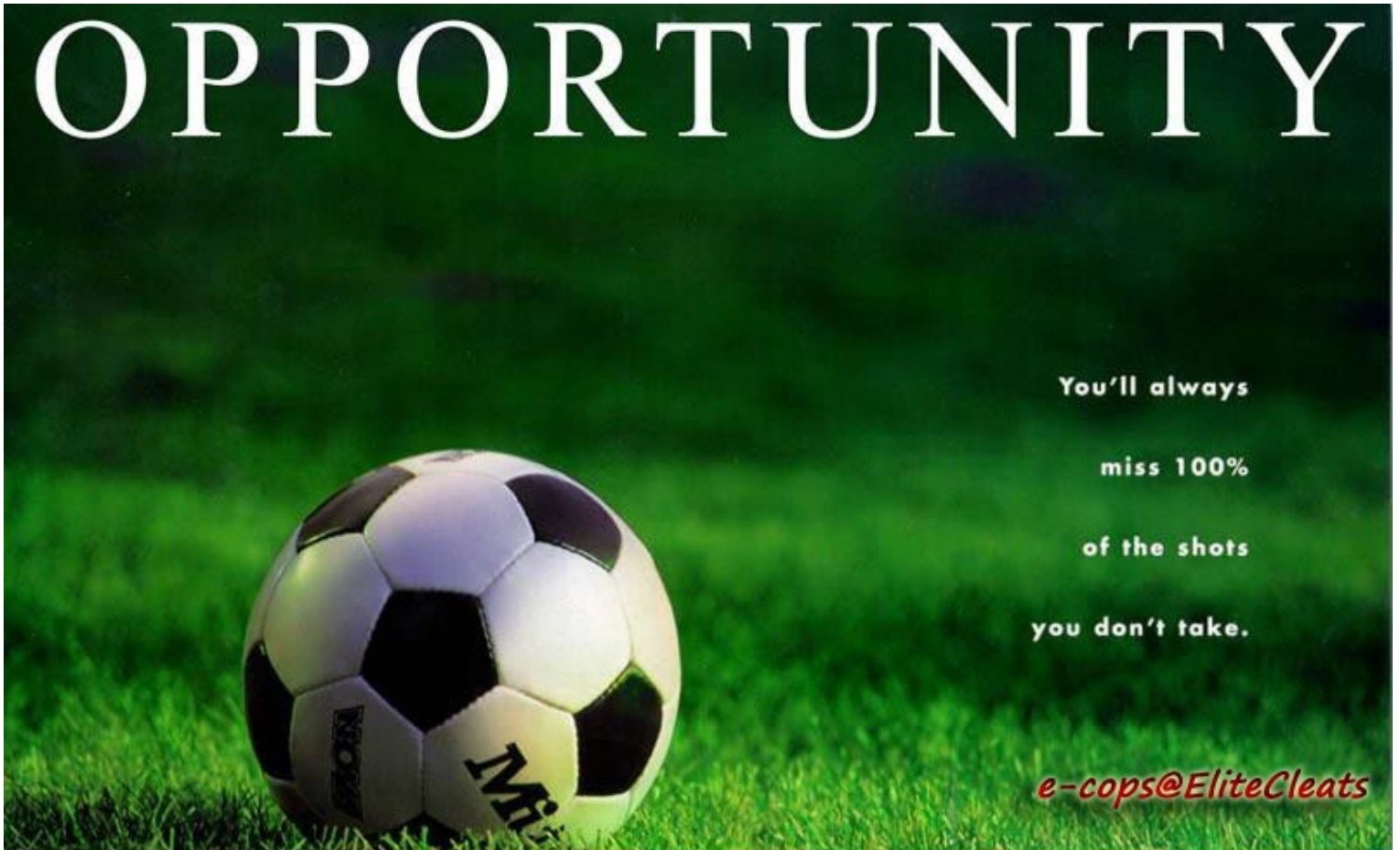


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e-cops@EliteCleats

EliteCleats

GENIUS SANJOG
AMIT KUMAR RAI
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AKHILESH MISHRA

2009

EliteCleats / U.P / E-Cops

E-Cops aims at the automation of police station, it provides fast processing of cases ,transparency in policing and better interaction with end user.

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Review Report:-

Date	Versions	Description	Author
<dd/yyyy/mm>	<x.x>	<details>	<name>
30/2009/09	0.1	Use Case Representations	EliteCleats
05/2009/10	0.2	Entity Relationship Diagrams	EliteCleats
10/2009/10	0.3	Activity Diagram	EliteCleats
30/2009/10	1.0	Software Requirements Specification	EliteCleats

Table of Contents

1. Introduction	3
1.1 Purpose	3
1.2 Scope	3
1.3 Definitions, Acronyms and Abbreviations	3
1.4 References	4
1.5 Technologies/Tools to be used	4
1.6 Hardware / Software Requirements	5
1.7 Overview	6
2. Overall Description	6
2.1 Use -Case Model Survey & Reports	6
2.2 Architecture diagram & Database Design	26
2.3 Assumptions and Dependencies	32

3. Specific Requirements	32	3
3.1 Activity Diagram Reports	32	
3.2 Supplementary Requirements	36	

1.Introduction:-

1.1 Purpose :

E-COPS is an online police station where all the tasks related to a police department are made online. E -COPS can maintain the records of FIR, crime and criminals' details and police department administration. Computerization of the Police Department enhances speedy processing, increased efficiency, transparent policing and better interaction with the citizens.

1.2 Scope :

- ❖ Secure online login and authentication of all users.
- ❖ Creation and edition of Police Stations and modification of their areas of control at a later time.
- ❖ Appointment of Police Officers to a particular Police Station as a first time setup.
- ❖ Transfer of Police Officers at a later time.
- ❖ Police Stations are divided into various departments to provide better and fast services to citizens.
- ❖ Sharing of case details with Police Stations in other states.
- ❖ Communication between police officers is facilitated through chat,forum,polls.
- ❖ Maintenance of criminal information state wise,area wise and age wise.
- ❖ Magistrate can access case details and can provide/deny arrest warrant.
- ❖ Secured registration of citizens.
- ❖ Citizens can apply for various types of licenses and are notified on approval/rejection via SMS and mail.
- ❖ Citizens can make an online complaint and request for lodge of a FIR whose status can be checked at a later time.
- ❖ Police Officers cross check proof of citizenship provided by the citizens.
- ❖ Traffic Inspector can file a charge sheet from a mobile or PDA.
- ❖ Integration with Prison Management and Court.
- ❖ Online maintenance of Case Diary,General Diary and Case Details by Police Officers.

1.3 Definitions, Acronyms and Abbreviations :

E-cops

JSP : Java Server Pages – A leading server side technology.

JVM : Java Virtual Machine – needed for running java programs.

HTML - Hypertext Markup Language used for creation of static web pages.

J2EE - Java 2 Enterprise Edition – Platform for development of multitier java applications

XML - Extensible Markup Language.

DB2 - DB2 Database Server

WAS CE - WebSphere Application Server Community Edition-Application Server

HTTP - Hypertext Transfer Protocol –transaction oriented client- server protocol

HTTPS - Secure Hypertext Transfer Protocol – Uses Secure Socket Layer for secure transmission of data.

AJAX – Asynchronous Java Script and Extensible Markup Language.

RSS – Really Simple Syndication

1.4 References :

IEEE SRS Format

Object Oriented Systems Development –Ali Bahrami (McGraw-Hill)

Software Engineering – A Practitioner's Approach – Roger S. Pressman – (McGraw-Hill)

Project specification requirement (provided by IBM)

Database System Concepts – Abraham Silberschatz

1.5 Technologies /Tools to be used :

Design Tools :

Rational

Altova UML tool

Smart Draw

Star UML tool

Rational Rose plugin for Eclipse

Programming Tools :

Eclipse

Technologies :

User Interface :

JSP/Servlets – Basic text files with Java code in HTML page or vice versa.

AJAX – Provides server interaction without page reloading.

Middleware :

DB2 – A high-end database server for enterprise purposes.

WAS CE – A user-friendly application server which supports all the modern web development practices.

Other essential technologies and Tools:

XML

Eclipse SDK -6.0

RSS – Provides dynamic updates to the clients in an easy fashion.

Tivoli - It provides an intelligent infrastructure management, to manage and enhance the business value of the client's IT system.

1.6 Hardware / Software Requirements :

<u>Client Side</u>	<u>Operating System</u>	<u>Processor</u>	<u>Disk Space</u>	<u>RAM</u>
Browser (Internet Explorer, Mozilla Firefox, Opera)	ANY	Pentium II onwards, AMD Opteron onwards	1 GB	64 MB
<u>Server Side</u>	<u>Operating System</u>	<u>Processor</u>	<u>Disk Space</u>	<u>RAM</u>
Websphere Application Server v 7.0	Linux (Development End), ANY other can also be used	Pentium IV @500 MHz onwards, AMD Opteron onwards	2 GB	512 MB (minimum), 1 GB (recommended)
Database Server DB2 v 9.5	Linux (Development End), ANY other can also be used	Pentium IV @ 500 MHz onwards, AMD Opteron onwards	2 GB + data storage	512 MB (minimum), 1 GB (recommended)

User Characteristics :

Should have a basic knowledge of English.

Should be familiar with basic concepts of computer including web browsing and file uploading.

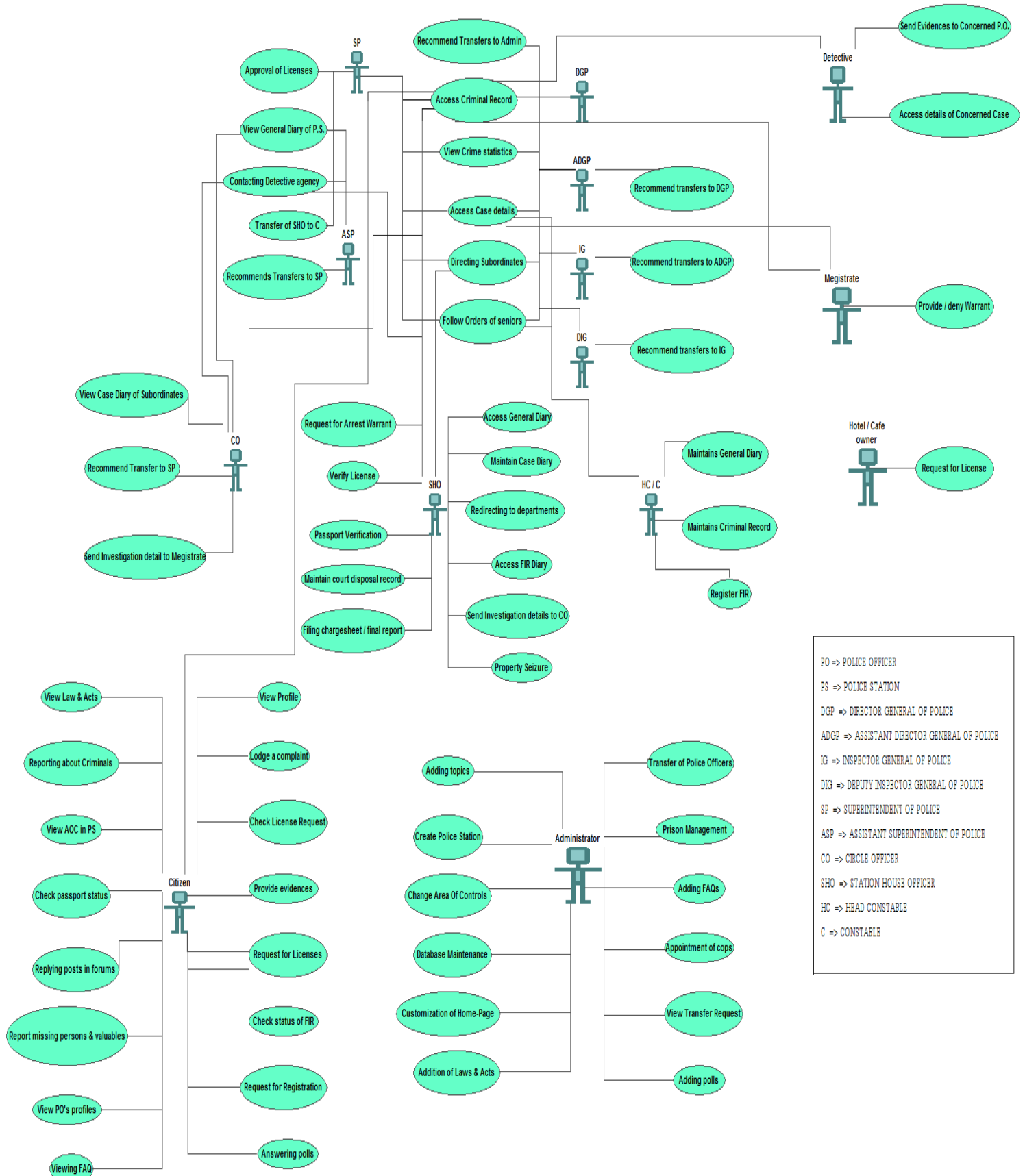
Design Constraints :

Adminitrator has no privilege to create a new user type.
Only HTTP / HTTPS protocols are supported.

