Parking Management & Security System

Introduction

PMM system project is developed to solve manual parking and its management worked by a security watchman and CCTV cameras. By using the PMS system the owner can fully automate the process such as monitoring vehicles, Recording individual videos & images recording, notifying the owner/admin for unauthorized entry,assigning parking lot numbers to vehicles and managing the parking, and recording data and analyzing later.

Features of PMS System

★ Management of parking areas

★ Surveillance of the parking area and surroundings(only if allowed in pmss)

★ Recording vehicles traffic details

★ Monitoring and analysis of parking time

★ Allocation of parking space

★ Security

★ Monitoring unauthorized vehicles entry

★ Observe activities in the parking area

★ Telegram notification to the Owner(user)

★ Broadcasting Parking lot number to the driver

System Requirement

Processor	intel i5 or AMD Ryzen 5
RAM	16 GB
Storage	500 GB hard disk space
Graphics Card	2GB VRAM minimum
Operating System	Windows 10 or higher operating system
Network Requirement	LAN/PAN/Local-Hotspot/Local Network HUB *(PMSS must be in the same network)
Camera(Input source)	IP-Camera or any other surveillance camera with IP-Cam support in same network
Environments	Python 3.7 or above
Android Device	Android Mobile phone or Smart TV of Android version 7.0 or above

Hardware Components

Cameras:

The system requires cameras to capture images of vehicles. The cameras can be IP cameras or surveillance cameras, and they must be compatible with the system software. The camera should have a high resolution to ensure that the license plate numbers are clear and legible.

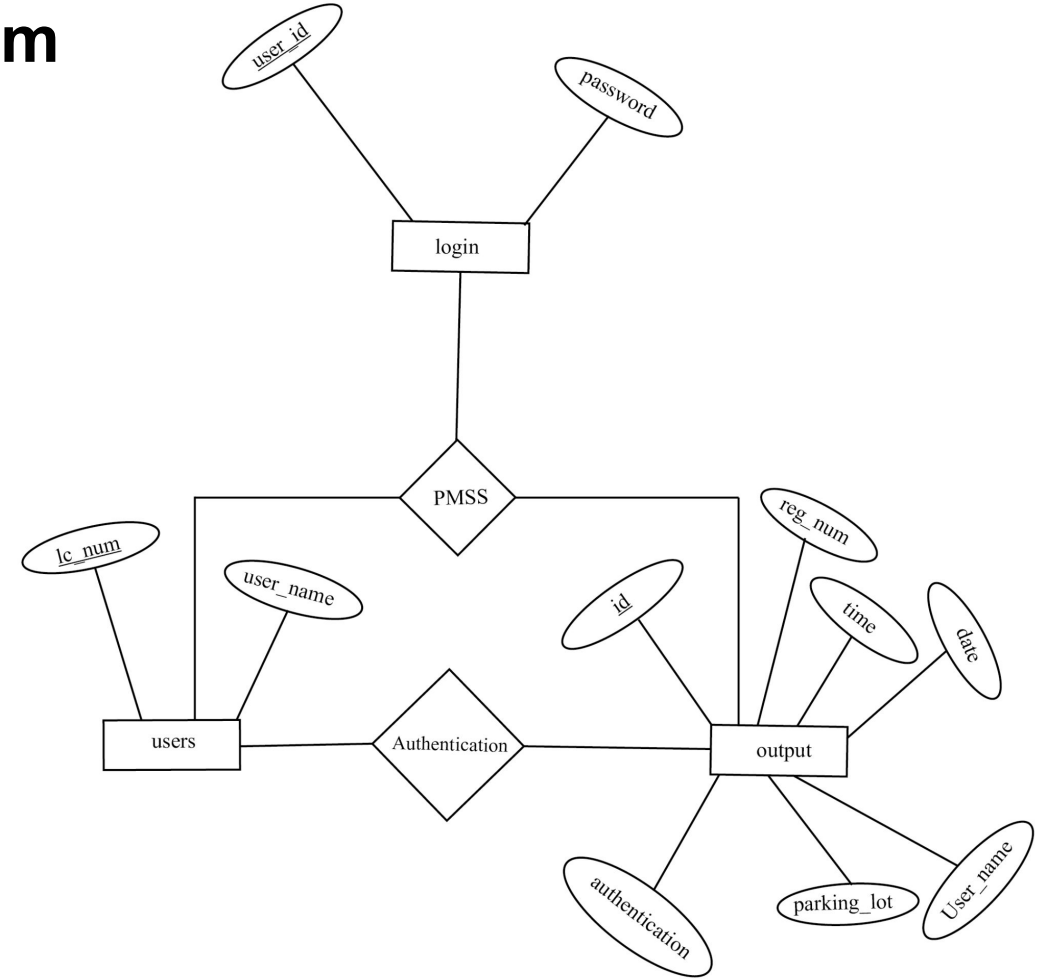
Network:

The system requires a network connection to transfer data from the cameras to the computer. The network should be stable and have high bandwidth to ensure that the data transfer is fast and reliable.

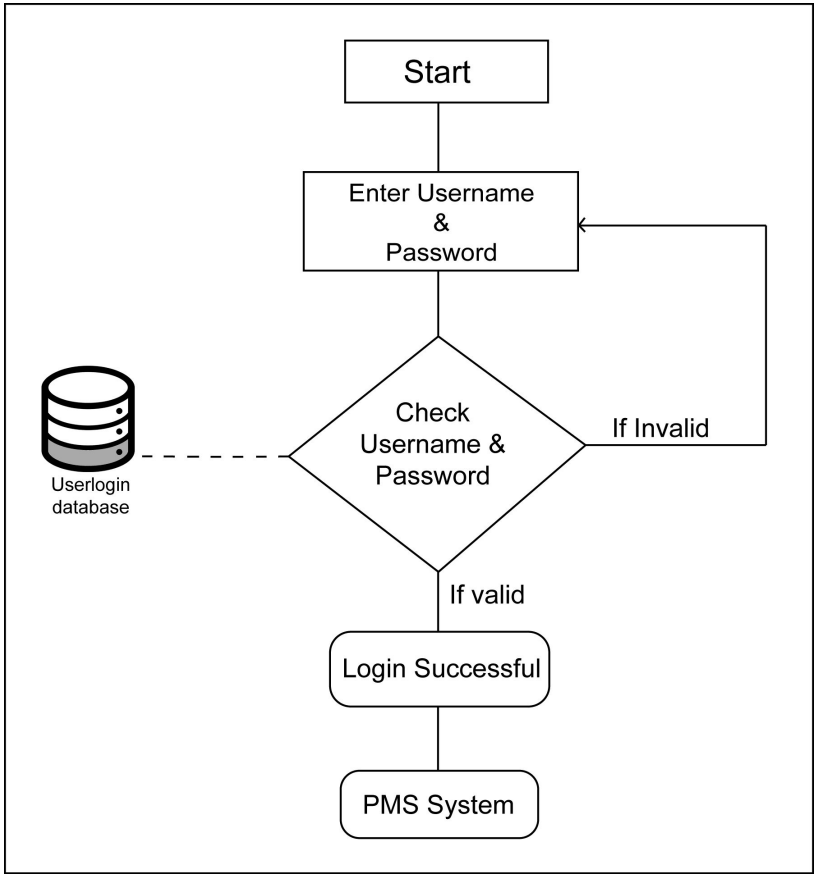
Android Device:

The System requires an android smart Tv or mobile phone to broadcast the parking lot number to the vehicle or its driver

