MINISTRY CATEGORY: **MINISTRY OF HRD**

PROBLEM STATEMENT: **IMAGE DATA PROCESSING AND EVALUATION**

Problem Code: #CBS2

AICTE Application No.:1-2809546845

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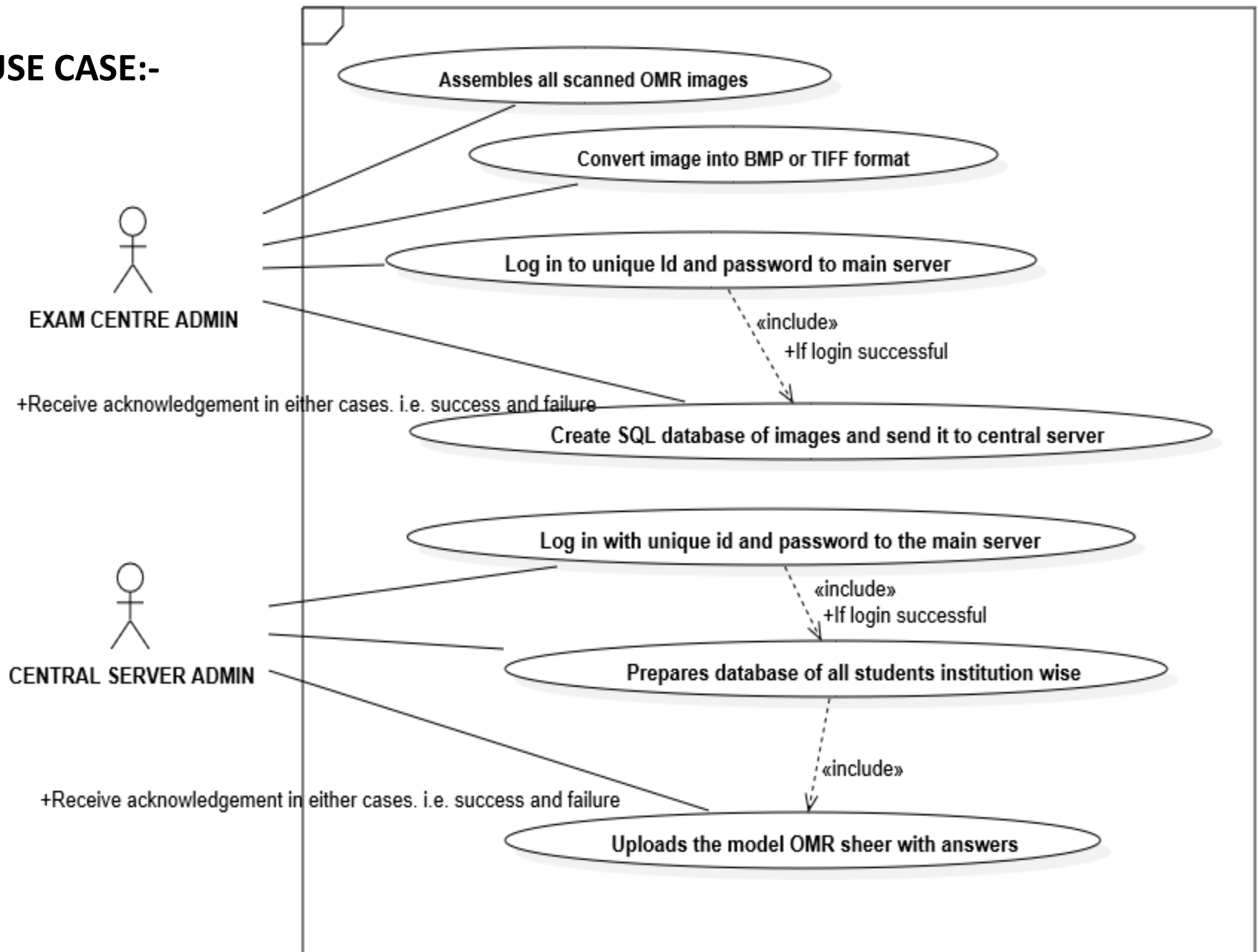
Ideology/Solution:-

AT EXAM CENTER

- Scanned OMR sheets are converted from RGB to Gray scale image.
- Applying threshold values convert the Gray image to BMP/TIFF.
- This is then transferred in the form of a SQL database using a suitable protocol(FTP).
- FTP provides the IP address.

