

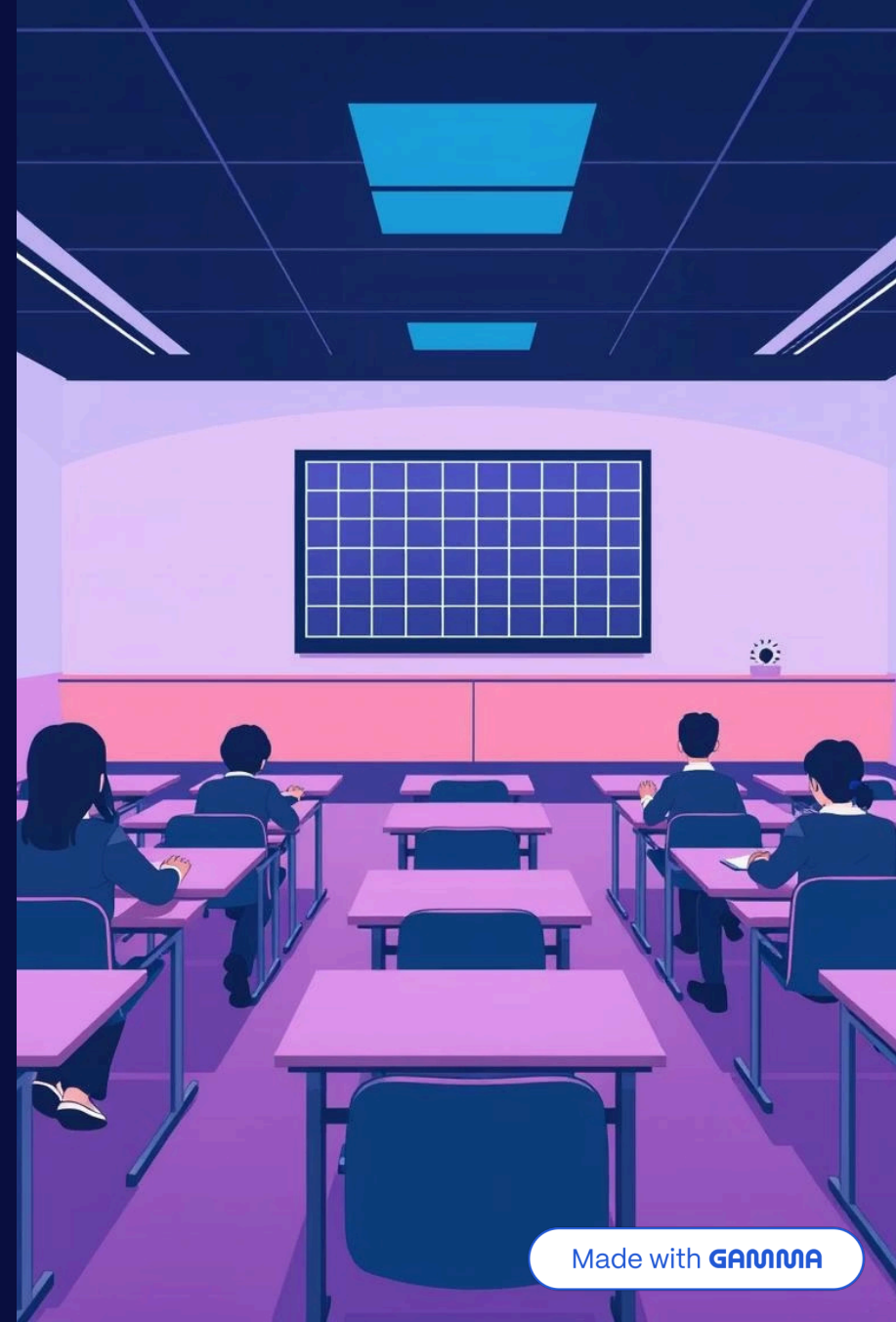
Cheating Detection System Using Grid Monitoring & Alarm

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Subject: Discrete Structures



The Challenge: Ensuring Exam Integrity

In bustling examination halls, maintaining vigilance against academic dishonesty is a constant battle. Educators face the daunting task of monitoring numerous students simultaneously, often leading to missed instances of cheating.