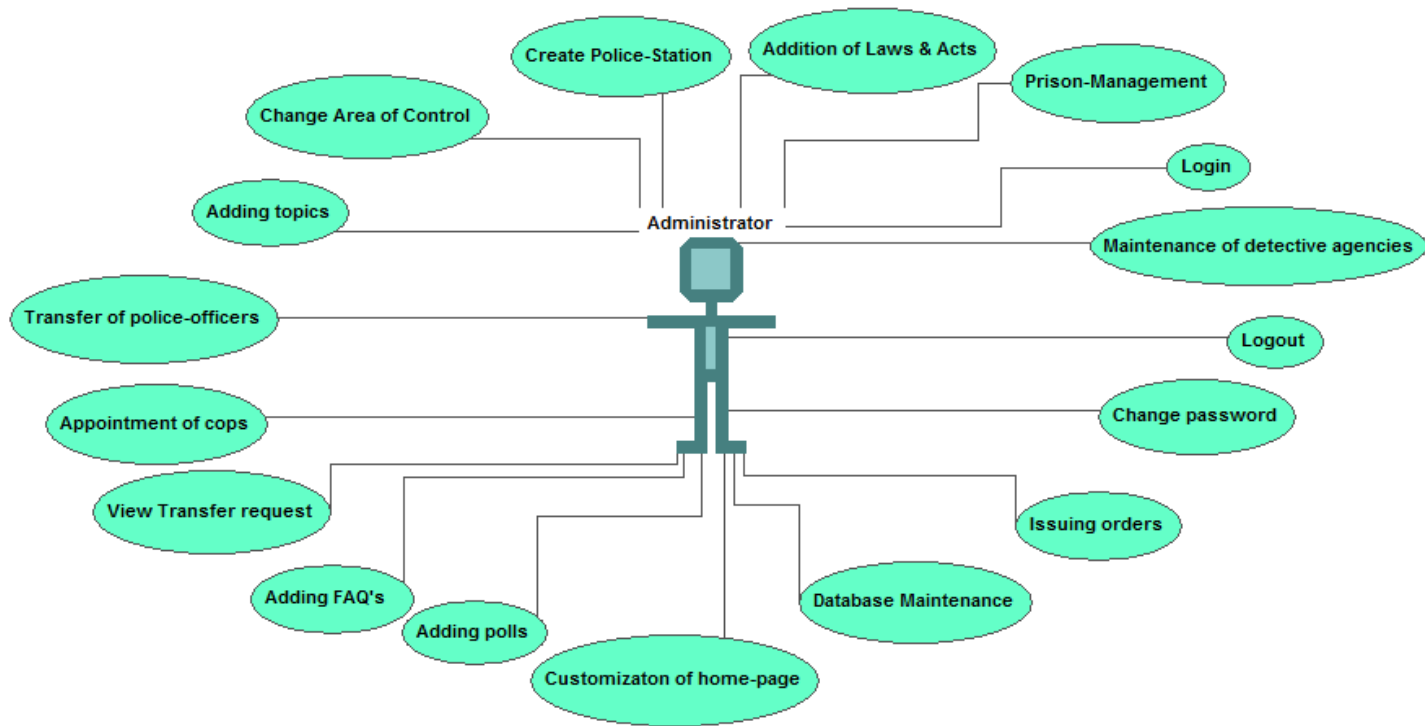
1.7 Overview

SRS includes two sections overall description and specific requirements:-
Overall description will describe major role of the system components and interconnections.
Specific requirements will describe roles & functions of the actors.

2 Overall Description**2.1 Use Case Modelling:-**



Users:

a) Administrator:-❖ **Creates/Edit Police Station:-**

Administrator can create online police stations resembling real ones as a first time setup.

❖ **Modifying Police Stations:-**

Administrator can modify the areas of control under various Police Stations.

❖ **Addition of Laws and Acts:-**

Administrator can add new laws and acts which applies on everyone.

❖ **Database Maintenance:-**

Administrator can maintain the entire database, all the records and details and can restore it to a previous time.

❖ **Customization of Home page:-**

Administrator can customize the contents & layout of the Home page.

❖ Appointment Of Cops:-

Administrator can appoint police officers to a particular station in a specific zone or to a specific district as a first time setup.

❖ Transfer of Cops:-

Administrator can transfer cops at a later time.

❖ Manages Prison:-

Administrator can manage the prison.

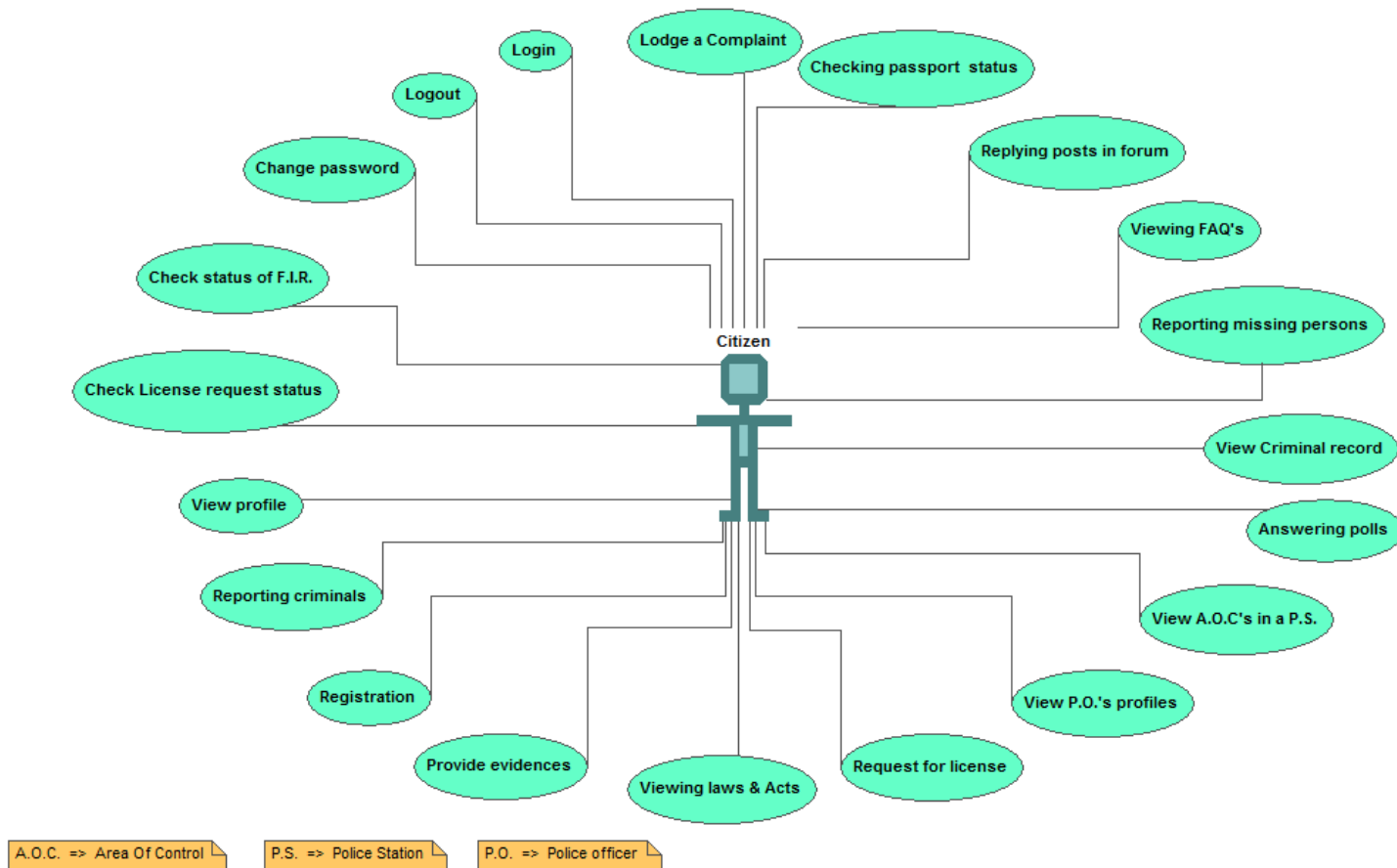
❖ Chat with officers:-

He can chat online with other officers in case of emergency. Also they can transfer criminal details, case diaries and other important documents.

❖ Addition of polls,FAQs,Topics:-

Administrator can add polls,view poll results and pollers,add Frequently Asked Questions(FAQ) and add or delete Topics in Forums.

b) Citizen:-



❖ Applies for registration:-

Every parent applies for citizenship as soon as a new child is born.

❖ Sign in:-

After getting the username and password, citizens can log on to their account and can access the website.

❖ Files Complaint:-

Citizens can file complaint regarding any crime, accident or riots.

❖ Check FIR and License status:-

Citizens can check the FIR and license status i.e. in which state is the FIR or the License request, being processed.

❖ View Profile:-

Citizens can view their profile after successful login and of the concerned police station officers.

❖ View Criminal Record:-

Citizens can view the criminals records and can access the case details related to them.

❖ Answering Polls and Posting New Topics:-

Citizens can vote in the polls and can post new topics in the related forums.

❖ View Areas Of Control in a Police Station:-

Citizens can view all the areas of control in a police station.

❖ Provide Evidences:-

Citizens can provide evidences needed in any case enquiry and can be an eye witness, if were present during the crime.

❖ View Laws and Acts:-

Citizens can view laws and acts which are currently being incorporated in the system.

❖ Request for License:-

Citizens who signed in can request for various licenses such as arms, loud speaker, browsing centre,lodge, video, meetings and gymnasium.

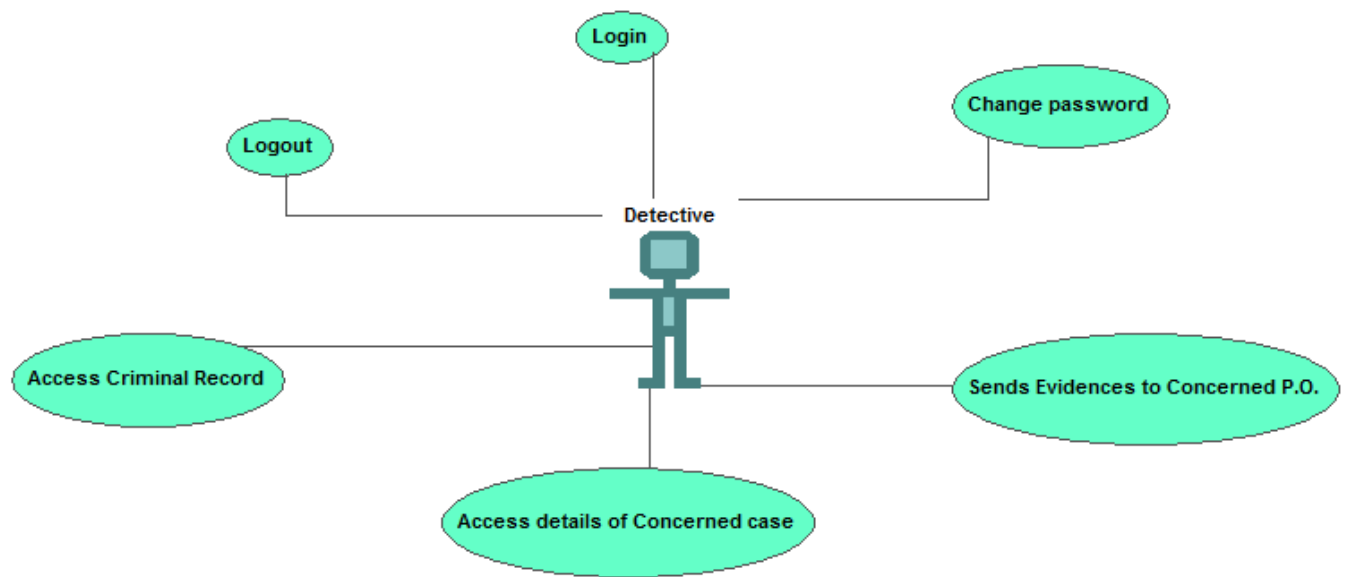
❖ Report Wanted Criminals:-

End user who signed in can report about the wanted criminals and can collect the rewards from the government.