    - SQL database provides security through username and password.

    - It will reduce the size of the uploaded document considerably.

- If uploading fails , the client server will receive a failure message . On successful uploading an acknowledgement is sent.
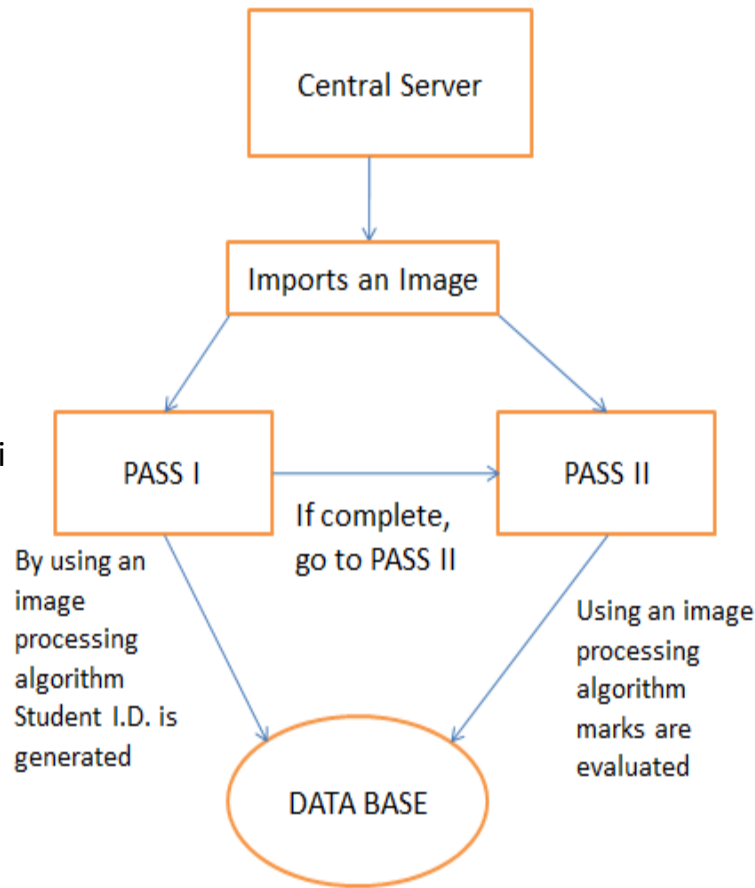
AT CENTRAL SERVER

- Images are extracted from the received database.
- The student's I.D. is extracted after processing the image.
- The image will also be processed section wise to generate marks of the respective section by comparing with the model answer sheet .
- The number of allocated students to a center is known and the number of scanned images is known, from this the number of absentees is calculated.
- All the extracted information is entered in the database where I.D. acts as the primary key.
- Using the Identification number the location in the original database at the central server is found using a searching algorithm , and subject – wise marks are updated.
- A field in the database indicating the strength of the center and the absentees is added.

USE CASE:-

Assembles all scanned OMR images

Convert image into BMP or TIFF format

Log in to unique Id and password to main server

EXAM CENTRE ADMIN

«include»
+If login successful

+Receive acknowledgement in either cases. i.e. success and failure

Create SQL database of images and send it to central server

Log in with unique id and password to the main server

«include»
+If login successful

CENTRAL SERVER ADMIN

Prepares database of all students institution wise

«include»

+Receive acknowledgement in either cases. i.e. success and failure

Uploads the model OMR sheer with answers

Technology Stack:

- Images : TIFF or BMP
- SQL Database of scanned and converted files
- Language used:
- File Transfer Protocol(FTP)with Windows Firewall.
- At central server :- Language: Open CV for image processing and multi threaded type of server.
- **Algorithm used:**

One image processing algorithm like Region of Interest(ROI) will be used for extracting the Student I.D. and one more will be used for evaluating the marks of each student.

Showstopper:

- Server overloading.
- Improper net service:
    -If the internet service is slow uploading time will increase.
- Failure of centralized main computer at exam center.
- Error in scanning.
- Loss of data during extraction and downloading.
- If the template of the OMR sheet changes then the corresponding algorithm will also change.

Central Server

Imports an Image

PASS I

PASS II

If complete, go to PASS II

By using an image processing algorithm Student I.D. is generated

Using an image processing algorithm marks are evaluated

DATA BASE