```
UserForm17 - 1

Private Sub Label4_Click()

End Sub

Private Sub TextBox16_Change()

End Sub

Private Sub TextBox17_Change()

End Sub

Private Sub TextBox18_Change()

End Sub

Private Sub TextBox19_Change()

End Sub

Private Sub TextBox2_Change()

End Sub

Private Sub TextBox20_Change()

End Sub

Private Sub TextBox21_Change()

End Sub

Private Sub TextBox23_Change()

End Sub

Private Sub TextBox24_Change()

End Sub

Private Sub TextBox26_Change()

End Sub

Private Sub TextBox27_Change()

End Sub

Private Sub TextBox29_Change()

End Sub

Private Sub TextBox3_Change()

End Sub

Private Sub TextBox31_Change()

End Sub

Private Sub TextBox33_Change()

End Sub

Private Sub TextBox35_Change()

End Sub

Private Sub TextBox36_Change()

End Sub

Private Sub TextBox5_Change()
```

```
UserForm17 - 2


End Sub

Private Sub TextBox7_Change()

End Sub

Private Sub TextBox8_Change()

End Sub

Private Sub TextBox9_Change()

End Sub

Private Sub UserForm_Activate()

End Sub

Private Sub UserForm_AddControl(ByVal Control As MSForms.Control)

End Sub

Private Sub UserForm_BeforeDragOver(ByVal Cancel As MSForms.ReturnBoolean, ByVal Control As MSForms.Co
ntrol, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal Y As Single, ByVal State As MSForms.
fmDragState, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)

End Sub

Private Sub UserForm_BeforeDropOrPaste(ByVal Cancel As MSForms.ReturnBoolean, ByVal Control As MSForms
.Control, ByVal Action As MSForms.fmAction, ByVal Data As MSForms.DataObject, ByVal X As Single, ByVal
 Y As Single, ByVal Effect As MSForms.ReturnEffect, ByVal Shift As Integer)

End Sub

Private Sub UserForm_Click()

End Sub

Private Sub UserForm_DblClick(ByVal Cancel As MSForms.ReturnBoolean)

End Sub

Private Sub UserForm_Deactivate()

End Sub

Private Sub UserForm_Error(ByVal Number As Integer, ByVal Description As MSForms.ReturnString, ByVal S
Code As Long, ByVal Source As String, ByVal HelpFile As String, ByVal HelpContext As Long, ByVal Cance
lDisplay As MSForms.ReturnBoolean)

End Sub

Private Sub UserForm_Initialize()

End Sub

Private Sub UserForm_KeyPress(ByVal KeyAscii As MSForms.ReturnInteger)

End Sub

Private Sub UserForm_KeyUp(ByVal KeyCode As MSForms.ReturnInteger, ByVal Shift As Integer)

End Sub

Private Sub UserForm_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByV
al Y As Single)

End Sub

Private Sub UserForm_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal
 Y As Single)
```

```
UserForm17 - 3

End Sub

Private Sub UserForm_RemoveControl(ByVal Control As MSForms.Control)

End Sub

Private Sub UserForm_Scroll(ByVal ActionX As MSForms.fmScrollAction, ByVal ActionY As MSForms.fmScroll
Action, ByVal RequestDx As Single, ByVal RequestDy As Single, ByVal ActualDx As MSForms.ReturnSingle,
ByVal ActualDy As MSForms.ReturnSingle)

End Sub

Private Sub UserForm17_Terminate()

End Sub

End Subtshingombe fiston
```

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Research Article Dec 11, 2023
https://doi.org/10.32388/JGU5FH

Web-Based Crime Management System for Samara City Main Police Station

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Abstract

Crime is a human experience, and it must be controlled. The Samara town police station plays a signifi
cant role in controlling crime. However, the management of crime activities is done manually, which is
 due to the lack of an automated system that supports the station workers in communicating with citize
ns to share information and store, retrieve, and manage crime activities. To control crime efficiently
, we need to develop online crime management systems.

This project, entitled "Web-Based Crime Management System," is designed to develop an online applicati
on in which any citizen can report crimes; if anybody wants to file a complaint against crimes, they m
ust enjoy online communication with the police. This project provides records of crimes that have led

to disciplinary cases in addition to being used to simply retrieve information from the database. The system implemented is a typical web-based crime record management system based on client-server architecture, allowing data storage and crime record interchange with police stations.

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Chapter One

1. Introduction to the Study

The "Crime Management System" is a web-based website for online complaining and computerized management of crime records (Khan et al., 2008).

A criminal is a popular term used for a person who has committed a crime or has been legally convicted of a crime. "Criminal" also means being connected with a crime. When certain acts or people are involved in or related to a crime, they are termed as criminal (Wex, 2023).

