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# The Judicial Case Priority Management System

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**Abstract:** A significant backlog of unresolved cases currently plagues the Indian legal system, mostly as a result of ineffective case management procedures and a lack of established procedures for setting case priorities. The scheduling and prioritization procedure is now handled manually by court employees, who rely on their own experience and subjective judgment. In addition to wasting important time and money, this manual intervention causes delays and dealing with inconsistencies urgent issues. when an automated solution is desperately needed to expedite the prioritization process and guarantee that important cases receive prompt attention while the number of pending cases keeps growing. The creation of a software-based tool that automates the process of prioritizing and ranking court cases is suggested in this paper: the Judicial Case Priority Management System. To give each case a priority ranking, the algorithm makes use of key legal characteristics as well as portions of the Indian Penal Code (IPC). Case information, IPC sections, and the accompanying priority scores are kept in a special database. The algorithm at the heart of the system determines each case's severity and urgency, resulting in a final priority score on a scale from 0 to 10. High-profile or urgent instances that require immediate care are indicated by a score of 0, whereas less urgent cases are indicated by a score of 10. To determine the priority score, the algorithm takes into account a number of variables, including the type of violation, related IPC sections, prior case history, and other contextual information. In order to ensure that courts can handle high-priority cases quickly, the calculated scores are saved in the database and utilized to dynamically categorize cases. By minimizing human participation and increasing speed, this structured prioritizing lowers the possibility of bias and error in the case scheduling process.

**Keywords:** Judicial case management, Priority Scoring, Legal Automation, Court Efficiency, Indian Penal Code.

## I. INTRODUCTION

Even though the Indian judiciary is frequently seen as one of the cornerstones of democracy, it continues to struggle with an excessive backlog of cases. The inefficient scheduling and prioritization of cases, which causes important things to be postponed, is one of the biggest obstacles to prompt justice. Court employees have historically handled scheduling by hand, prioritizing cases based on their own memory and judgment. However, because humans are limited in their ability to digest vast amounts of information, this approach is fundamentally incorrect and can result in biases, delays, and inconsistencies. The need to update the legal system by utilizing technology to improve efficiency and equity is growing as technological developments continue to transform a number of industries. This study suggests creating a Judicial Case Priority Management System, a complete software program intended to transform the way cases are arranged and given priority in Indian courts, in order to address these issues. By automating the prioritization process, the system seeks to lessen the workload for court employees, cut down on delays, and guarantee that high priority cases receive prompt treatment. dynamically calculating the FPS and sorting cases accordingly. By doing away with the subjectivity that comes with manual prioritization, this automated procedure improves case management's consistency and transparency. This study examines the Judicial Case Priority Management System's architecture, design, and implementation while assessing how it might simplify judicial procedures. The Indian judiciary may significantly improve its responsiveness, decrease case pendency, and strengthen public confidence in the legal system by implementing such technology innovations. Additionally, this endeavor may provide the groundwork for more extensive legal reforms, opening the door to a judicial system that is more technologically advanced and flexible.

## II. METHODOLOGIES

i. Overview of Algorithms

By automating the priority process, the Judicial Case Priority Management System aims to improve the efficiency of case handling in Indian courts. In order to ensure that urgent situations are handled quickly while upholding fairness algorithm and consistency, organizes the cases according to their associated IPC sections.

  

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ii. Computation of Priority function

A list of related IPC sections is given for every case. Each section is given a preset priority value by the algorithm, which makes use of a lookup table called section Priorities. The following methods are used in the priority calculation: Cases with a single section: The priority of a case that only involves one section is retrieved straight from the lookup database. A high priority value of infinity is applied by default if the section is not recognized. Several Section Cases: In situations where there are several sections: Determine the Weighted Average Priority by taking into account each section's level of severity, making sure that sections with a higher priority have a bigger impact. Choose the lowest priority value from each area to get the highest priority (lower values indicate higher priority).

iii. Sorting Cases

Cases are arranged in ascending order of priority after priorities have been calculated to guarantee that cases with lower scores—which are considered greater priorities—are handled first. For ease of review and administration, the sorted list shows case IDs, names, related sections, and calculated priority.

Implementation of Algorithm:

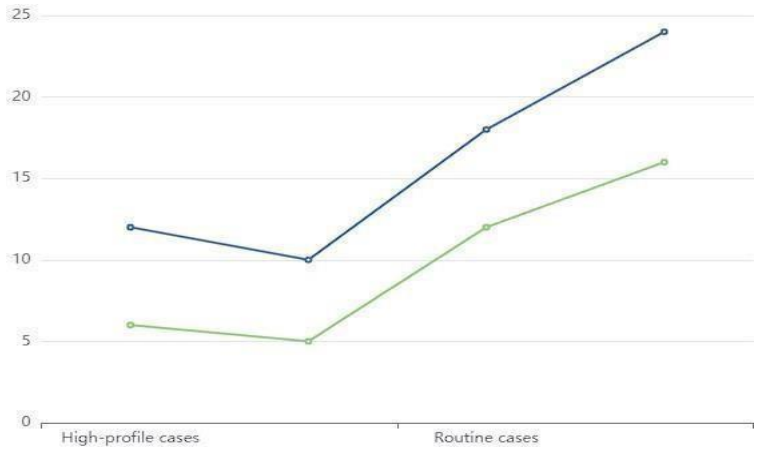
```
function calculatePriority(sections,sectionPriorities):
   if length(sections) == 1:
      return sectionPriorities[sections[0]] or Infinity
   else:
      priorities = []
      for section in sections:
         priority = sectionPriorities[section] or Infinity
         priorities.append(priority)

      avgPriority = sum(priorities) / length(priorities)
      highestPriority = min(priorities)
      return min(avgPriority, highestPriority)

function displaySortedCases(cases, sectionPriorities):
   for case in cases:
      case.priority = calculatePriority(case.sections,sectionPriorities)
   sort cases by case.priority (ascending)

   for case in cases:
      print(case.caseId, case.caseName, case.sections, case.priority)
```

Fig. 1. Algorithm




vii. Design of Databases

The system is based on a relational database paradigm, which includes tables for:
Case Records: Keeping track of names, sections, priority scores, and case IDs.