❖ Report Missing Valuables and Persons:-

End user who signed in can report about the missing valuables and can collect the rewards from the complainant if applicable.

c) Detectives:-



❖ Access Criminal Records:-

Detective can access the Crime and criminal records maintained for the entire state.

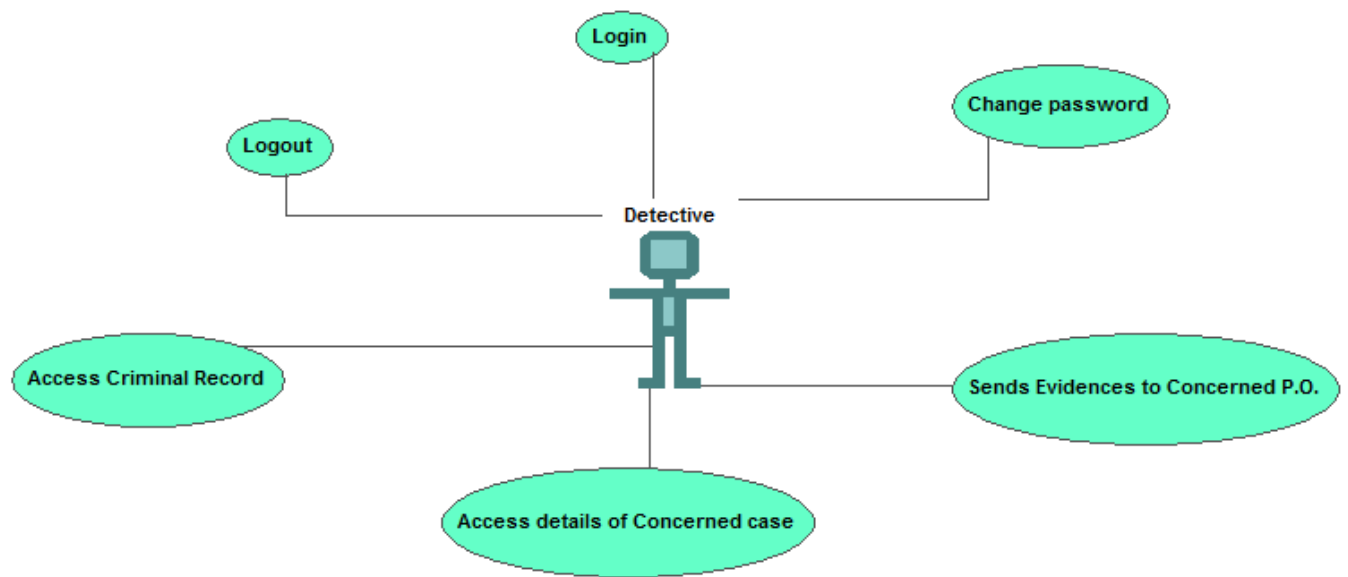
❖ Access details of Concerned Case:-

Detective can access the details of the cases assigned to him.

❖ Send Evidences To the Concerned Police Officers:-

Detectives can upload and send the investigation details and evidences to the police officer who assigned the case to him.

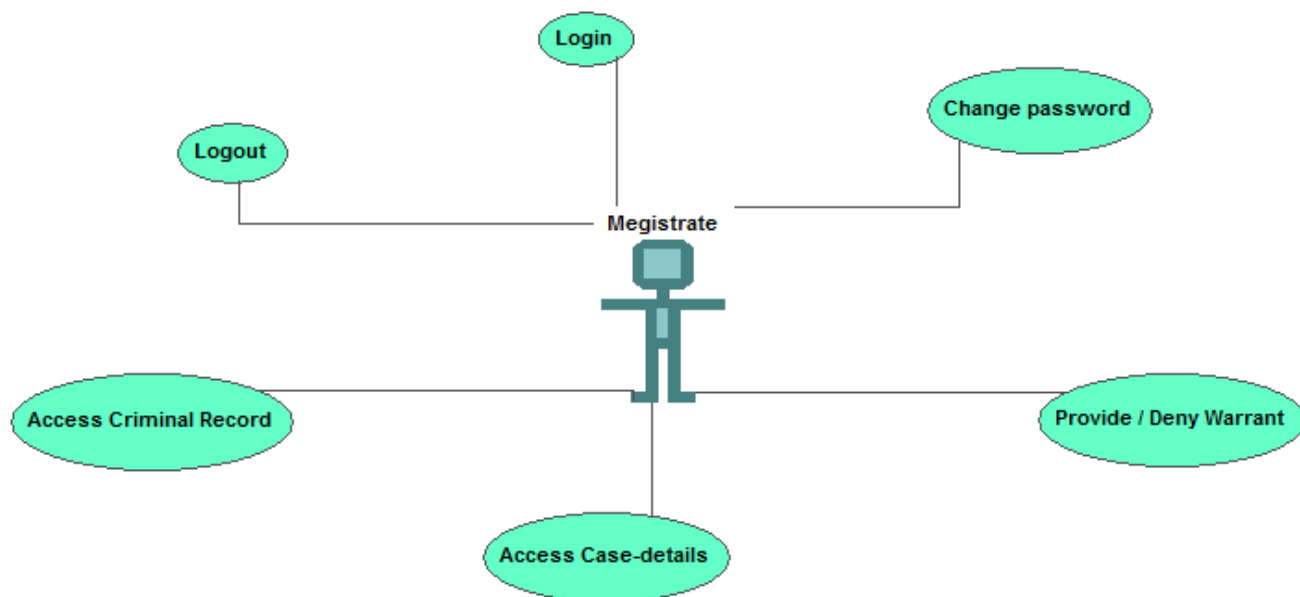
d) Hotel & Cyber Cafe Owners:-



❖ Request for License Issue and Renewal:-

Hotel & Cyber Cafe Owners can request for a new license or for renewal of the older one.

e) Magistrate:-



❖ Access Criminal Records:-

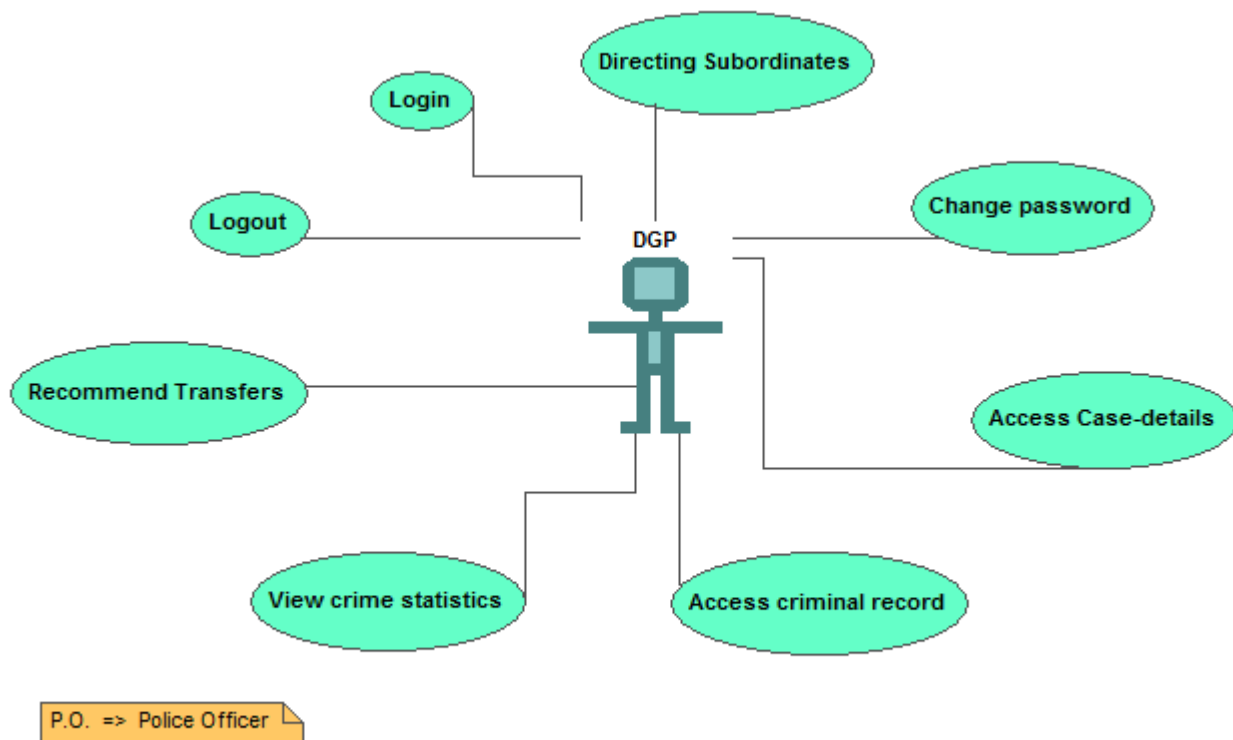
Magistrate can access the Crime and criminal records maintained for the entire state.

❖ Provide/Deny Warrant:-

Magistrate can provide or deny the arrest warrant requested by the Inspector.

❖ Access details of Cases:-

Magistrate can access the details of all the cases currently being investigated, cases under trial and pending cases.

f) Police Officers:-**➤ Director General of Police(DGP):-**

❖ Access details of Cases:-

Director General of Police(DGP) can access the details of all the cases currently being investigated,cases under trial and pending cases.

❖ Access Criminal Records:-

Director General of Police(DGP) can access the Crime and criminal records maintained for the entire state.

❖ Recommend transfers to Administrator:-

Director General of Police(DGP) can recommend transfers of all his subordinates to the administrator.

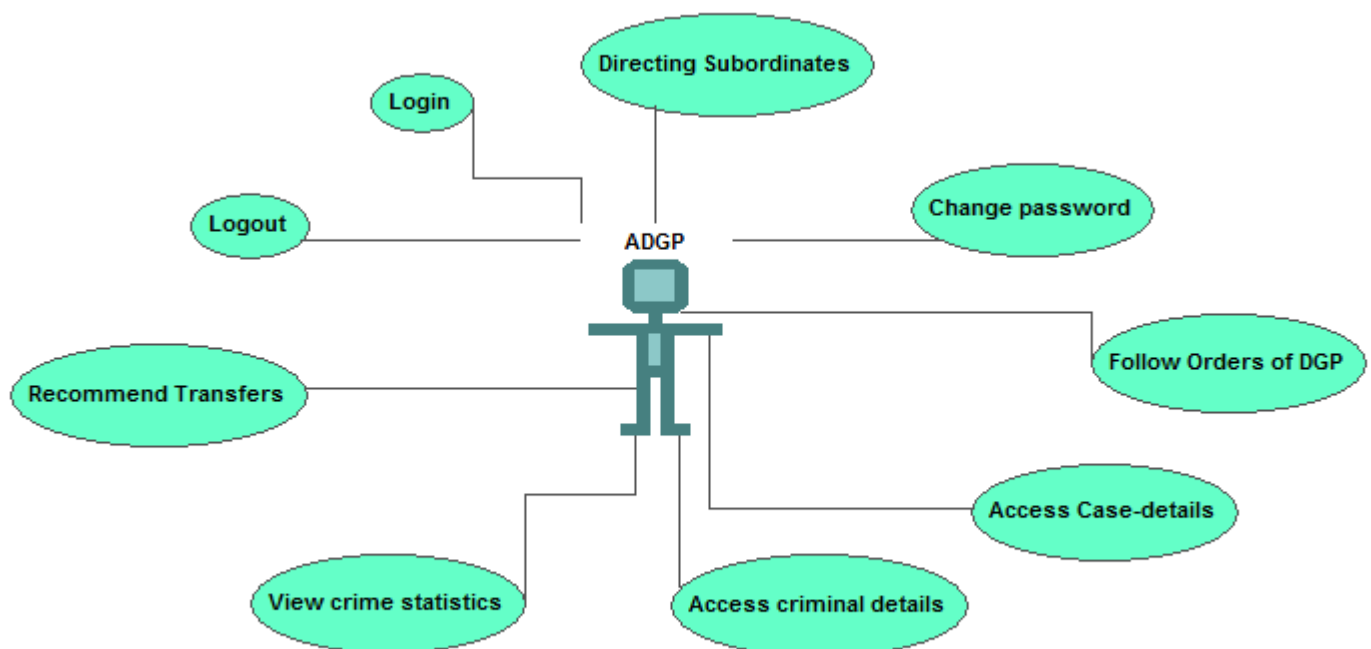
❖ View Crime Statistics:-

Director General of Police(DGP) can view crime and criminal statistics & weekly/monthly/annual graphical reports on the crime status age wise/area wise/district wise.

❖ Directing Subordinates:-

Director General of Police(DGP) can direct and issue commands & orders to all his subordinate officers.