Samara City 's main police station is located in Samara City, within the Afar Regional State. It was established in 1984 E.C. with the purpose of protecting local communities from criminal activities. The Samara City police station is situated near the diesel suppliers in Samara City. In the first phase, there was a small number of police members, including commanders, inspectors, and constables. But recently, more than 170 police members have been employed. It is a well-organized police station that serves in crime prevention; the detection and conviction of criminals depend on a highly responsive manner. The effectiveness of this station is based on how efficient, reliable, and fast it is. As a consequence, the station maintains a large volume of information. To manage their information requirements, the station is currently using an information system. This system is manual and paper-based, where information is passed hand-to-hand, and information is kept in hard-copy paper files stored ordinarily in filing cabinets. Despite the relevance of their information system, it poses several challenges in the management of information, including an ever-increasing paper load, difficulty in enforcing file access controls, and cases of missing files and information.

To have a peaceful life, we need a well-organized law enforcement system. In our city, Samara, we have very good facilities in the law enforcement sector. However, due to a lack of facilities, some work cannot be done in a very good way. The widely employed CMS method in Samara City is the manual process. This approach entails the use of paper files in the documentation of criminal information. For this reason, a website will be produced for the Crime Management System. The main authority is given to the administrator. Next is the main module of the system, which is the crime module. In this way, all the crime information will be stored in the database. First, complaint details will be added to the system, and then station employees will check if the complaint is related to a crime or law and order. The researcher focuses on a crime management system to provide services based on a computerized or web-based system for the main police station in Samara. It also emphasizes computerized work on many activities, especially recording and reporting crime information. The researcher will help to facilitate an easy crime management system by making it reliable and efficient by implementing the loss of many crime works means web-based through the crime parts of the Samara City main police station.

The aim of the proposed system is to develop a system with improved facilities. The proposed system can overcome all the limitations of the existing system. The system provides proper security and reduces manual work.

- Security of data.
- Minimize manual data entry.
- Better service.
- User-friendly and interactive.
- Minimum time required.
- Changing the manual system into an automated system.

1.1. Statement of the Problem

The police station record management system is a project designed with the aim of maintaining all the records and details related to a police station in order to increase efficiency. As a result of making it easier to manage and administer a police station, this record management system makes the management and administration of a police station easier and more effective. Every country has always placed the safety and protection of human rights at the top of its priorities, since without them no country can exist. It is the responsibility of every country's government to protect the freedom and rights of all human beings without discrimination so that every individual can lead his life with his own choice without violating the rules and regulations set by the government of that country (Fluchtplan erstellen, 2023).

The existing system of the Samara Police Station crime record management is a manual system. With the existing system, all activities are performed manually; there is no computerized system like a database or website. Files are manually stored, moved, and processed from one section to another. Reports are manually prepared and delivered to the appropriate unit. In the existing system, it's very difficult to retrieve any record information because different records are written in paper-based books or agend

as. The problems in the existing system are:

Limitations on crime recording: Recording crime information manually.
Limitation on System Retrievals: The information is very difficult to retrieve, and finding particular information, like searching for crime detail information, is challenging.
Problem with information storage: The information generated by various transactions takes time and effort to be stored in the right place.
Problems with updating records: Various changes to information, like crime details, are difficult to update.
More manpower required: Many police officers are needed to handle crime.
Time-consuming: It is time-consuming to record crime.
Consumes a large volume of paperwork: it requires much paper to record a crime file.
Lack of security and space: There is no security for data because it is paper-based and has no password.
Report generation latency: There is an overlap of crime records from others.
Poor inter-station sharing and connectivity.

Therefore, the main objective of this project was to solve the entire above-mentioned problem by developing a web-based crime management system for the Samara city police station.

1.2. Objective

1.2.1. General Objective

The general objective of the project is to develop a web based crime management system for samara city main police station.

1.2.2. Specific Objectives

The specific objectives for our project are:

Make a plan for how to carry out our project accordingly.
Gather or collect data.
Analyze the gathered data.
Design the system based on the specified requirements.
Develop an interactive user interface.
Identify the functional and non-functional requirements.
Implement the system based on the system design.
Test to check the availability of the project.
Finally, deploy the system in the working environment.

1.3. Significance of the System

The significance of this project will be:

Providing a web-based crime reporting system for police stations.
Reducing errors by suggesting appropriate actions for the recorded personal data.
Giving efficient service within the time limit.
Effective manipulation in terms of cost.
Ease of use, updating, and maintenance.
Facilitating the accessibility of information.