IPC Sections: Assigning priority values to sections.

User accounts: controlling access rights and roles.

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Case Statuses: Monitoring each case's development and state of resolution.

Administrators may easily control IPC sections and change records thanks to this structure, which guarantees effective data storage and retrieval. Scalability is supported by the relational model, which can handle varied user interactions and high case data volumes.

MATHEMATICAL EXPRESSIONS:

**(I) Priority Calculation for Multiple Sections:**

Let S={s1, s2,…,sn} represent the sections associated with a case, and P(Si). be the priority of section Si. Then the priority of a case can be determined as:

$$\text{Average Priority} = \frac{1}{n}\sum_{i=1}^{n} P(si)$$

Highest Priority = min
{P(s1), P(s2),…,P(sn)} The final priority
P case for a case is given by:

$$\textbf{P case = min (Average Priority, Highest Priority)}$$

**(II) Single Section Case:**

For a case with a single section S1, the priority Pcase is simply:

$$\textbf{P case = P(S1)}$$

## III. SYSTEM ARCHITECTURE

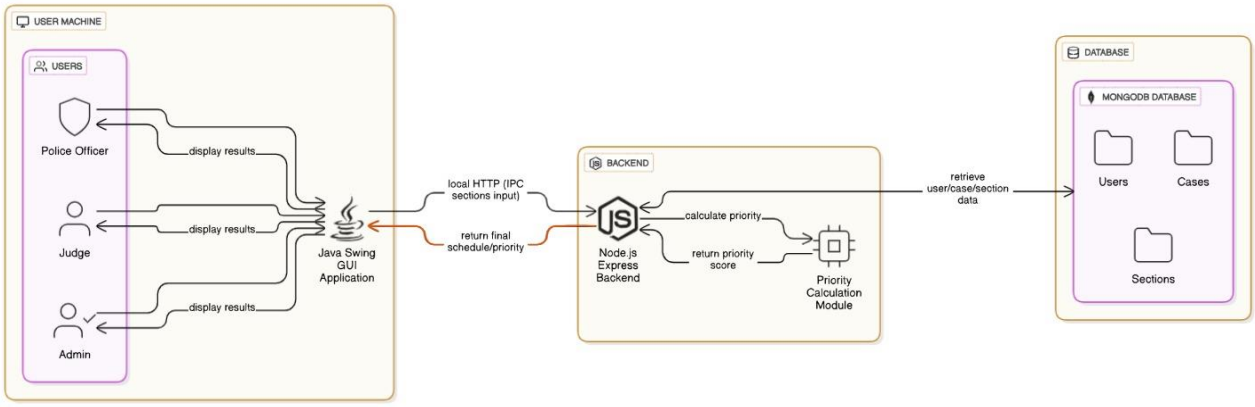


Fig. 3. System Architecture

**User Input Interface**

- This component allows court staff to enter case details, including IPC sections, case type, and severity, through an intuitive and user-friendly interface.
- The interface can be accessed via computer or mobile devices, enabling easy data entry and updates.

**2. Case Management System**

- This module manages and stores all case-related information.
- It interfaces with a central database that contains comprehensive records of case details, including IPC sections, case histories, and priority scores.

**3. Database**

- The central repository where all case data is stored. It includes information such as case identifiers, IPC sections, case types, severity levels, and priority scores.
- The database ensures that all relevant information is available for processing and retrieval.

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**4. Priority Calculation Module**

- This module calculates the final priority score based on the data retrieved and processed.
- It uses the prioritization algorithm to determine each case's urgency and assigns a priority score, ranging from 0 (high-profile) to 10 (low-profile).

**5. Case Scheduler**

- This component organizes and schedules cases based on their priority scores.
- It ensures that high-priority cases are handled first and updates the court schedule accordingly.
- The scheduler coordinates with the announcement system to ensure timely case management.

**6. Output System:**

- The final module is responsible for communicating case priorities and scheduling information.
- It integrates with the court's public address system to make announcements regarding case priorities and scheduling changes, ensuring that all relevant parties are informed in a timely manner.

## IV. CONCLUSION

A major step has been taken to alleviate the inefficiencies and delays that beset the Indian judiciary's current manual case management procedures with the creation and implementation of the Judicial Case Priority Management System. A more streamlined and objective method of managing court dockets is introduced by the system, which uses technology to automate the ranking of cases. The complex algorithm at the core of this system evaluates related IPC sections and determines priority ratings to rank instances based on urgency. This guarantees that urgent or well known matters are handled quickly, increasing the general effectiveness of court processes. Moreover, the architecture of the system facilitates scalability, enabling it to manage substantial amounts of case data without sacrificing efficiency. The prioritization process could be further improved and judicial decision-making could be strengthened with future additions like automated notifications, real time updates, and machine learning integration. Crucially, if this system is successfully implemented in India, it may open the door for such reforms in other nations, promoting a more effective, fair, and open international justice system. This system has the ability to transform legal procedures and drastically cut case backlogs by resolving important issues and implementing technology advancements, bringing justice closer to being delivered on time.

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