A robust, intuitive system is urgently needed to provide real-time detection and deter improper actions, ensuring a fair and equitable testing environment for all.



Our Solution: Smart Monitoring & Instant Response

Grid-Based Seating Map

Visually represent the classroom layout for easy navigation and monitoring.

Define Restricted Zones

Clearly mark areas or seat positions where certain actions are not permitted.

Detect Unauthorized Interactions

Automatically identify and flag any activity occurring within restricted seats.

Immediate Alarm & Warning

Trigger a loud alarm and visual warning upon cheating detection for swift intervention.

User-Friendly Interface

Provide a clean, colorful, and intuitive GUI for effortless operation by instructors.

How It Works: Interactive Grid Logic

Our system simplifies cheating detection into an intuitive grid interaction. Each student's seat is represented by a button on a digital grid. A "normal" click on a seat indicates proper student behavior. However, a click on a designated "restricted cell" immediately signals a potential breach.

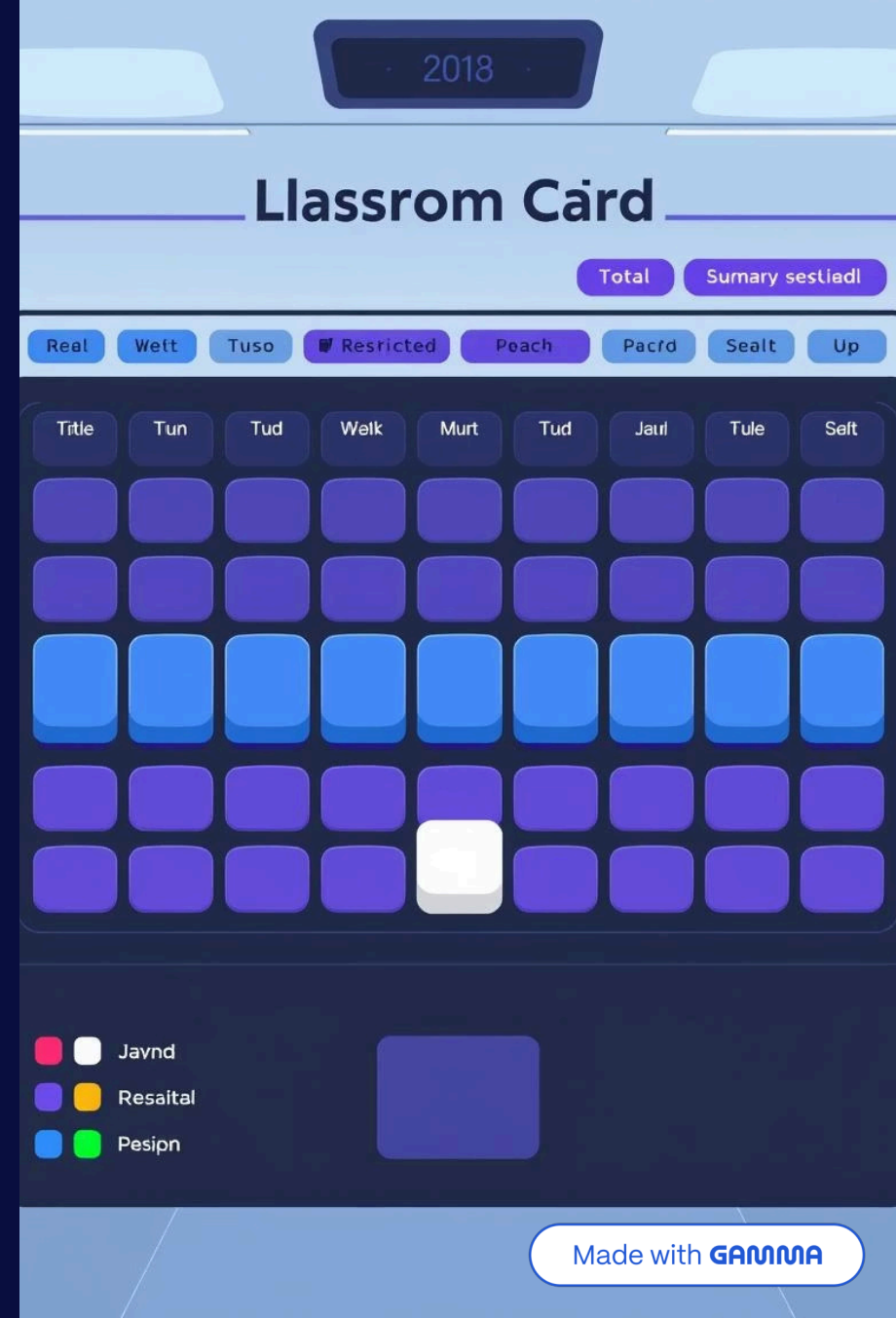
The program continuously checks the position of interactions. If a restricted seat is activated, it instantly triggers a loud alarm and a prominent popup message, ensuring immediate attention and a swift response from the invigilator.