1.4. Data gathering

To gather accurate data from the concerned body, the researcher used the following fact-finding techniques:

Interview: In order to gather complete and appropriate information for the proposed project, the team selected a person to interview about the organization, consisting of inspectors and secretaries, to get necessary information that is stated in the background of the project, like the existing problems and costs, such as salary.
Document Analysis: To get historical information about the organization's activities and to know the organization's rules and regulations, the team tried to analyze as many documents as possible that were relevant to the new system.
Observation: To get first-hand, accurate information about how the existing system works, the team observed the current system directly and found the pros and cons of the present system.

1.5. Design Methodology

The team decided to use object-oriented methodology (a system development approach that allows the reuse of existing components) for the following reasons:

It is known to the group members.
It is easier to maintain.
There is ease of understanding object-oriented models due to a consistent underlying representation throughout the development process.

There is ease of modification and extensibility of object-oriented models.
There is no separation between data and processes, unlike in structured analysis methodology, which treats data and processes separately.
From the development method, we would use prototyping, and from the testing method, we would use integration and system testing.

design Tools:

Deployment Diagram
Design class diagram

1.5.1. Analysis Methodology

The analysis approach used is object-oriented analysis (OOA). This method was selected because "object-oriented analysis is a method of analysis that examines requirements from the perspectives of the classes and objects found in the vocabulary of the problem domain." The primary tasks in object-oriented analysis (OOA) are identifying objects, organizing the objects by creating an object-oriented model diagram, and defining the behavior of the objects. Here, common models used in OOA are use cases and object models.

The team looked at the problem domain with the aim of producing a conceptual model of the information that exists in the area that will be analyzed. The team selected users who use the system and tried to refine how the users communicate with each other. This model includes the functions of the system (use case modeling), identifies the business objects, organizes the objects, and also the relationships between them, and finally models the behavior of the objects.

Analysis Tools:

Class Diagram
Use case diagram
Sequence Diagram
Activity Diagram

1.5.2. Hardware and Software to Be Used for Implementation

The software requirements specification is the single most important document in the software development process. The following are software requirements:

XAMPP Server, MySQL, Editor, Edraw Max and Microsoft Office Visio, Browser, Microsoft Office Word 2010, Microsoft PowerPoint 2010.

Hardware requirements are the tangible and visible components that are necessary to develop a system. Hardware Tools that were used to develop this project are:

Computers, Flash Disk (8GB), Pen and Paper, Mobile, Camera, Hard Disk.

Chapter Two
2. System Modeling

System modeling is the process of developing abstract models of a system, with each model presenting a different view or perspective of that system. It is about representing a system using some kind of graphical notation, which is now almost always based on notations in the Unified Modeling Language (UML). Models help the analyst to understand the functionality of the system and are used to communicate with customers.

2.1. Use Case Identification

A use case describes the functionality that a system is supposed to perform or shows by modeling. Each use case describes a possible scenario of how the external entity interacts with the system. That means it interacts with the entire system for external users. In modeling use cases, each use case describes the interaction between the actors within the system boundary. A Use Case describes the sequence of actions that provides a measurable value to an actor, is drawn as a horizontal ellipse, and contains the use case name inside the ellipse.

In the following table, we attempt to list the use case ID, the use case name, and its description.

Use case ID	Use case Name	Include/
Uc1	Create Account	Login
Uc2	View User Account	Login
Uc3	Update account	Login
Uc4	View user Activities	Login
Uc5	Take backup	Login
Uc6	Restore backup	Login
Uc7	Assign placement for police	Login
Uc8	View employee	Login

Uc9	View comment	Login
Uc10	View nomination	Login
Uc11	Post missing criminals	Login
Uc12	Post notice	Login
Uc13	View criminal report	Login
Uc14	View placement	Login
Uc15	Register criminal	Login
Uc16	View nomination	Login
Uc17	Send account request for complaint	Login
Uc18	View order	Login
Uc19	View complaint request	Login
Uc20	View criminal	Login
Uc21	Register complaint	Login
Uc22	Order preventive police	Login
Uc23	Register witness	Login
Uc24	Register Accused	Login
Uc25	Register Accuser	Login
Uc26	Register first information report	Login
Uc27	Order preventive police	Login
Uc28	Register employee	Login
Uc29	Update employee	Login
Uc30	View employee	Login
Uc31	Send complain	Login
Uc32	View complain response	Login
Uc33	View missing criminal	----------
Uc34	Give nomination	----------
Uc35	Give comment	----------
Uc36	Login	----------
Uc37	Logout	Login

Table 1. Use Case Identification

2.2. Use Case Diagram

A UML use case diagram shows the relationships among actors and use cases within a system. A use-case diagram is a graphic representation of the interactions among the elements of a system. Use case diagrams show the various activities the users can perform on the system. The system is something that performs a function. They model the dynamic aspects of the system. It deals with who uses your application or system and what they can do with it

A use case diagram contains the following sub-components:

System boundary: which defines the system of interest in relation to the world around it.
Actors: An actor is an entity that initiates the use case from outside the scope of the use case. It can be any element that can trigger an interaction with the use case. Define the roles that users or other systems play while interacting with the system.