➤ Assistant Director General of Police(ADGP):-



❖ **Access details of Cases:-**

ADGP can access the details of all the cases currently being investigated, cases under trial and pending cases.

❖ **Access Criminal Records:-**

DGP can access the Crime and criminal records maintained for the entire state.

❖ **Recommend transfers to Administrator:-**

Assistant Director General of Police (ADGP) can recommend transfers of all his subordinates to the administrator.

❖ **View Crime Statistics:-**

A can view crime and criminal statistics & weekly/monthly/annual graphical reports on the crime status age wise/area wise/district wise.

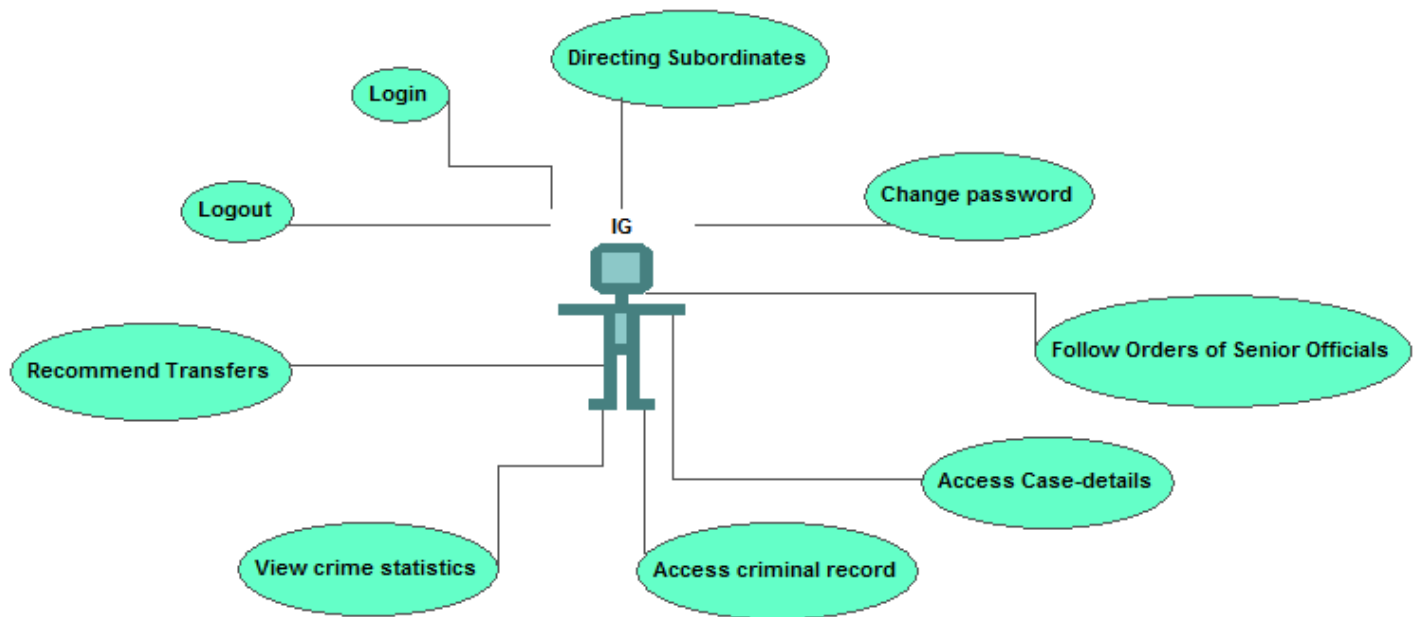
❖ **Directing Subordinates:-**

A can direct and issue commands & orders to all his subordinate officers.

❖ **Follow orders of DGP:-**

ADG must abide by the orders of DGP in order to avoid spread of chaos.

➤ **Inspector General of Police (IG)-**



❖ Access details of Cases:-

Inspector General of Police(IG) can access the details of all the cases currently being investigated,cases under trial and pending cases of his own range.

❖ Access Criminal Records:-

Inspector General of Police(IG) can access the Crime and criminal records maintained for the entire state.

❖ Recommend transfers to Administrator:-

Inspector General of Police(IG) can recommend transfers of his subordinates to the administrator.

❖ View Crime Statistics:-

Inspector General of Police(IG) can view crime and criminal statistics & weekly/monthly/annual graphical reports on the crime status age wise/area wise/district wise.

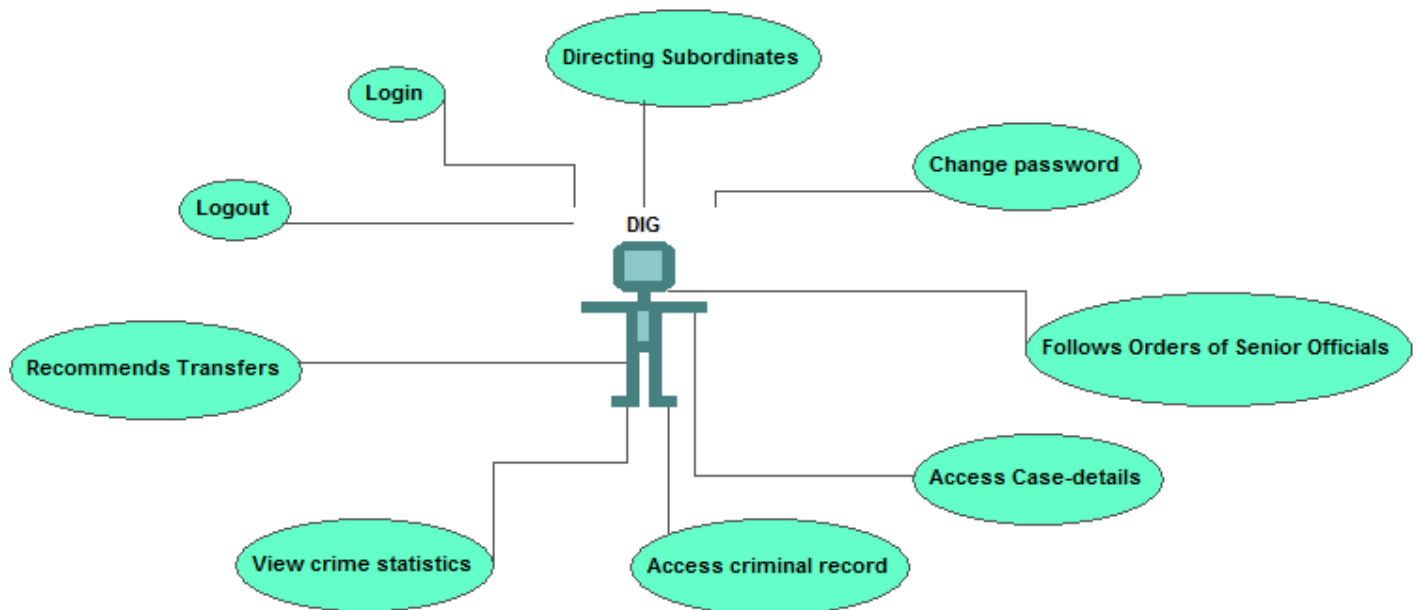
❖ Directing Subordinates:-

Inspector General of Police(IG) can direct and issue commands & orders to all his subordinate officers.

❖ Follow orders of DGP & ADGP:-

Inspector General of Police(IG) must abide by the orders of DGP & ADGP in order to avoid spread of chaos.

➤ Deputy Inspector General of Police (DIG):-



❖ Access details of Cases:-

Deputy Inspector General of Police (DIG) can access the details of all the cases currently being investigated, cases under trial and pending cases of his own range.

❖ Access Criminal Records:-

Deputy Inspector General of Police (DIG) can access the Crime and criminal records maintained for the entire state.

❖ Recommend transfers to Administrator:-

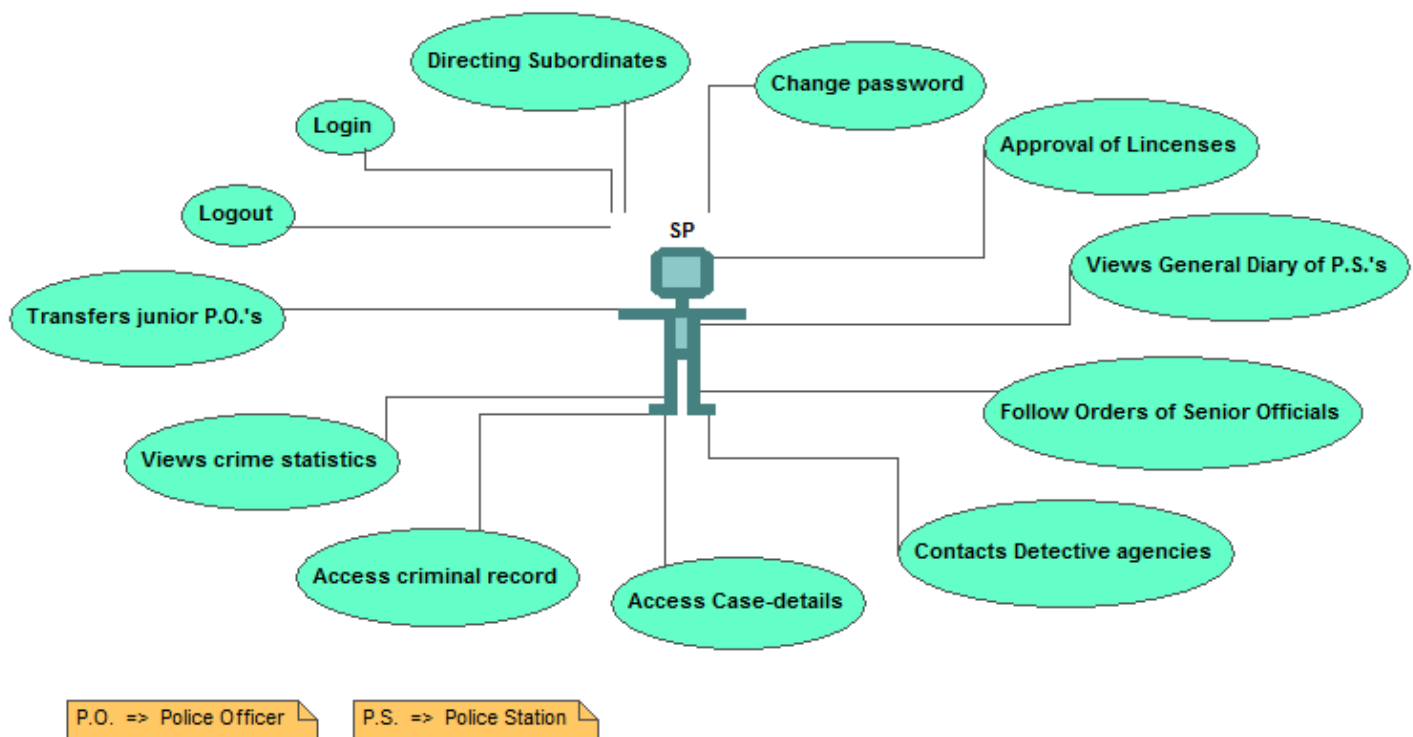
Deputy Inspector General of Police (DIG) can recommend transfers of his subordinates to the administrator.

❖ View Crime Statistics:-

Deputy Inspector General of Police (DIG) can view crime and criminal statistics & weekly/monthly/annual graphical reports on the crime status age wise/area wise/district wise.

❖ **Directing Subordinates:-**

Deputy Inspector General of Police (DIG) can direct and issue commands & orders to all his subordinate officers.

➤ **Superintendent of Police(SP):-**❖ **Access details of Cases:-**

Superintendent of Police can access the details of all the cases currently being investigated, cases under trial and pending cases of his own district.

❖ **Access Criminal Records:-**

Superintendent of Police can access the Crime and criminal records maintained for the entire state.

❖ **Transfers of Subordinates:-**

Superintendent of Police can transfer his subordinates within a district.

❖ **View Crime Statistics:-**

Superintendent of Police can view crime and criminal statistics & weekly/monthly/annual graphical reports

on the crime status age wise/area wise/district wise.

❖ **Directing Subordinates:-**

Superintendent of Police can direct and issue commands & orders to all his subordinate officers.

❖ **Contacting Detective Agencies:-**

Superintendent of Police can contact the detective agencies seeking help in cases.