Intuitive & Visually Engaging Design

The system's Graphical User Interface (GUI) is designed for clarity and ease of use. It features vibrant, colorful buttons arranged precisely in rows and columns, mirroring a real classroom layout. Row numbers and column letters are displayed in contrasting black labels for quick identification.

A clean purple header and footer frame the interface, providing an attractive and professional appearance. Modern hover effects on buttons enhance user interaction, making the GUI responsive and engaging. Crucially, all restricted seats are clearly highlighted, drawing immediate attention to potential issues.



Under the Hood: Technology Stack



Python Programming Language

The core logic and functionality are built using Python, known for its readability and versatility.



Tkinter for GUI

Utilizes Python's standard GUI toolkit, Tkinter, for creating the attractive and interactive user interface.



Winsound Module

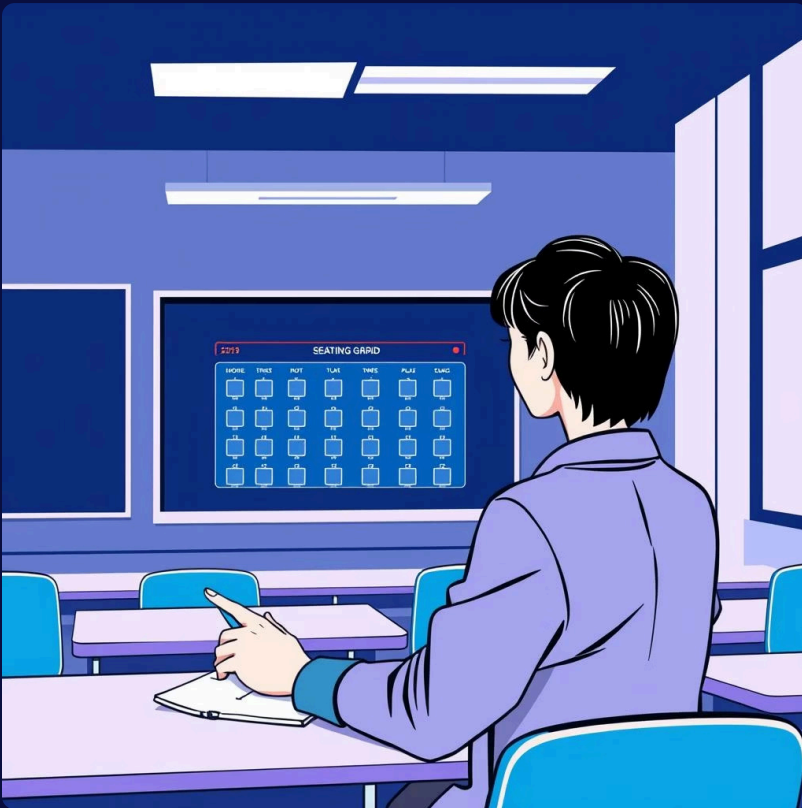
Employs the built-in Winsound module (for Windows) to produce a distinct alarm siren upon detection.