It is usually individuals involved with the system defined according to their roles.

The relationship: Communication associations connect actors with the use cases in which they participate. Relationships among use cases are defined by means of including and extending relationships.

It is a connection between the actors and the use cases. The Include Relationship (<<include>> or <<uses>>) represents the inclusion of the functionality of one use case within another. The arrow is drawn from the base use case to the used use case. The Extend Relationship (<<extend>>) represents the extension of the use case to include optional functionality.

Use Case: are the specific roles played by the actors within the system

2.2.1. Actor Specification

This part describes who the actors are and what their role is in the system. In the proposed system, there are eight actors who are participating. The following are the actors in the proposed system:

System Administrator: An administrator who interacts with the proposed system and has full control over the system. After logging in to the system, their responsibilities include:

- View User Account
- Update account
- View User Activities
- Restore backup
- Create account
- View Employee
- Take backup

Police Head: Has the following activities:

- Assign placement for preventive police
- View Employee
- View nomination
- View missing criminal
- Create account
- View Comment
- Post missing criminals
- View Criminal Report

Criminal Preventive Police: Have the following activities:

- View their Placement assigned by police head
- Register Criminal
- Register Complaint
- Register Crime
- View complaint request
- View nomination
- View notice
- Send nomination
- View Order

Detective Officer: Have the following activities:

- View Criminal
- Order preventive police
- Register witness
- Register accused
- Register accuser
- View witness
- View accused
- View accuser
- Generate First Information Report

Human Resource Manager: Have the following activities:

- Register Employee
- View Employee
- Update Employee

Customer: Have the following activities:

- View Missing Criminal
- Give nomination
- Give Comment

Complaint: Have the following activities:

- Send request
- View response

2.2.2. Use Case Description

A use case description is a business analysis presentation of the steps defining the interactions betw
een a user (called an actor) and a system (usually a computer system). It details the interactions and
 sets expectations for how the user will work within the system.
Use Case Name Register Employee
Use Case ID Uc28
include Login
Actor Human resource manager
Description The human resources manager accepts the user and registers them for the database in the sy
stem.
Precondition The users should be workers at the police station.
Basic course of Action

Actor Action

1. HR manager opens the system.

3. HR manager, click on the Register Employee Link.

5. Fill each individual field and press the register button.

7. Use case end

System response

2. The system opens to the user page.

4. The system displays a user registration form.

6. If the user correctly fills each required field the system will display the "You are Successfully R
egistered" message.
Alternative course of action

If the HR manager enters the wrong username or password, the system displays

"Incorrect input, " and the process turns again from step 5.
Post condition Employees are legal users of the station.
Table 2. Register Employee use case description
Use Case Name Create Account
Use Case ID Uc1
include Login
Actor Administrator
Description Administrators create accounts for already-registered users.
Precondition Administrators must login and should get a list of users' information from registered
users.
Basic course of Action

Actor Action

1. Administrator Login to the system

3. Click on the Create Account Link.

5. The administrator fills out the field, including the user name and password, then clicks on the Cre
ate Account button.

7. Use case-end.

System response

2. The system opens to the Administrator page.

4. The system displays Create Account form

6. If the entered data is valid, the system will display the "You have successfully created an account
" message.
Alternative course of action If the user enters the wrong username or password, the system displays
 an invalid input message and processes it again from step 4.
Post condition Users can login to the system with their account.
Table 3. Create Account use case description
Use Case Name Login
Use Case ID Uc36
Include -----
Actor Police Head, Preventive Police, Detective Officer, Human Resource Manager, Administrator, and
Complaint.
Description This use case is used to ensure security for system usage. Only legal users can access the
 system.
Precondition The user must have a valid user name and password from Administrator.
Basic course of Action

Actor Action

1. the user opens the system.

3. User-Click Login Menu

5. The user fills out the form and clicks the login button.

7. Use case-end

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System response

2. The system displays the Home Page.

4. The system displays the login form.

6. System displays user page
Alternative course of action

The user may input the wrong user name and password and the system will display the wrong message.

The process turns back to step 5.