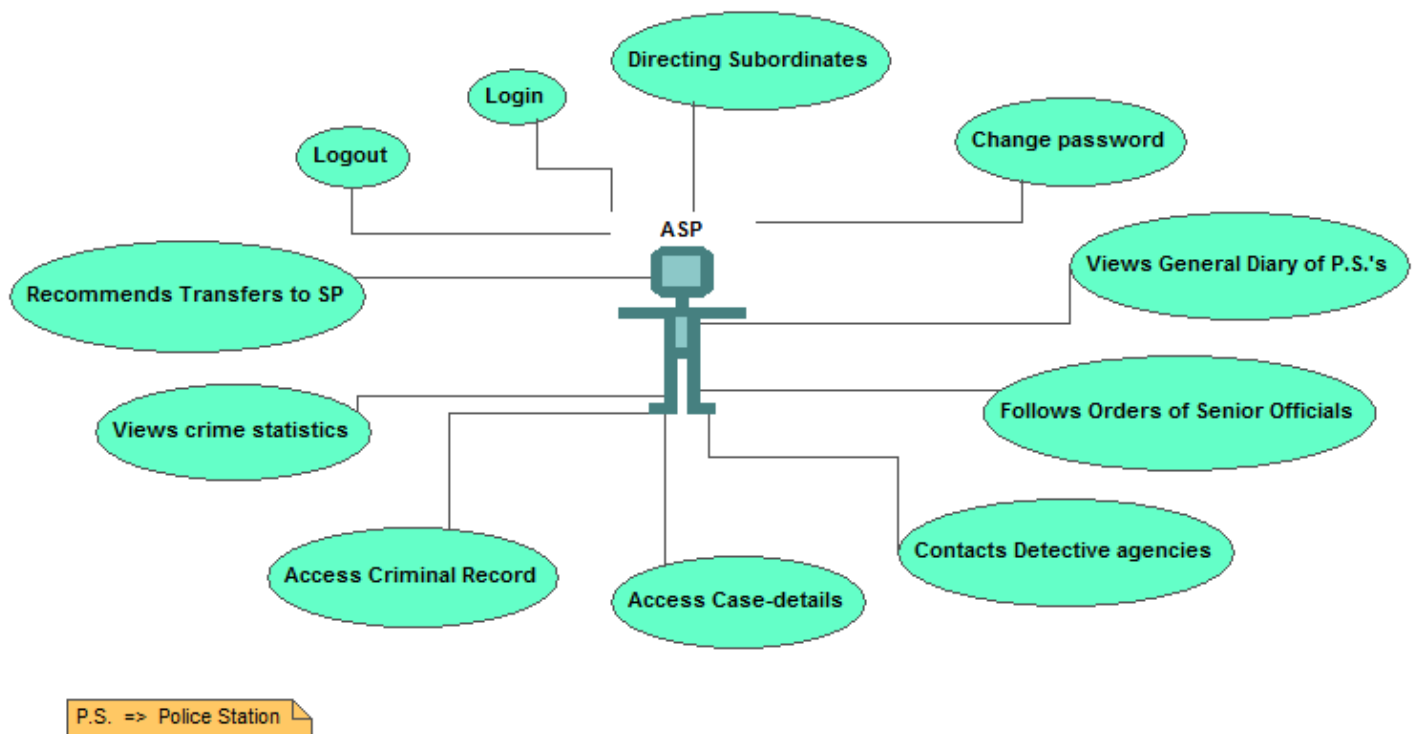
❖ **View General Diary:-**

Superintendent of Police can access & View the General Diary of the police stations under his control.

❖ **Approval of Licenses:-**

Superintendent of Police can approve all the licenses verified by Station house Officer.

➤ **Assistant Superintendent of Police(ASP):-**



❖ **Access details of Cases:-**

ASP can access the details of all the cases currently being investigated, cases under trial and pending cases of his own district. **21**

❖ **Access Criminal Records:-**

ASP can access the Crime and criminal records maintained for the entire state.

❖ **Recommend transfers to SP:-**

ASP can recommend transfers of all his subordinates to SP.

❖ **View Crime Statistics:-**

ASP can view crime and criminal statistics & weekly/monthly/annual graphical reports on the crime status age wise/area wise/district wise.

❖ **Directing Subordinates:-**

ASP can direct and issue commands & orders to all his subordinate officers.

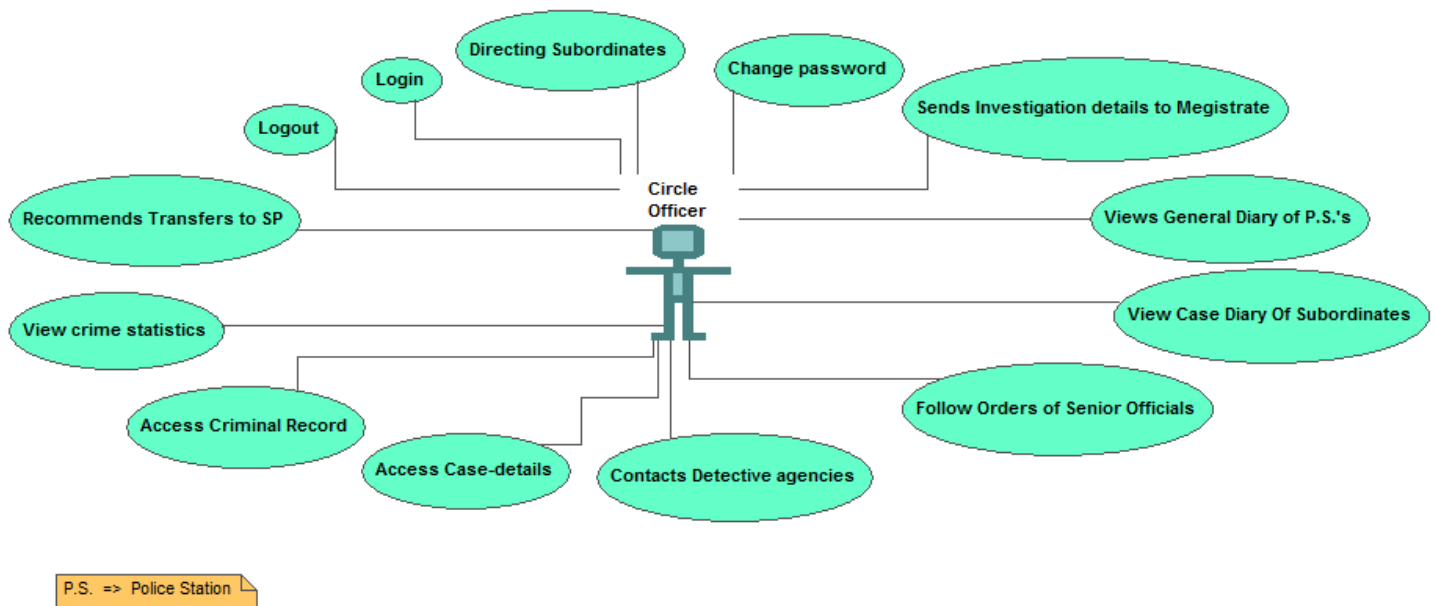
❖ **View General Diary:-**

Circle Officer can access & View the General Diary of the police stations under his control.

❖ **Contacting Detective Agencies:-**

Circle Officer can contact the detective agencies seeking help in cases.

➤ **Circle Officer(CO):-**



❖ Access details of Cases:-

Circle Officer can access the details of all the cases currently being investigated, cases under trial and pending cases of his own Circle.

❖ Access Criminal Records:-

Circle Officer can access the Crime and criminal records maintained for the entire state.

❖ Recommend transfers to SP:-

Circle Officer can recommend transfers of all his subordinates to the SP.

❖ View Crime Statistics:-

Circle Officer can view crime and criminal statistics & weekly/monthly/annual graphical reports on the crime status age wise/area wise/district wise.

❖ Directing Subordinates:-

Circle Officer can direct and issue commands & orders to all his subordinate officers.

❖ Contacting Detective Agencies:-

Circle Officer can contact the detective agencies seeking help in cases.

❖ View General Diary:-

Circle Officer can access & View the General Diary of the police stations under his control.

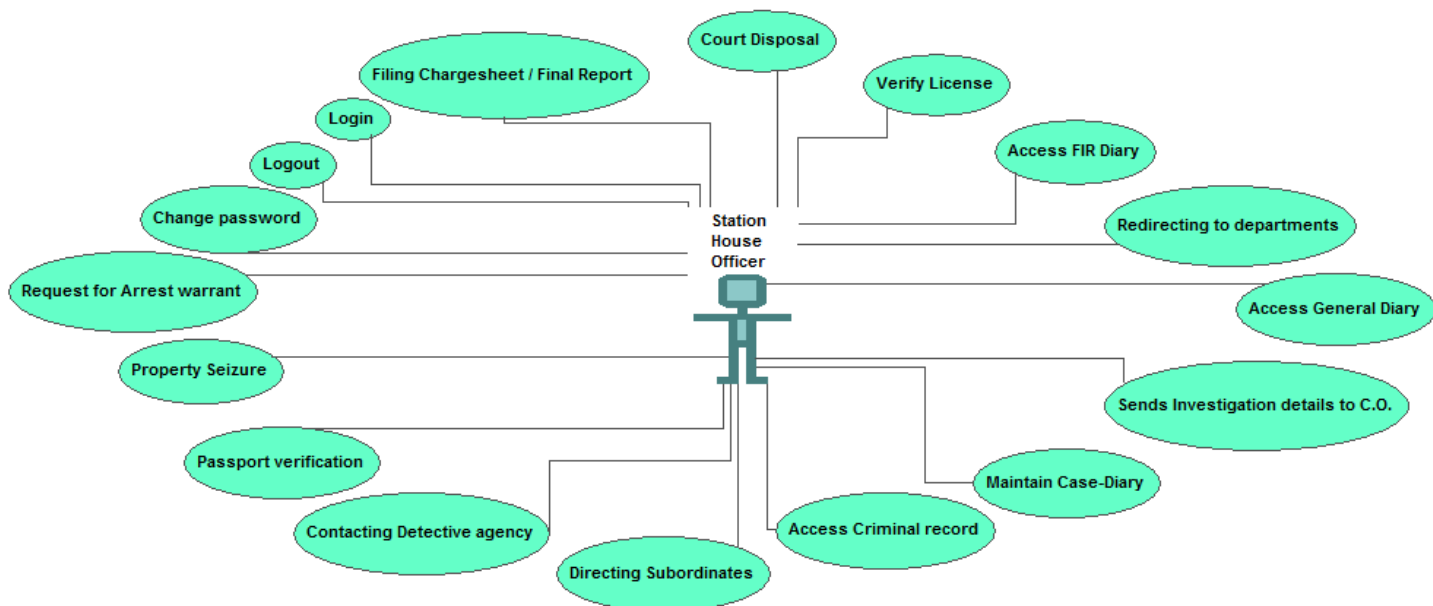
❖ **View Case Diary of Subordinates:-**

Circle Officer can view the case diary of all his subordinate station house officers.

❖ **Sends Investigation details to Magistrate:-**

Circle Officer can send the investigation details & evidences to Magistrate.

➤ **Station House Officer(SHO):-**



❖ **Access details of Cases:-**

Station House Officer can access the details of all the cases currently being investigated, cases under trial and pending cases of his own police station.

❖ **Access Criminal Records:-**

Station House Officer can access the Crime and criminal records maintained for the entire state.

❖ **Recommend transfers to SP:-**

Station House Officer can recommend transfers of all his subordinates to the SP.

❖ View Crime Statistics:-

Station House Officer can view crime and criminal statistics & weekly/monthly/annual graphical reports on the crime status age wise/area wise/district wise.

❖ Directing Subordinates:-

Station House Officer can direct and issue commands & orders to all his subordinate officers.

❖ Filing Charge sheet/Final Report:-

Station House Officer can file charge sheet in the court after investigating the case. He can also file final report in case he doesn't get any evidence in the case.

❖ Maintains case diary:-

Station House Officer can maintain the case diary in which he can scribble all the details of the case he is investigating.

❖ Verification of Licenses:-

Station House Officer can verify the various licenses like arms, mass meeting, loudspeaker etc requested by citizens.

❖ Redirecting to Departments:-

Station House Officer can redirect a FIR to the various departments in police station like Law & order, Women Protection, Cyber crime etc.

❖ View FIR diary:-

Station House Officer can access & view the FIR Register of the Police Station.

❖ View General Diary:-

Station House Officer can access & View the General Diary of the police station maintained by the constable.

❖ Sends Investigation details to Circle Officer:-

Station House Officer can send the investigation details to Circle Officer which are sent to the Magistrate later.

❖ Contacting Detective Agencies:-

Station House Officer can contact the detective agencies seeking help in cases.

❖ Passport Verification:-

Station House Officer can verify the passport requests in the Passport office(Integration with Ministry of External Affairs being a part of E-Governance system).