Zero External Dependencies

No additional packages or complex installations are required, ensuring quick deployment and hassle-free operation.

Key Features for Seamless Monitoring



→ Visually Appealing & Intuitive GUI

An attractive, colorful interface designed for maximum ease of use and quick comprehension.

→ Responsive Button Feedback

Buttons provide visual cues when hovered over, enhancing the interactive experience.

→ Distinct Alarm System

Customizable alarm sound ensures immediate notification of any cheating attempt.

→ Clear Seating Layout

Effortlessly understand student positions and restricted areas at a glance.

→ Simplified Operation

Designed to be extremely simple for teachers, requiring minimal training.

→ Offline Functionality

Operates independently without internet access or additional software tools.


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The Logic Behind the Grid

The core of our system lies in its straightforward yet effective code logic:

Grid Creation

The seating grid is dynamically generated using nested loops, defining rows and columns of interactive buttons.

Event Handling

Every button click triggers a dedicated `cell_click` function, which processes the interaction.

Restriction Check

The program then instantly evaluates if the clicked seat corresponds to a designated restricted area.

Action & Alert

If a restricted seat is detected, the system activates the alarm sound and displays a "Cheating Detected" message.

Impact & Versatility

This innovative system offers significant advantages and broad applicability across various educational settings.

Educational Institutions

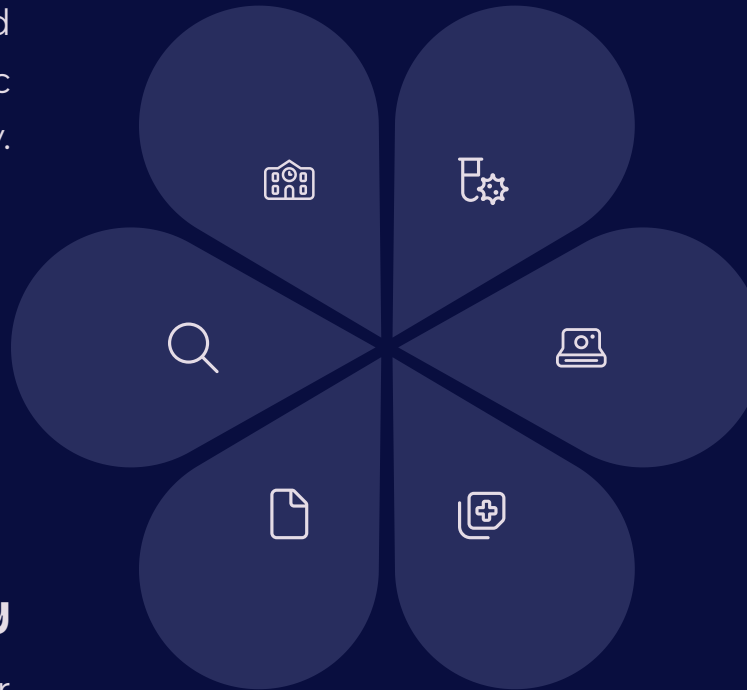
Ideal for schools, colleges, and universities to ensure academic integrity.

Full Customization

Grid size, restricted areas, and alarm sounds are fully configurable to suit specific needs.

Accessible Technology

Functions efficiently even on older or less powerful computer systems.



Laboratories & Assessment Centers

Applicable in any environment requiring supervised testing or assessment.

Immediate Detection

Pinpoints cheating incidents in real-time, allowing for rapid intervention.

Hardware-Free Solution

No additional physical equipment is needed, making it cost-effective and easy to implement.



Conclusion: A Step Towards Fairer Exams

We have successfully developed a robust Cheating Detection System utilizing Python, an interactive GUI, and real-time alarming capabilities. This tool is a testament to the power of combining thoughtful design with logical verification to address a critical need in education.

Its simple, clear, and highly effective nature, coupled with a visually appealing interface, makes it an invaluable asset for maintaining discipline and ensuring a fair examination process. Thank you for your attention!