Post condition Users perform their own tasks on the system.
Table 4. Login use case description
Use Case Name Register Accused
Use Case ID Uc24
include Login
Actor Detective Officer
Description A detective officer can register the accused criminal to make a decision.
Precondition The detective officer must have a valid user name and password to register the accused criminal.
Basic course of Action

Actor Action

1. The user logs into the system.

3. Detective Officer, click the Register accused criminal link.

5. Fill out the form and click the Register button.

7. Use case-end.

System response

2. The user inputs the correct value, and the system displays Detective Officer Page.

4. The system displays an accused criminal register form.

6. The system displays a successful message.
Alternative course of action

The user may input the wrong user name and password, and the system will show an incorrect message.

The process turns back to step 1.

Post condition Logout from the system..
Table 5. Register Accused use case description
Use Case Name Assign placement for police
Use Case ID Uc7
include Login
Actor Police Head
Description Police Head: Assign police to their working place.
Precondition The police head must have a valid user name and password to assign police to their task.
Basic course of Action

Actor Action

1. The police head logged in to the system.

3. The user clicks Assign Link.

5. Then fill out the form and click the Assign button.

System response

2. System directs to police head page

4. The system opens the form.

6. system display successfully message

7. Use case-end.
Alternative course of action

A1. The police head may input the wrong user name and password, and the system will show an incorrect message.

The process turns back to step 1.

A2. If the police chief enters incorrect information, the system displays an incorrect message.

The process turns back to step 5.

Post condition User's logout from the system.
Table 6. Assign Police use case description
Use Case Name Post Missing Criminals
Use Case ID Uc11
include Login
Actor Police Head
Description Police Head post the missing criminal on the home page and get a nomination from the citiz en.
Precondition

There must have been a missing criminal nominated by the people, and

The police head must have a valid user name and password to post.

Basic course of Action

Actor Action

1. The police head logged in to the system.

3. The police head clicks on the post-missing criminal link.

5. The police head uploaded a missing criminal file.

7. Use case-end.

System response

2. system directs to the police head page.

4. The system displays browsing Button.

6. The system displays "the missing criminal successfully posted" message.
Alternative course of action A1. If the user enters the wrong username or password, the system noti fies "the wrong input" and the process continues from step 1.
Post condition User's logout from the system.
Table 7. Post Missing Criminals use case description
Use Case Name Send complain
Use Case ID Uc31
include Login
Actor Complaint
Description The complainant sends their complaint to the preventive police, and the preventive police examine it and send a response to the complaint.
Precondition The customer knows how to use the system.
Basic course of Action

Actor Action

1. The complaint logged in to the system.

3. Fill out the complaint form and submit it.

5. The complainant fills out the form and sends a request.

7. Use case-end.

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System response

2. The system directs to the complaint page.

4. The system displays the form.

6. The system displays a "successfully" message.
Alternative course of action A1. If the user enters the wrong username or password, the system notifies "the wrong input, " and the process continues from step 1.
Post condition user's logout from the system.
Table 8. Send Complaint use case description
2.3. Sequence Diagram

A sequence diagram is a kind of interaction diagram that shows how processes operate with one another and in what order in a system. It shows object interactions arranged in a time sequence. UML sequence diagrams model the flow of logic within your system in a visual manner, enabling you to both document and validate your logic. They are commonly used for both analysis and design purposes. Sequence diagrams are the most popular UML artifact for dynamic modeling, which focuses on identifying the behavior within your system.
UML Sequence Diagrams Description

- Capture the interaction between objects in the context of a collaboration.
- Show object instances that play the roles defined in a collaboration.
- Show the order of the interaction visually by using the vertical axis of the diagram to represent time, what messages are sent, and when.
- Show elements as they interact over time, showing interactions or interactions, for instance.

Figure 1. Sequence diagram for User LoginFigure 2. Sequence diagram for Give NominationFigure 3. Sequence diagram for Assign PoliceFigure 4. Sequence diagram for Update User ProfileFigure 5. Sequence diagram for Posts Missing CriminalFigure 6. Sequence diagram for Register EmployeeFigure 7. Sequence diagram for View Accused Criminal
2.4. Class Diagram

This class diagram shows the detailed associations and attributes of the proposed system. A class diagram in the Unified Modeling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes,

- Objects
- their Attributes
- Operations (methods)
- And the relationships among the classes

A class diagram is an illustration of the relationships and source code dependencies among classes in the Unified Modeling Language (UML). It provides an overview of the target system by describing the objects and classes within the system and the relationships between them.
Figure 8. Crime Management Class Diagram
Chapter Three
3. System Design

System design is the transformation of the analysis model into a system design model. System design is the first part to get into the solution domain in software development. This chapter focuses on transforming the analysis model into a design model that takes into account the non-functional requirements and constraints described in the problem statement and requirement analysis sections discussed earlier.
3.1. Design Goal