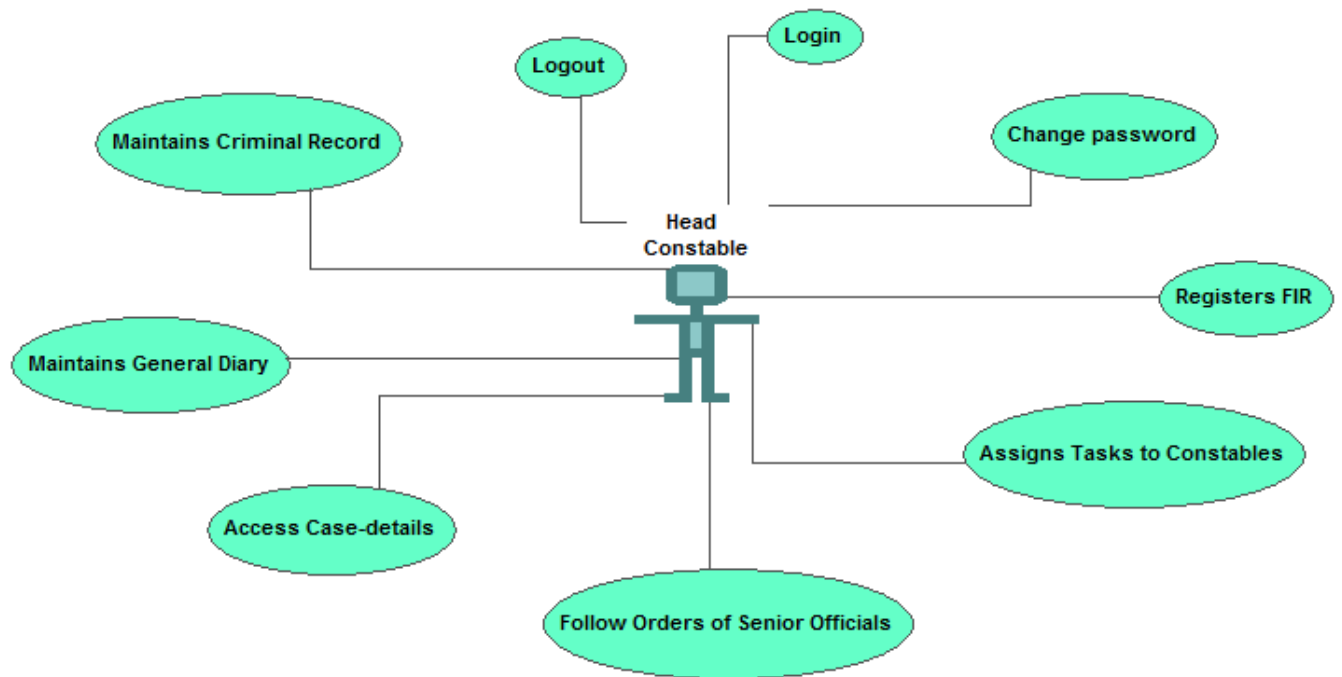
❖ **Property Seizure:-**

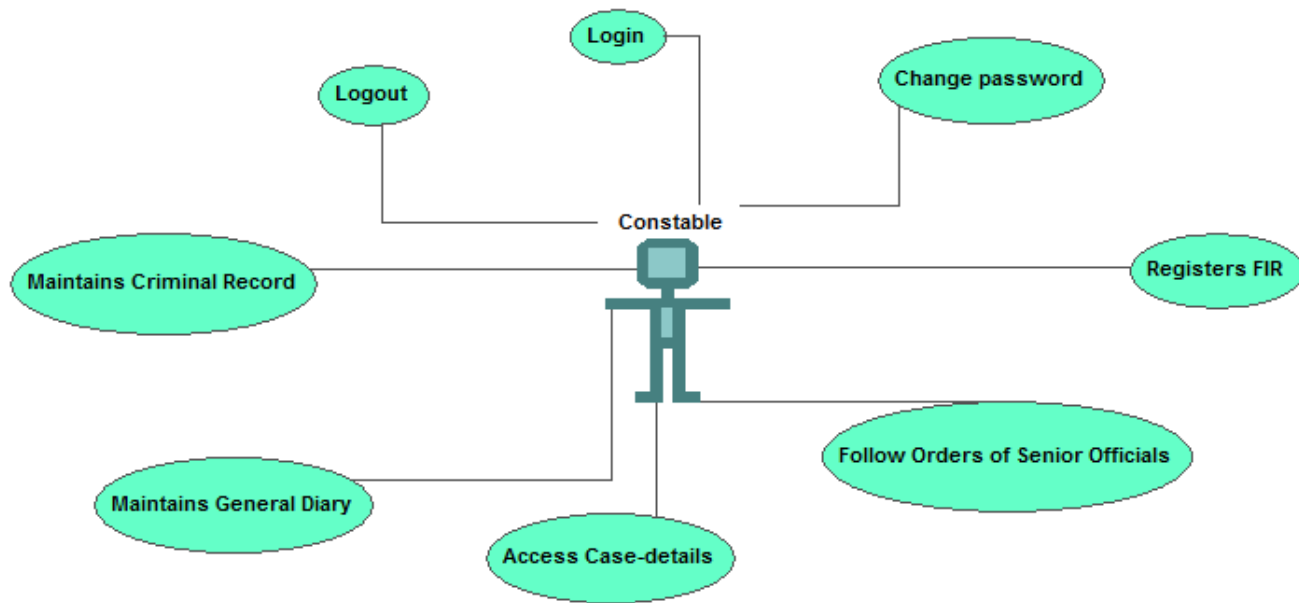
Station House Officer can perform property seizure if ordered by magistrate.

❖ **Request for Arrest Warrant:-**

Station House Officer can request the magistrate for arrest warrant.

➤ **Head Constable(HC)/Constable:-**





❖ Access details of Cases:-

Head Constable or the constable can access the details of all the cases currently being investigated, cases under trial and pending cases of the police station he is working in.

❖ Maintains Criminal Records:-

Head Constable or the constable can access the Crime and criminal records maintained for the entire state.

❖ Registers FIR:-

Head Constable or the constable can Register a new FIR in the FIR register on the basis of the request made by citizen.

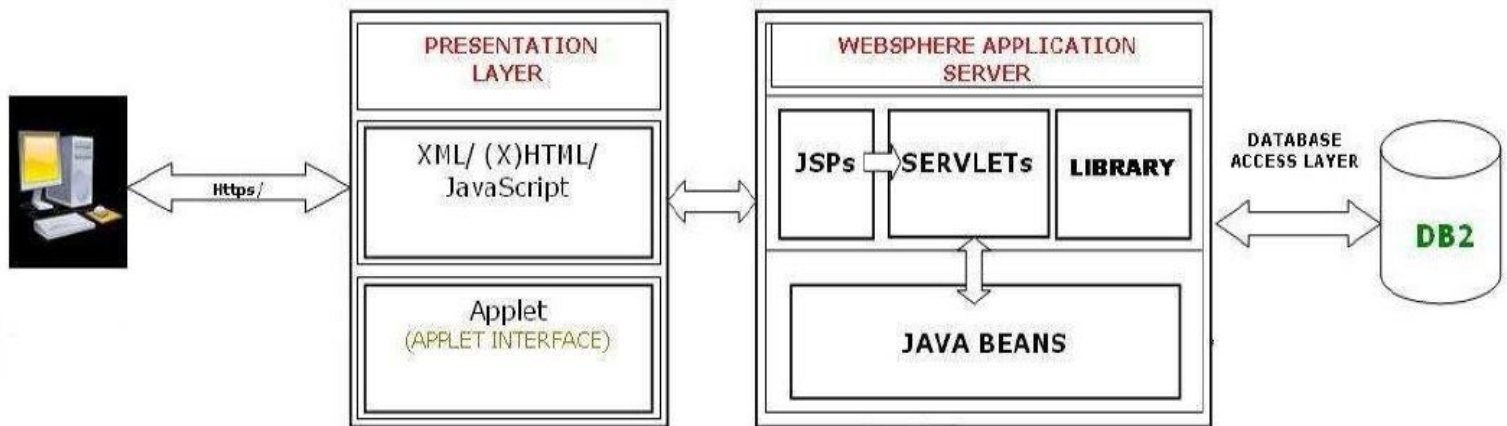
❖ Maintains General Diary:-

Head Constable or the constable can maintain the general diary of the police station he is working in.

❖ Follow Orders Issued by Senior officers:-

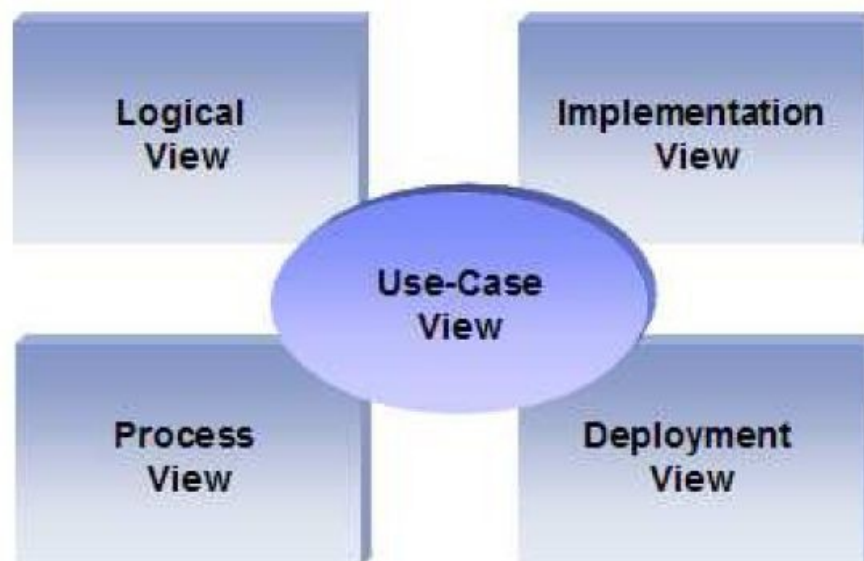
Head Constable or the Constable has to follow the orders issued by Senior Police officers and to take the necessary steps required.

2.2 Architecture Diagram :



The above diagram basically depicts what is the architecture in the whole processing of our project that we have used. It clearly shows all the layers and what all layers are composed of. Each components are self explanatory and hence are not explained further.

The architecture of the whole project is based on the 4+1 view of the rational approach:-



Logical view

Audience: Designers.

Area: Functional Requirements: describes the design's object model. Also describes the most important use-case realizations.

Related Artifacts: Design model

Process view

Audience: Integrators.

Area: Non-functional requirements: describes the design's concurrency and synchronization aspects.

Related Artifacts: (no specific artifact).

Implementation view

Audience: Programmers.

Area: Software components: describes the layers and subsystems of the application.

Related Artifacts: Implementation model, components

Deployment view

Audience: Deployment managers.

Area: Topology: describes the mapping of the software onto the hardware and shows the system's distributed aspects.

Related Artifacts: Deployment model.

Use Case view

Audience: all the stakeholders of the system, including the end-users.

Area: describes the set of scenarios and/or use cases that represent some significant, central functionality of the system.

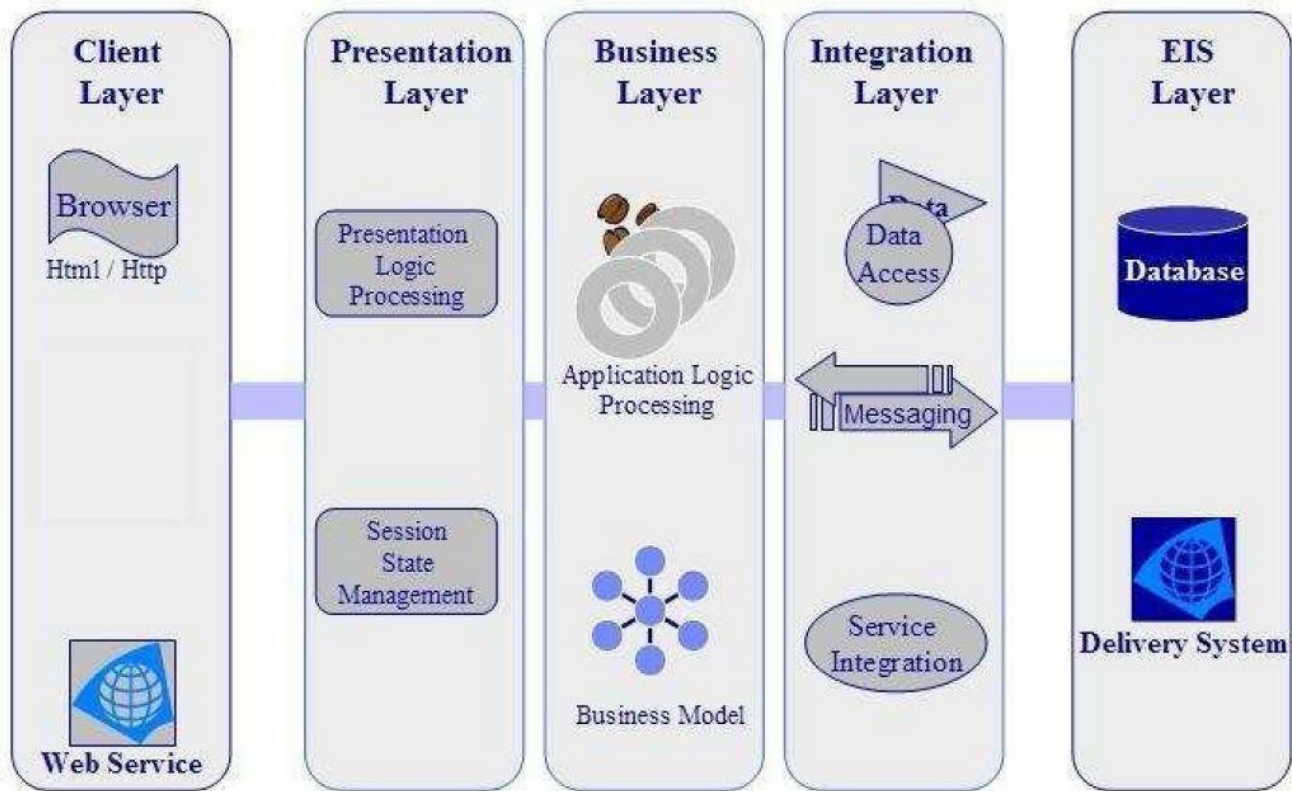
Related Artifacts: Use-Case Model, Use-Case documents

Data view (optional)

Audience: Data specialists, Database administrators

Area: Persistence: describes the architecturally significant persistent elements in the data model

Related Artifacts: Data model.

