



Problem Statement: Paperless Office

PS Number: DS171

Category: Software

Organization: Dr. B R Ambedkar Institute of Technology

Participants :

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Problem statement description :

Making the official activities to go paperless - like sending official communications through e-media, automating procedures for protecting the environment.

Design a customizable workflow management system to handle the submission of documents and approval workflow with the facility to sign the document with approval seal.

This system should have the ability to intimate the concerned party by email and also be manageable by email.

Abstract :

Files are the currency of business, how well the paper files migrate onto the computers can be the cornerstone of any business or institution. Paperwork at government offices and other institutes is highly tedious and time consuming.

We aim at designing a **COMPLETE, INTEGRATED PAPERLESS OFFICE DISTRIBUTED WEB PORTAL** where our users can upload their official documents as well as to authenticate/verify them using their personal electronic signatures. Think intuitive document management and one-click scanning.

This portal aims at nullifying all paperwork at the same time providing security at all levels along with a user-friendly interface by incorporating the following:

1. Reading Paper Documents using OCR

Challenge: Dealing with any paper files that the business already possesses. All paper files must be digitized so they can be accessed via our paperless office platform

Solution: Optical Character Recognition (OCR) software. OCR detects the exact letters and characters on scanned pages. This makes all scanned files editable and fully searchable once they are in the systems stored in the required format.

2. Circulate notices and create Fillable Forms

Challenge: Ensuring that important notices/announcements reach the concerned recipients/applicants, at the same time capturing their responses is difficult. Also filling out paper forms is a very time-consuming aspect of office work that usually involves manual processing. Once a paper form is completed, it is either filed or the data is manually transferred into an electronic system. After the data has been recorded, the paper form is usually discarded — wasting resources.

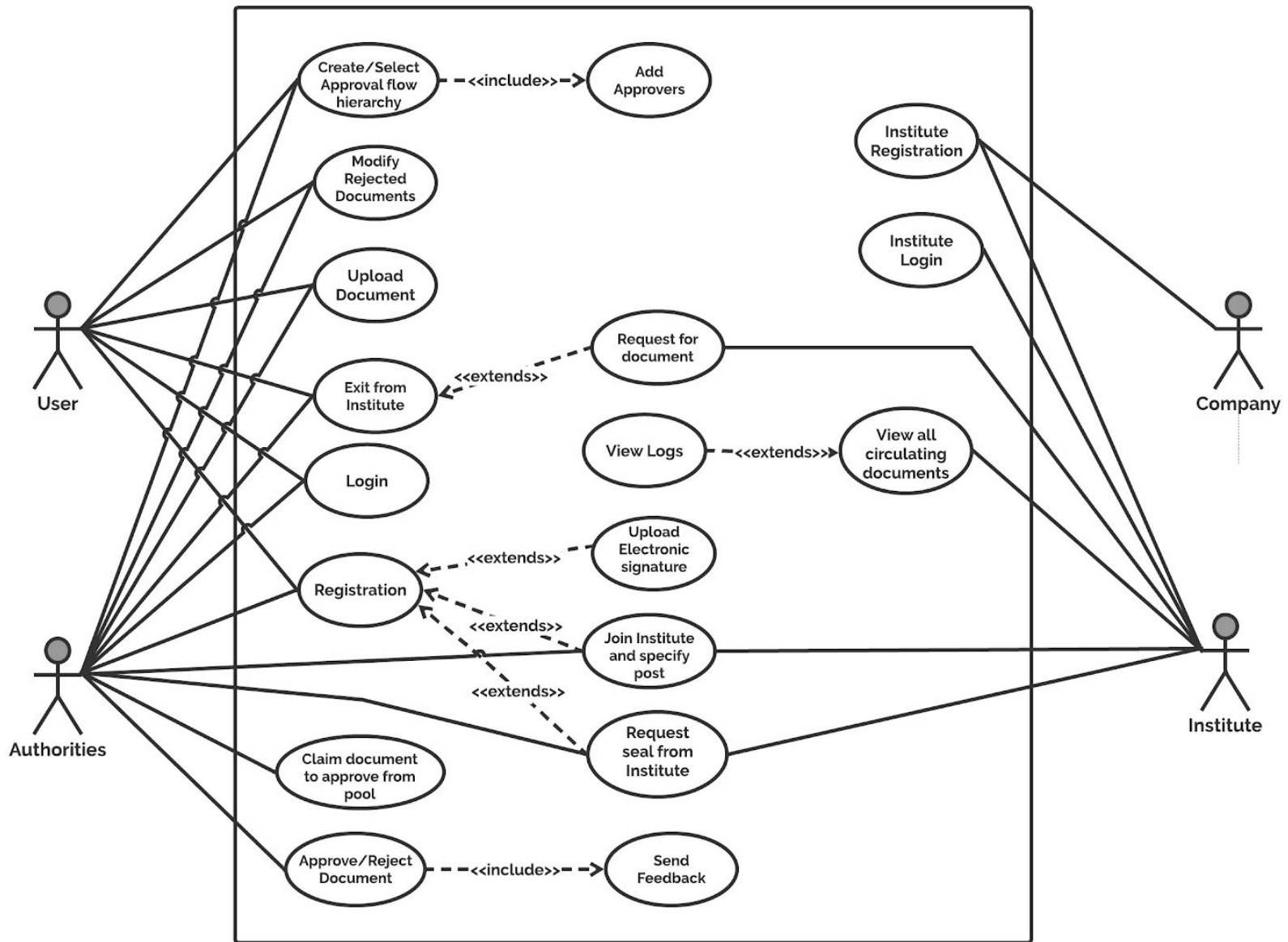
Solution: Creating fillable forms and notify concerned users- There's no more need to circulate notices and fill out the paper forms for the applications, you would be notified by our software and can be easily filled by you on your computer. These electronic forms contain all of the elements of a paper form, including text fields, check boxes, radio buttons, combo boxes, list boxes, and more.