The objectives of design are to model the system with high quality. The design goals are derived from non-functional requirements, which means a non-functional requirement is the description of the feature characteristics and attributes of the system as well as any constraints that may limit the boundary of the proposed solution.
3.2. System Decomposition

To reduce the complexity of the solution domain, we decompose a system into simpler parts, called subsystems, which are made of a number of solution domain classes. In the case of complex subsystems, we recursively apply this principle and decompose a subsystem into a set of loosely dependent parts that make up the system. Subsystem decomposition is the way that helps us to distinguish the parts of the operations that take place within the organization
Figure 9. System decomposition
3.3. System Architecture

The purpose of design is to show the direction in which the application is being developed and to obtain clear and sufficient information needed to derive the actual implementation of the application. The work is based on the services provided on the internet to customers. Once the services are available

based on customer requests, they will be delivered with specific privileges to access, receive, and visit the site. The architecture used for the system is a client-server architecture where a client can use internet browsers to access the web-based crime file management system within the local area network of the agency or anywhere using the internet. It stores this data in a relational database management system. The middle tier (web/application server) implements the business logic, controller logic, and presentation logic to control the interaction between the application's clients and data. The controller logic processes client requests, such as requests for reservations and show services provided by th
e printing enterprise system from the database.
Figure 10. System Architecture
3.4. Component Diagram

Component modeling shows which components or objects will be accessed by the user. In this modeling of the system's components, it will be shown that there is a relationship among components.

By this diagram, components of the system will be wired, showing that there is a relationship among components: management of the system, database operations performed on databases, and security issues.
Figure 11. Component diagram
3.5. State Chart Diagram

A state chart diagram describes the flow of control of the Samara police station criminal management proposed system from one state to another to describe the system dynamically. States are defined as a condition in which an object exists and changes when some event is triggered. So the most important purpose of a state chart diagram is to model the life of an object from creation to termination
Figure 12. State Chart Diagram for LoginFigure 13. State Chart Diagram for Update Criminal StatusFigure 14. State Chart Diagram for Add Criminal InformationFigure 15. State Chart Diagram for View Post CriminalFigure 16. State Chart Diagram for Update ProfileFigure 17. State Chart Diagram for Register Employee
3.6. Deployment Diagram

A deployment diagram shows the execution architecture of systems that represent the assignment (deployment) of software artifacts to deployment targets (usually nodes). Nodes represent either hardware devices or software execution environments.

Deployment diagrams are used to model the hardware that will be used to implement the system, the link between different items of hardware, and the deployment of software on that hardware.

Through the deployment diagram, we are able to model:

- Where hardware Is located
- Where software Is located
- What the communication path is between various hardware parts

Deployment Diagram Description:

Browser: Online viewers will be able to communicate with the web server using a browser.

Web Server: Using Apache as the web server, it will be responsible for accepting and responding to requests sent by the browsers.

Database: This will be responsible for storing information on the computer.
Figure 18. Deployment Diagram
3.7. Persistence Data Management

The persistent data model describes the persistent data stored by the system and the data management infrastructure required for it. This section typically includes the description of data schemas, the selection of a database, and the description of the encapsulation of the database. Here, as the system includes a large amount of data received from users and is implemented in large organizations, it needs persistent data storage. Therefore, our software system uses a database called SQL Server to manage and store data persistently. Information related to admin, preventive officer, case, news, feedback, and others is persistent data and is hence stored on a database management system. Moreover, storing data in a database enables the system to perform complex queries on large data sets. In order to store data persistently in a database, those class objects identified in the class diagram of CMS are mapped into tables, and the attributes are mapped into fields for the respective tables. The tables of the system
with their respective fields and the relationships that exist between the tables are expressed in this portion of the project.
Figure 19. Persistence data management
3.8. Access Control and Security

In these aspects of the system design issues of the Samara police station crime management system, we are concerned about two things: protecting the system from external threats and ensuring that the normal day-to-day operation of the system processes data in a controlled manner. Therefore, we are focusin

g on the design to ensure the secure operation of the information system and safeguard the information and assets stored in it so that the Samara police station crime management system runs properly. This means that in the design, we are concerned with information security and application controls.

Actors

Administrator Customer Preventive Police Detective Officer Police Head Complaint HR Manager

Manage account Order police Assign placement

Create account

-Give comment

-Give nomination

Give nomination

-View-user activity

-View Employee

View missing person

-View missing person

-View complaint

-View order

-View placement

-View notice

-View criminal

-View nomination

-View accused

-View FIR

-View criminal

-View missing person

-View placement

-View response

-View criminal report

-View missing person

-View response

-View Employee

Take backup

Send account request

Send request Update Employee

-Post notice

-Post missing person

-Register criminal

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-Register crime

-Register complaint

-Register accuser

-Register accused

-Register witness

-Register FIR

Register Employee

Table 9. Access control and security for WBCMS

3.9. User Interface

User interface design is the design of a system with a focus on the user's experience and interaction. The main goal of user interface design is to make the user's interaction as simple and efficient as possible.