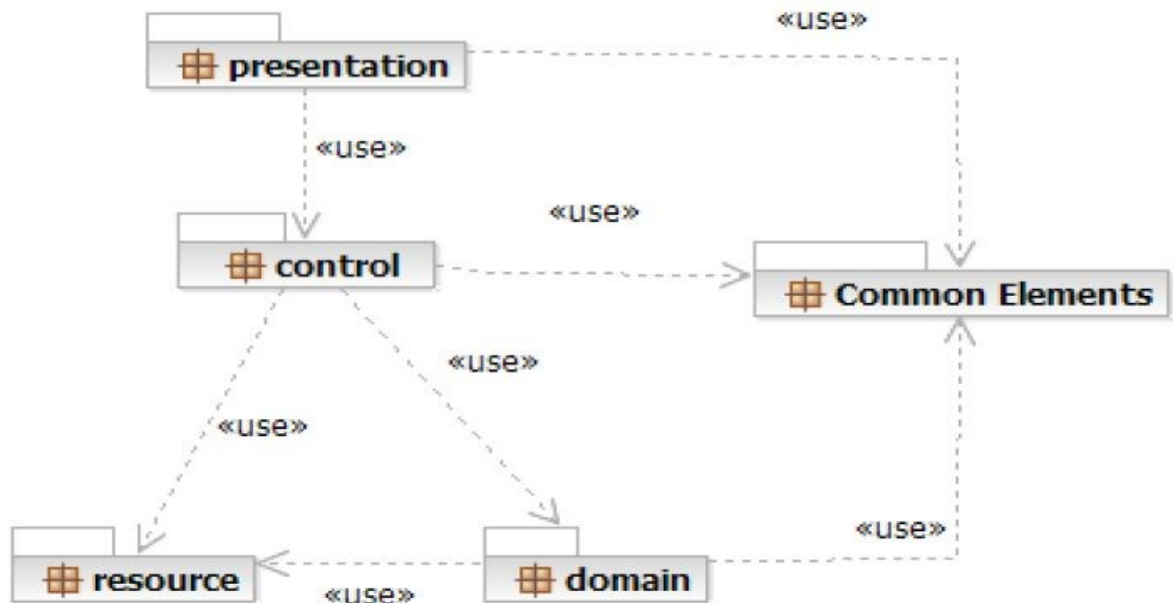


EliteCleats: N-Tier Architecture

The layering model of the E-cops@EliteCleats is based on a responsibility layering strategy that associates each layer with a particular responsibility.

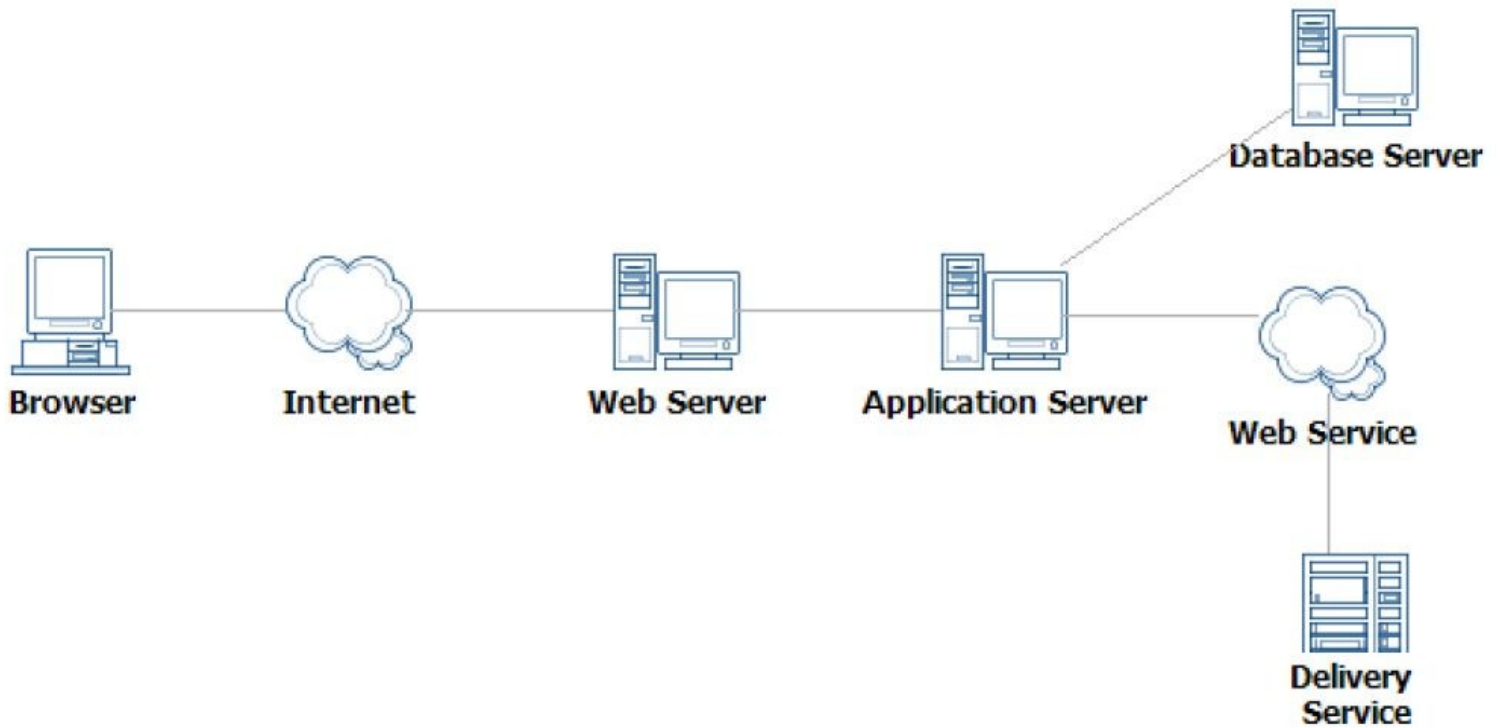
This strategy has been chosen because it isolates various system responsibilities from one another so that it improves both system development and maintenance.

Architectural Layer Dependencies

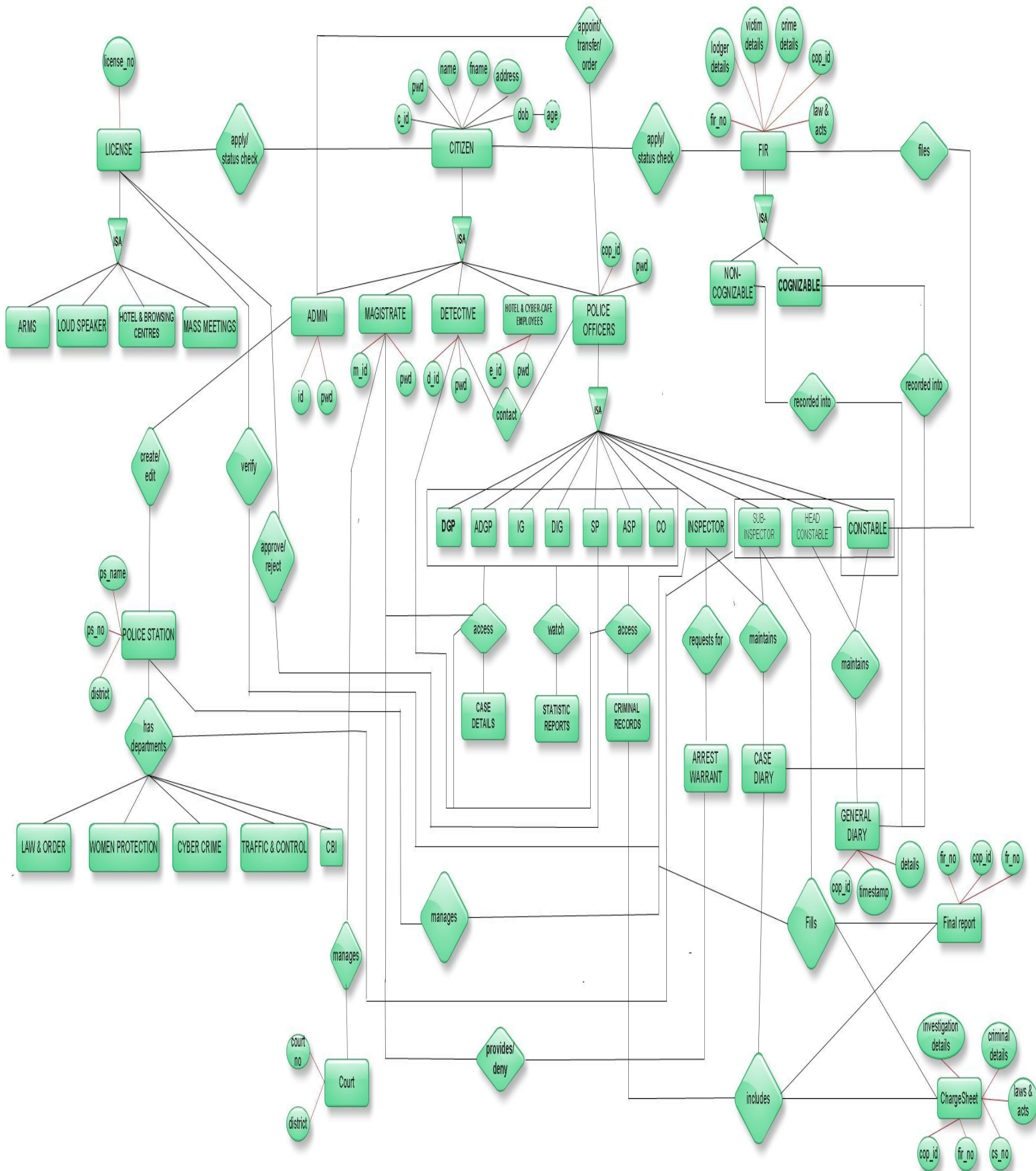


Each layer has specific responsibilities.

- The **presentation layer** deals with the presentation logic and the pages rendering
- The **control layer** manages the access to the domain layer
- The **resource layer** (integration layer) is responsible for the access to the enterprise information system (databases or other sources of information)
- The **domain layer** is related to the business logic and manages the accesses to the resource layer.
- The **Common Elements layer** gathers the common objects reused through all the layers

Deployment View Architecture of the Project:**E-R Diagram:-**

The E-R Diagram shows all the basic entities required in the project and the relationships existing between them. The E-R model has covered all the dependencies and the sharing of the data attributes between the entities.