3. Electronic Sign and Approval Seal

Challenge: Sending signed documents can be a resource-intensive process. Typically, the document must be printed, signed, stamped by the institute seals(if required), scanned, and sent.

Solution: The user can add his/her signature to our system. During the software will automatically add the signature in the required places, or the user may manually choose the location for signing(drag and drop). After that he/she can send the signed document to the desired recipients. No paper is used during the entire process.

USE CASE DIAGRAM OF OUR PLATFORM:



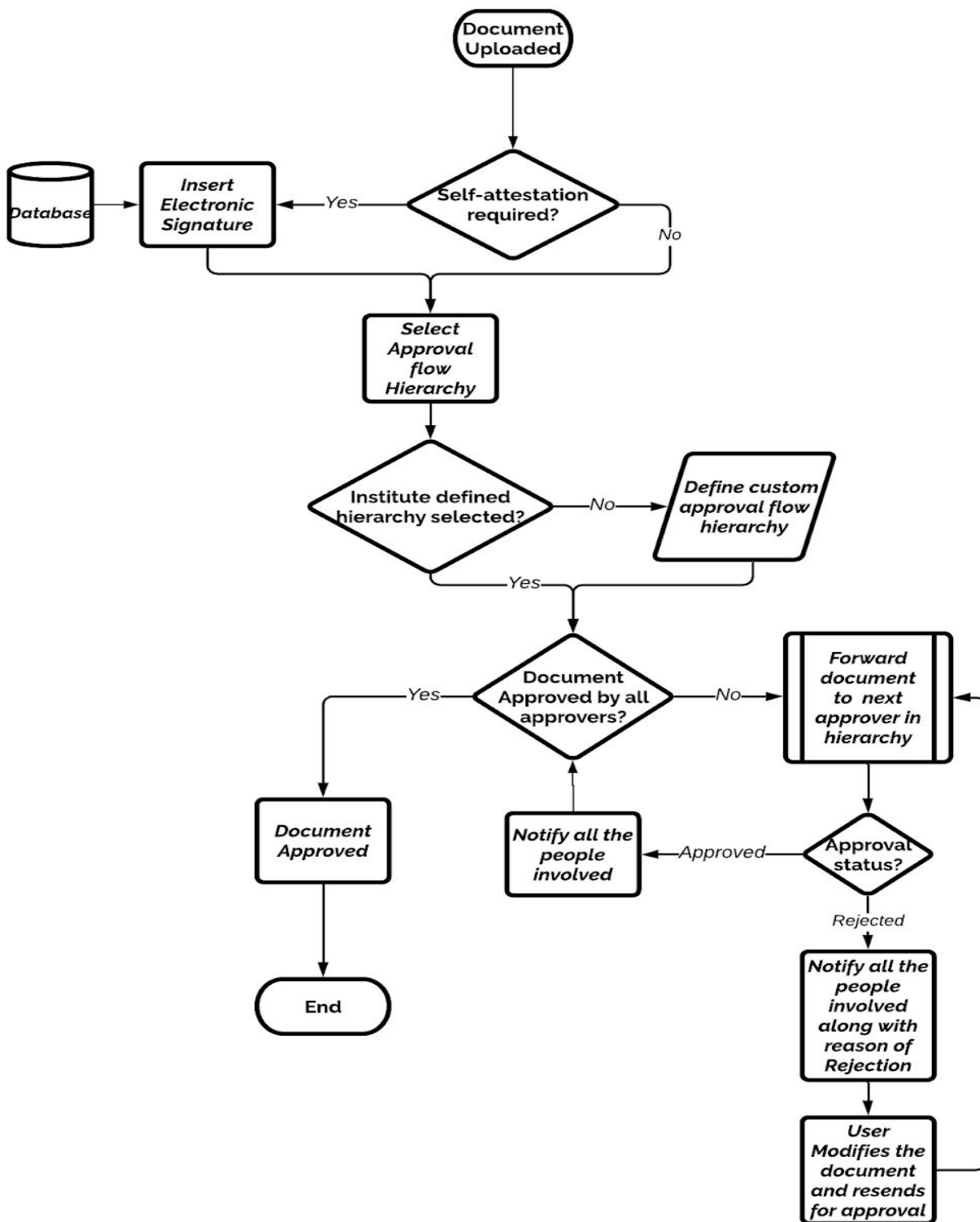
USER FUNCTIONALITIES:

- A user can create an account by providing necessary details along with his **email** where he may be notified about his activities privately.
- .
- While signing up he may choose to join a specific institute ,in that case Institute Admin will validate him and give him the required institute seals.
- He/She would also provide us with his electronic signature which we will store in encrypted format in our database. User can be an approver or a sender of documents.
- The user can then upload the required documents for signing. Signature would be preferably taken as an image. They may wish to choose any of the specified format provided by our application for their documents which will be read and stored by our application in the user profile.
- User may build his own custom template of approvers as per the hierarchy or can choose a default template defined by the institute for a standard protocol.
- They can then send the signed document to the recipient on our secure network.
- While leaving the institute user may request for some of his official documents concerning the institute to be kept with him.

INSTITUTE(ADMIN) FUNCTIONALITIES:

- An admin can create his account as well as register his institute on our platform. He/She will then validate the users signing up as a part of his institute and give them the institute seals if required.
- He/She will thus have access to all documents and activities of the members of the institute.
- He may choose to approve/reject the users request for keeping document related to the institute when they leave the institute.

WORKFLOW



PROPOSED ALGORITHM:

. SignUp

Institute(Admin) SignUp: Institute will register on our platform and it will be validated by us(as the company selling this platform).

User SignUp: User will register on our platform and submit all his details ,if he/she claims to be a part of any institute he/she will be validated by the institute admin.

. Uploading Documents and Signing:

User will upload the document in any of the featured formats. All the document transactions will happen in this format. For signing ,our system would mark/highlight the regions where signature will be uploaded ,post that user may also choose to add his electronic signature manually on regions not highlighted by the system.

. Approval Flow Hierarchy

The user can either choose a pre-defined hierarchy of approvers in the control flow defined by the institute for that particular protocol or he may built his custom control flow assign hierarchies accordingly for his particular requirement.

At any step in the control flow the document may require the signature of all approvers or any one of them as per the protocol. In case the document is rejected the document will be sent back with appropriate feedback along with corrections. User may also wish to discuss his queries about the approval process on a forum with all the approvers. Once the document passes through the entire control flow successfully it is declared approved and is returned back to the user.

WHY USE OUR PLATFORM?

1. SECURE:

We are ensuring the security using digital signature for **authentication, integrity** and **non-repudiation**.

Our system will encrypt the documents thus providing confidentiality, integrity and availability of the document.

BlockChain would be implemented as an additional security feature on the transaction logs.

2. ENHANCED DOCUMENT MANAGEMENT

The platform will use a familiar “Cabinet/Drawer/Folder” design that mimics a traditional physical filing system. Also the user friendly interface will enable him to view the pending approvals ,approve the document, view approvers and add approvers for any document.

3. ALL FORMATS CONSIDERED (.ppt, .doc, .txt, .xml, .json etc.)

User can upload the document/electronic signature in any of the featured formats of our platform like(.pdf, .docx, .xlsx, .ppt, .jpg, .png).

Hardware/Software Requirements :

- Python (Flask) for our web framework
- Ethereum blockchain for security
- Database: Google Cloud Storage Firebase (no-sql)