In this system, users would communicate with the system through the following user interface elements: links, buttons, forms, and pictures that are described under the system. The following interface design describes the logical characteristics of some interfaces between the system and the users.

Figure 20. Home Page user interfaceFigure 21. Police Head Post Notice Form user interfaceFigure 22. Detective Officer Accuser Registration Form user interfaceFigure 23. Complaint Page user interface

Chapter Four

4. Implementation and Testing

4.1. Implementation Overview

Implementation is the execution of any idea, model, or method in information technology. It refers to the process of setting up new software and hardware after a purchase is made. Implementation in the system includes implementing the attributes and methods of each object and integrating all the objects in the system to function as a single system. The implementation activity spans the gap between the detailed object design model and a complete set of source code files that can be compiled together.

The objective of the system implementation phase is to convert the final physical system specification into working and reliable software and hardware, document the work that has been done, and provide help for current and future users.

While we were thinking about developing this web-based application system, we encountered a number of constraints, but the following are the most common:

- Lack of fast internet access
- Lack of time
- Lack of resources such as computers, laptops, etc.

converting a logical design into an application using selected programming languages. To develop this project, the team members used the following programming languages: PHP, HTML, JavaScript, and CSS.

PHP is a server-side scripting language that is embedded in HTML. It is used to manage dynamic content, databases, session tracking, and even to build entire e-commerce sites.

It is integrated with a number of popular databases, including MySQL, PostgreSQL, Oracle, Sybase, Informix, and Microsoft SQL Server.

4.2. Algorithm Design

An algorithmic view of a problem gives insight that may make a program simpler to understand and to write. Every algorithm needs a process in order to be created and utilized, and they need the four stages of algorithm analysis: design, implement, and experiment.

4.3. Sample Code and Description

```
<? php

session_start();

include("connection.php");

?>

<!DOCTYPE html>
```

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```
<html>
<head>
<title>home page</title>
<link href="css/mystylesheethome.css" rel="stylesheet" type="text/css"/>
</head>
<body>
<div id="wrapper">
<table width="100%" cellspacing="0px">
       <tr>
          <td>
            <div id="header">
                                    <? php
                                         require("header.php");
                                        ?>
                          </div>
                            </td>
                           </tr>
<tr>
          <td>
                           <div id="headermenu">
                                                          <? php
                                                  require("headermenu.php");
                                                 ?>
                                    </div>
                            </td>
                          </tr>
              </table>
  <div id="maincontent">
        <table width="100%">
         <tr>
            <td>
             <div id="ContentLeft">
                                                <? php
                                                    require("homesidemenu.php");
                                                ?>
 </div>
              </div>
```