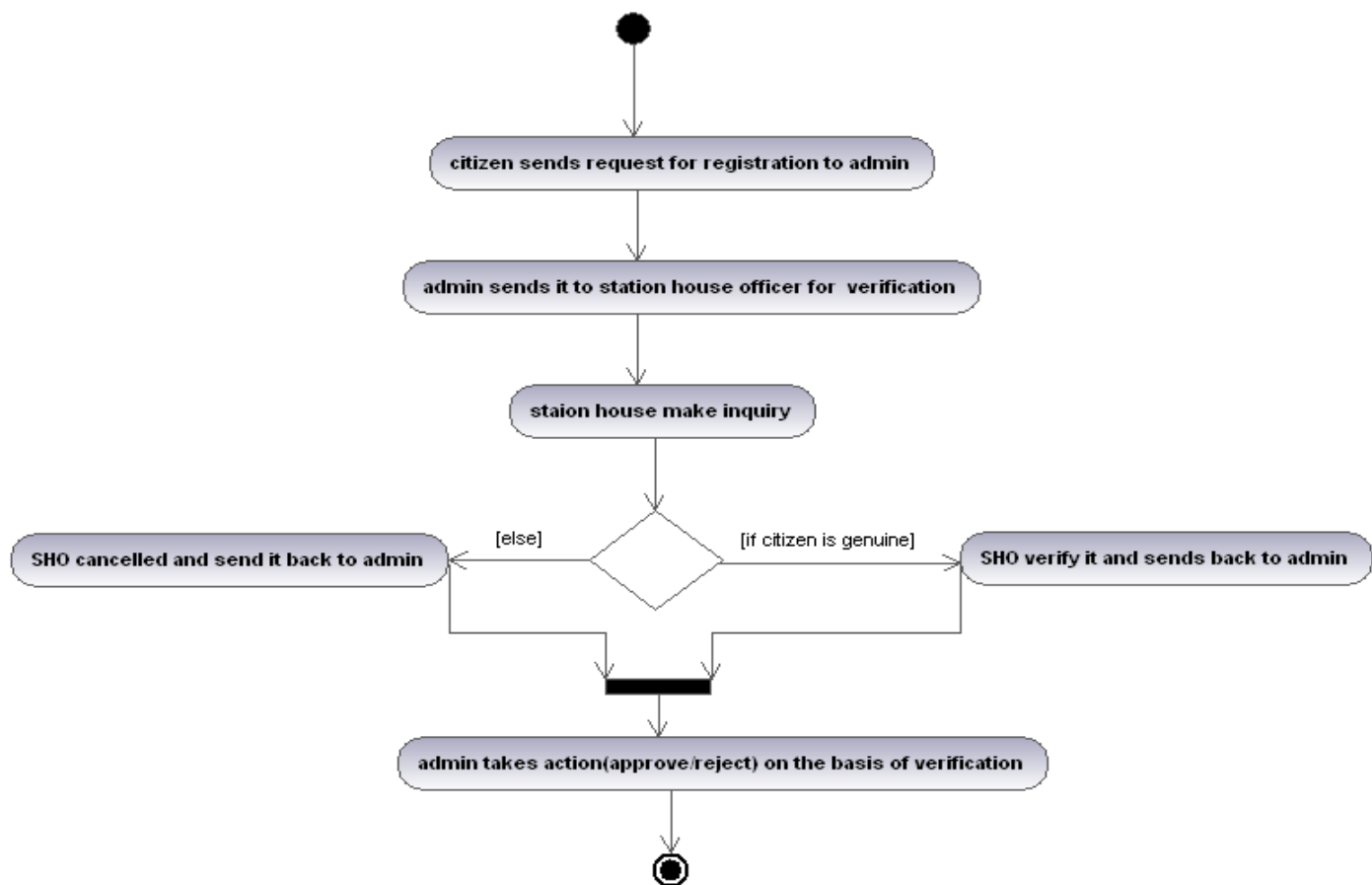
2.3 Assumptions and Dependencies :

33

By default, an Administrator account is created, Now through recruitment new police officers are appointed in police stations. It is assumed that all the citizens are having a unique identification id provided to them by police department itself.

3. Specific Requirements:

3.1 Activity Diagrams:-



- **Name of activity:** -Registration of Citizens.
- **Description:** Secure Registration of all citizens after verification of their details.
- **Preconditions:** The citizen has uploaded his verification documents.

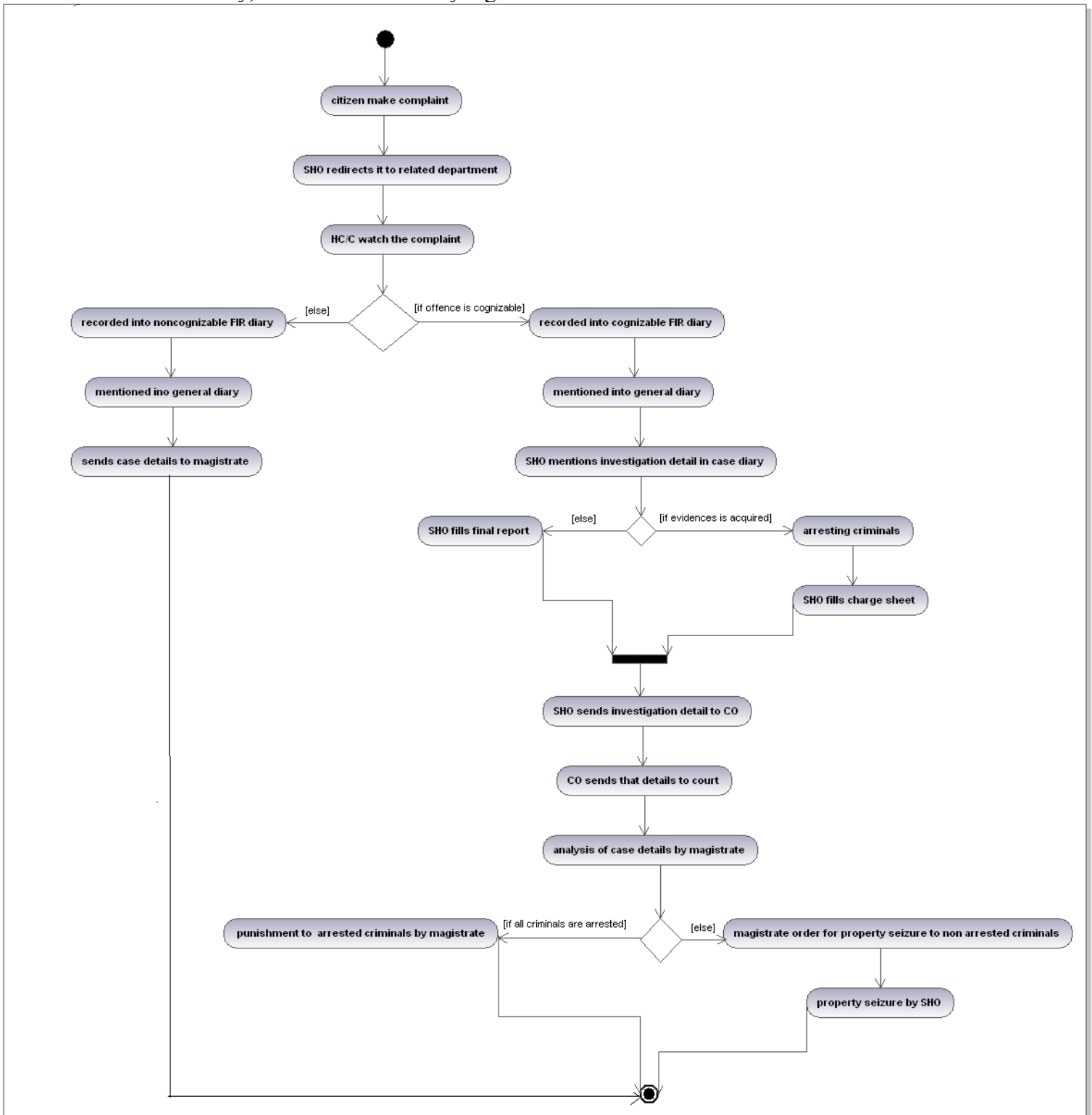
The admin, Station house officer is logged in.

- **Alternate flow of events:** None.

34

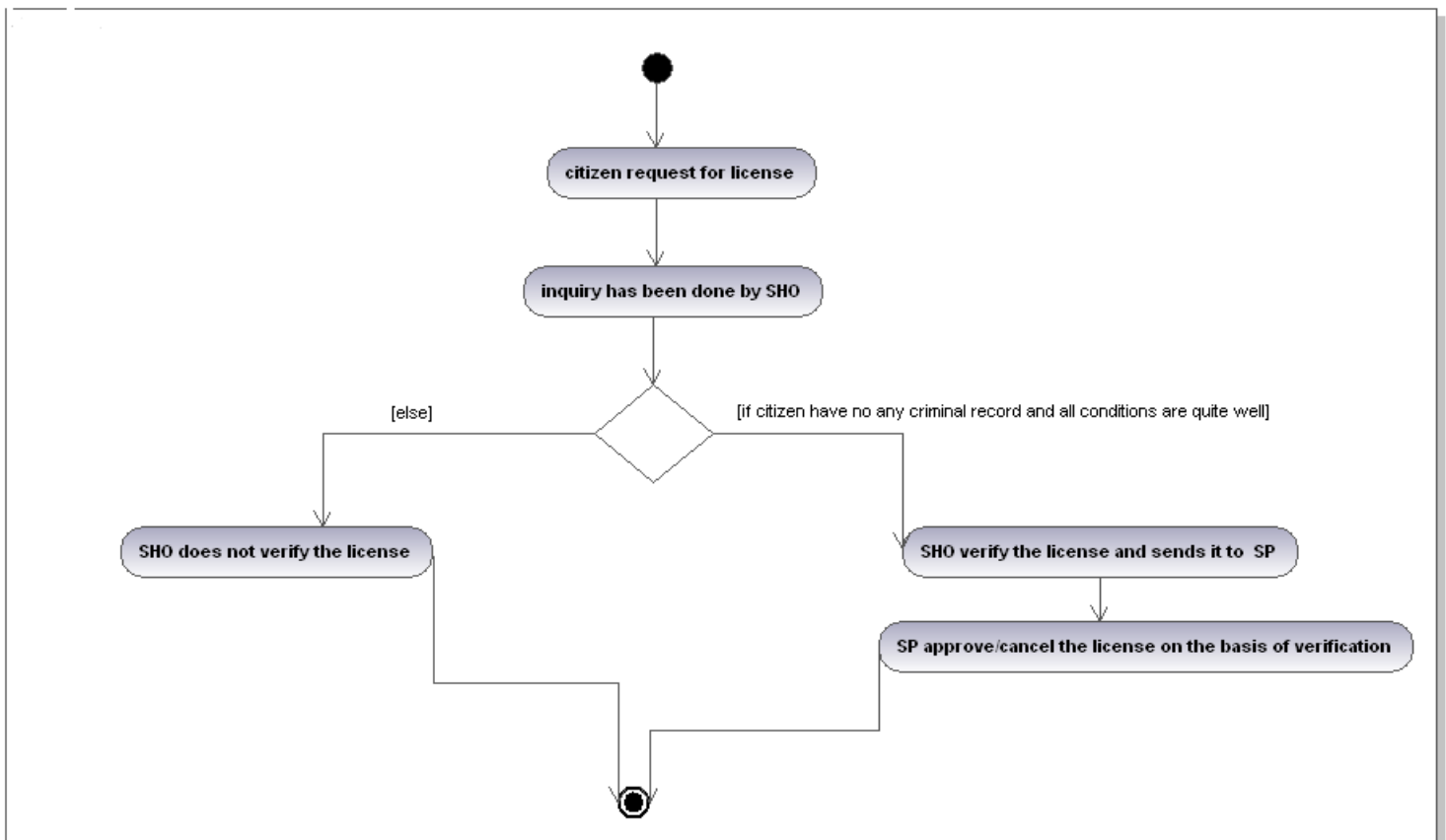
➤ **Post Condition:**

If verified successfully, the citizen is securely registered.



➤ **Name of activity:** -Complaint Processing

- **Description:** Sequential Process of FIR filing, Charge Sheet/Final Report generation, Property Seizure & Court Disposal.
- **Preconditions:**
Both the Police Officers and Citizens are logged in.
- **Alternate flow of events:** None.
- **Post Condition:**
Each complaint fired is processed completely.



- **Name of activity:** -License Request Processing.
- **Description:** Processing of License Requests of all citizens and granting them license if authenticity is verified successfully
- **Preconditions:**
Both the Police Officers and Citizens are logged in.
- **Alternate flow of events:** None.

➤ **Post Condition:**

36

If verified successfully, the citizen is successfully granted the license.

3.2 Supplementary Requirements:

- ❖ Have hours of operation that are 24x7 : Being an automated process, this system can work non-stop for all the time. This requires a UPS (Uninterruptible Power Supply) backup for atleast 8 hours
- ❖ Server Performance – The modern server is needed with advance features like load balancing, clustering, database connection pooling and caching.
- ❖ Session Management – The server should be inherently capable of handling sessions, so that the developer has to be least worried about such trivial details.