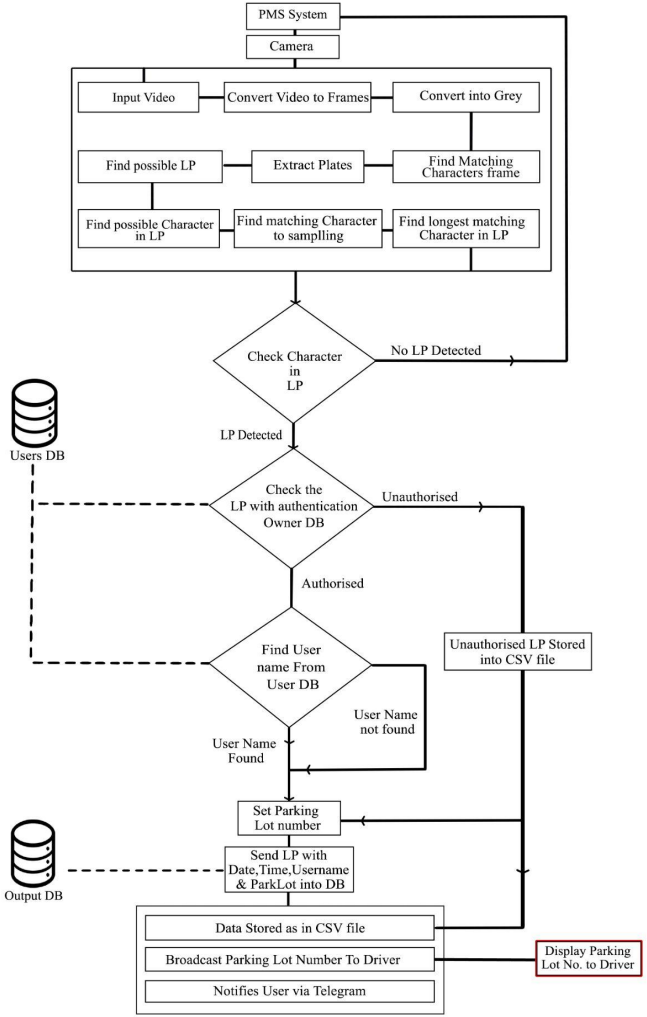
ER Diagram


user_id
password
login
PMSS
lc_num
user_name
users
Authentication
id
reg_num
time
date
output
authentication
parking_lot
User_name