```
 </td>
 <td>
   <div id="ContentCenter">
           <div style="border:solid 4px #dldbeg;overflow:scroll;overflow-y: scroll">
                                              <? php
                                                 // require("Animation.php");
                                                  ?>
<h1 style="color:blue; font-size: 25px;"> SAMARA CITY MAIN POLICE STATION</h1>
<p> <mark> Samara city main police station</mark> is a building that serves to accommodate police offi
cers and other members of staff. These buildings often contain offices and accommodations for personne
l and vehicles, along with locker rooms, temporary holding cells, and interview and interrogation room
s. </p>
<center> <h2 style="margin-left: 40px; color:blue"> LOCATION<h2></center>
 <p> <mark> Samara city main police station</mark> is found in Samara city, which is located in <mark>
Afar Regional State. </mark> It was established in 1984 E.C. for the purpose of protecting local commu
nities from criminal activities. <mark>Samara city police station</mark> found near the diesel supplie
rs in Samara city. </p>
                                              </div>
                                               <div>
 <img src="images/compound.jpg" width="95%" height="300px">
                                             </div>
                                               </div>
 </td>
<td>
           <div id="ContentRight">
                        <? php
                                                  require("login.php");
                                                 ?>
                                                 </div>
                                          </td>
                                     </tr>
                          </table>
                                      </div>
<!-- footer-->
                <div id="footer">
                                              <? php
                                       require("footer.php");
                                              ?>
       </div>
```

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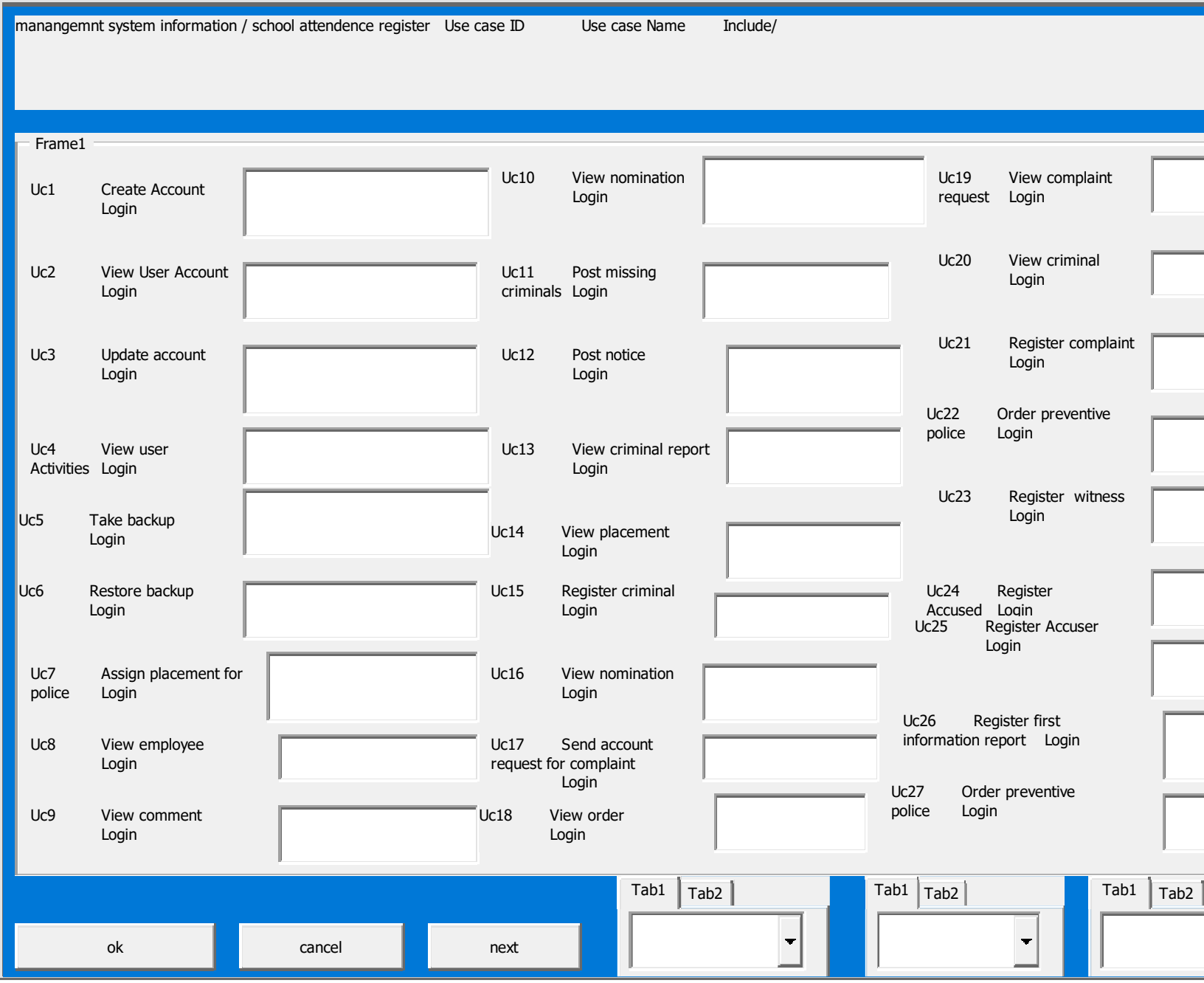
```
<!--end of main wrapper-->

</div>

</body>

</html>
```


manangemnt system information / school attendence register
Use case ID
Use case Name
Include/
Frame1
Uc1 Create Account Login
Uc2 View User Account Login
Uc3 Update account Login
Uc4 View user Activities Login
Uc5 Take backup Login
Uc6 Restore backup Login
Uc7 Assign placement for police Login
Uc8 View employee Login
Uc9 View comment Login
Uc10 View nomination Login
Uc11 Post missing criminals Login
Uc12 Post notice Login
Uc13 View criminal report Login
Uc14 View placement Login
Uc15 Register criminal Login
Uc16 View nomination Login
Uc17 Send account request for complaint Login
Uc18 View order Login
Uc19 View complaint request Login
Uc20 View criminal Login
Uc21 Register complaint Login
Uc22 Order preventive police Login
Uc23 Register witness Login
Uc24 Register Accused Login
Uc25 Register Accuser Login
Uc26 Register first information report Login
Uc27 Order preventive police Login
ok
cancel
next
Tab1
Tab2
Tab1
Tab2
Tab1
Tab2