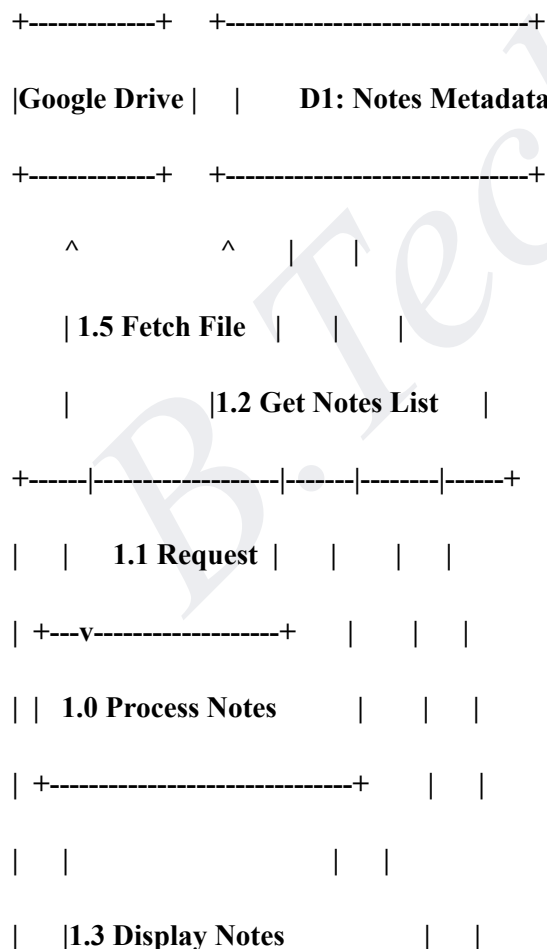
Processes:

- **Process Notes:** Handles retrieving, filtering, and serving the list of notes.
- **Handle Uploads:** Manages the submission of new notes from contributors.
- **Process Contact Form:** Receives and routes user queries.
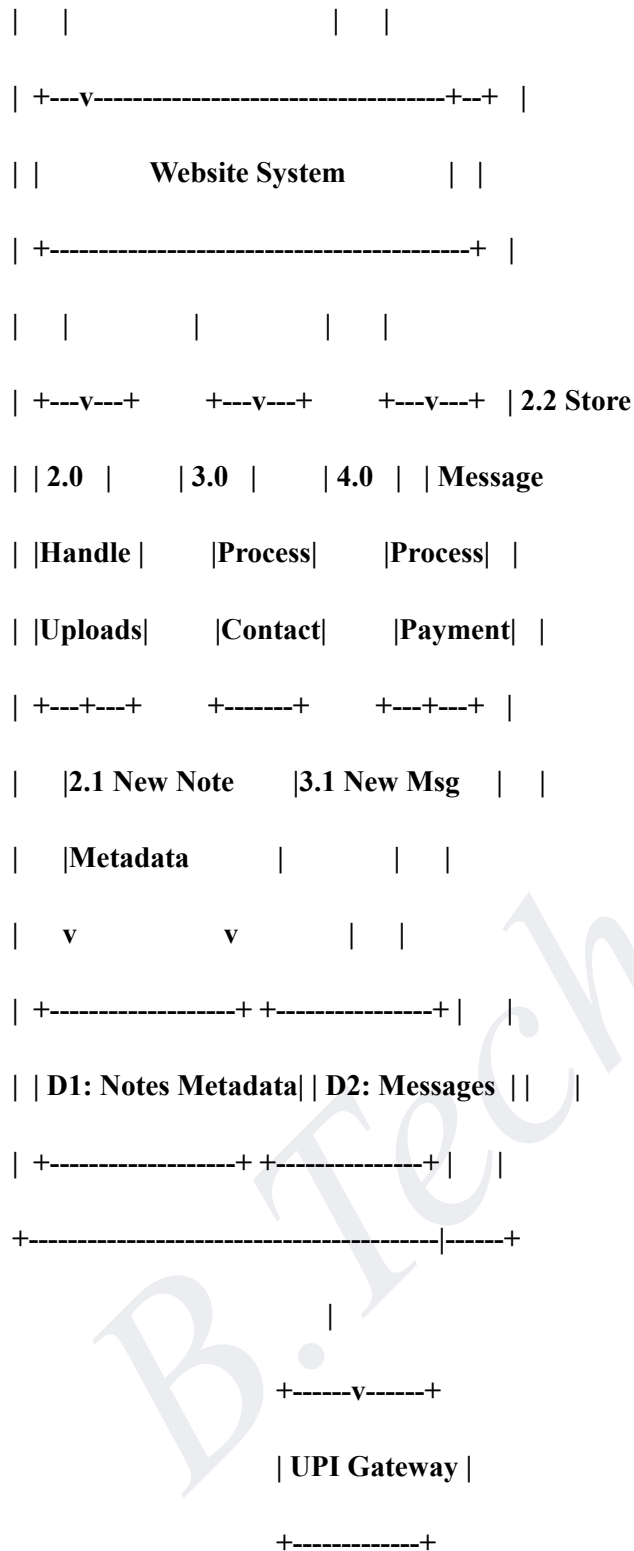- **Process Payment (Future):** Manages the payment validation workflow.

Data Stores:

1. **D1: Notes Metadata: A database storing information about each note (title, subject, drive link, uploader, etc.). Not the actual files.**
2. **D2: Messages/Queries: A database or log storing user contact form submissions.**

Diagram (Level 1):

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|Google Drive |   |      D1: Notes Metadata    |

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    | 1.5 Fetch File   |    |    |

    |                 |1.2 Get Notes List    |

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|   |    1.1 Request |    |    |    |

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| | 1.0 Process Notes       |    |    |

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| |1.3 Display Notes            |    |
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| |            Website System          |  |

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| |             |           |    |

| +---v---+      +---v---+      +---v---+  | 2.2 Store

| | 2.0   |      | 3.0   |      | 4.0   |  | | Message

| |Handle |      |Process|      |Process|  |

| |Uploads|      |Contact|      |Payment|  |

| +---+---+      +-------+      +---+---+  |

|    |2.1 New Note     |3.1 New Msg   |   |

|    |Metadata         |              |   |

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| | D1: Notes Metadata| | D2: Messages ||   |

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              | UPI Gateway |

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Data Flows (Level 1):

1.1 Request: User's request to browse/filter notes.

1.2 Get Notes List: Process fetches filtered metadata from D1.

1.3 Display Notes: The UI is populated with the note list.

1.5 Fetch File: The system generates a download link from Google Drive based on the stored Drive File ID.

2.1 New Note Metadata: Contributor's submitted data is stored in D1.

2.2 Store Message: User's query is stored in D2.

3.1 New Msg: Process Contact Form stores the incoming message.

(Future) 4.1 Payment Request / 4.2 Validation Response: Communication with the UPI Gateway.