Block Diagram of User login



Block Diagram of PMSS



Number Plate Detection and Character Detection

Finding Possible Number Plates

Original Image scene

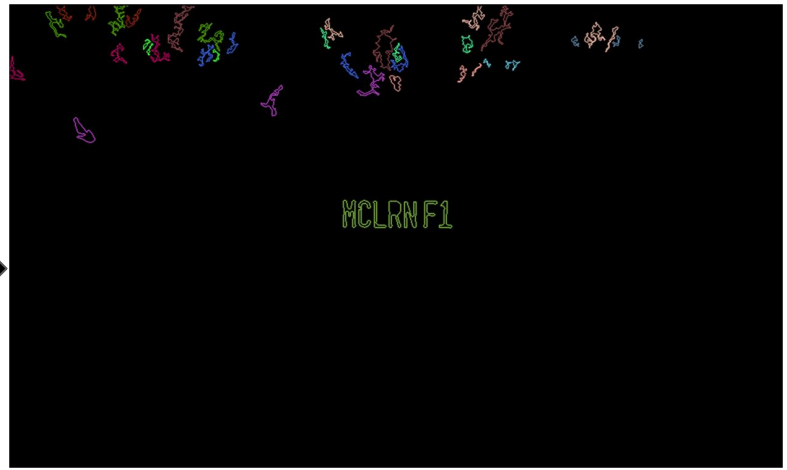
Gray Scale scene of image

Threshold Image of the scene

Threshold Image

Finding Possible LP in Scene Step-1

Finding possible LP Step-2



Found Possible Lp from scene

Selecting Possible LP with Characters

Find Possible Character String from possible Number plates

Cropping possible Number Plates from original scene

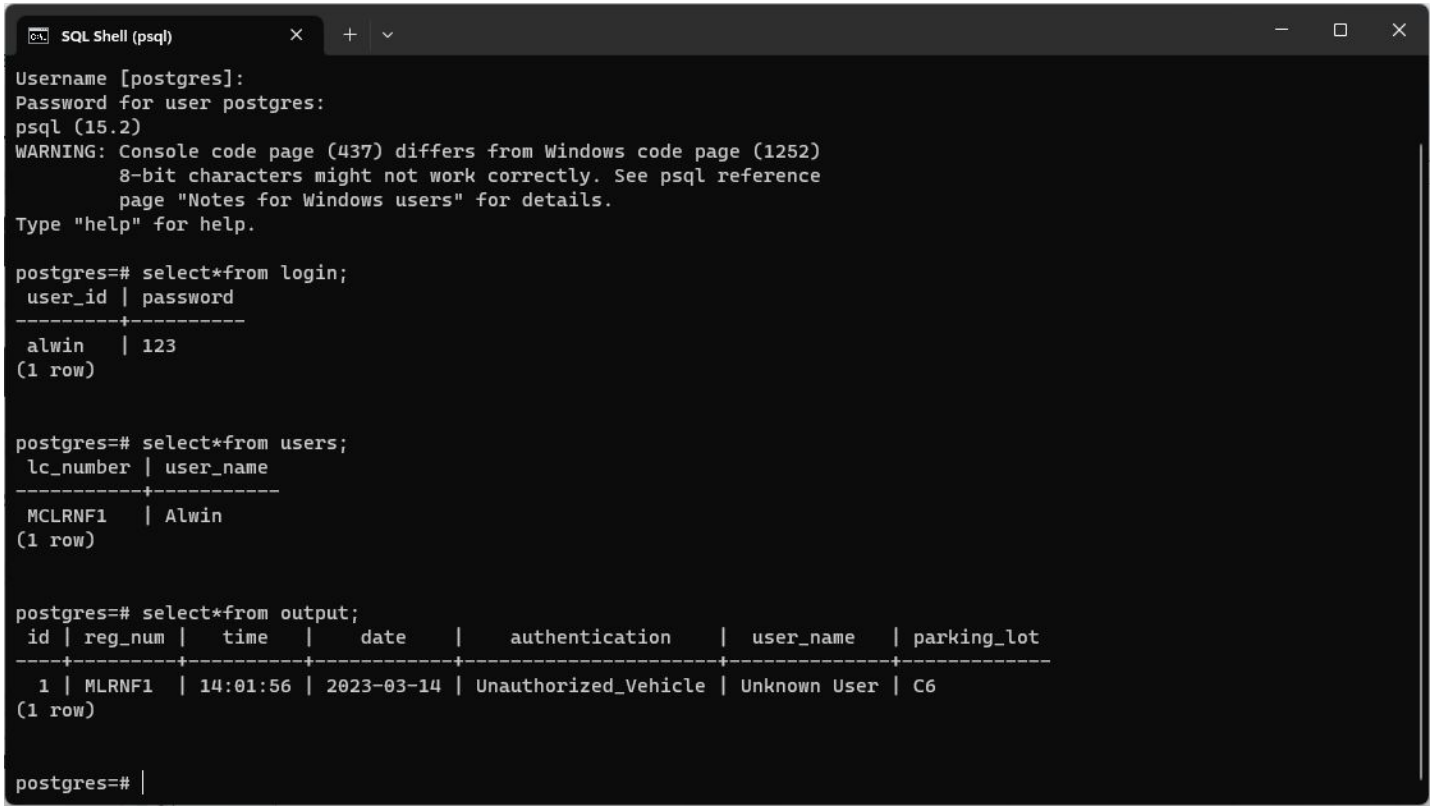
Converting Cropped Image into Threshold Image

Recognizing Characters from Number plate

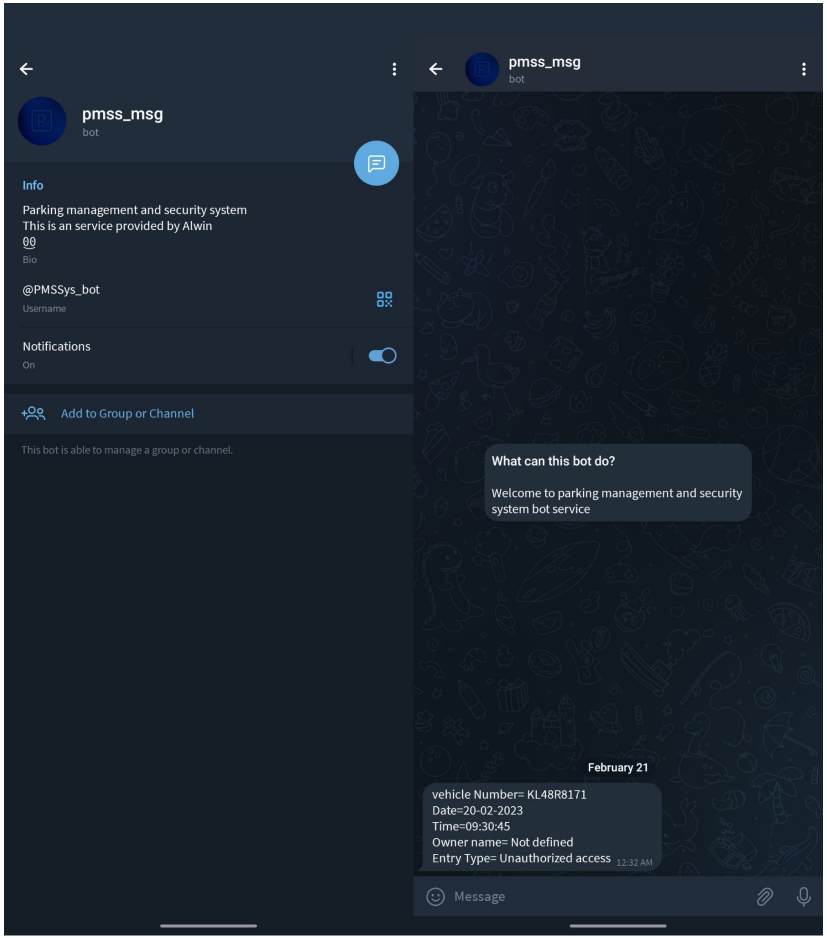
Characters were found

Print possible character found from original image

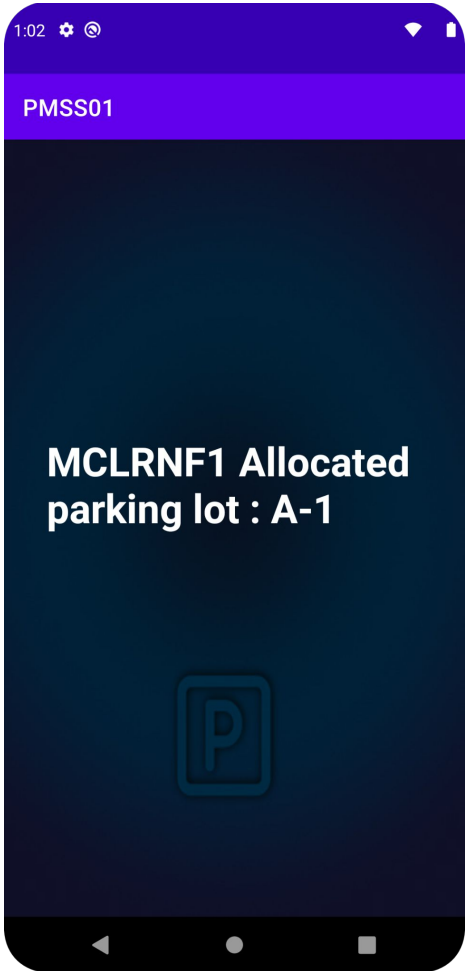
Database Storage



Telegram Notification



Android Broadcasting App



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