

# *QR Code-Based Smart Office Seat Allocation System*

**Team Name & Members:**

AI ALCHEMISTS

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Hack-A-League 3.0, Global Academy of Technology -1<sup>st</sup> and 2<sup>nd</sup> Feb

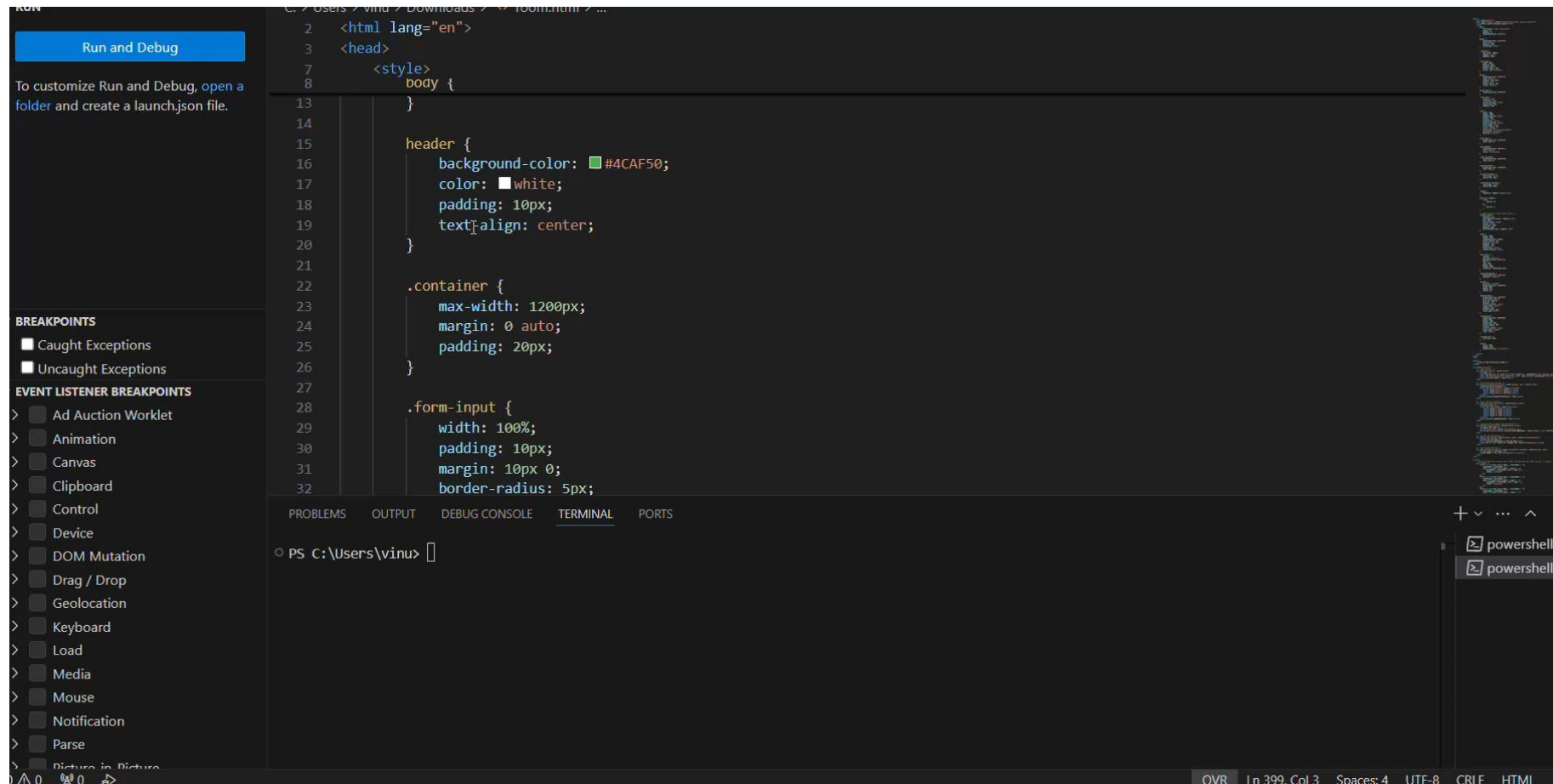
# Problem Statement

- Offices today are plagued by inefficient seat allocation methods, leading to wasted time and confusion for employees.
- In hybrid work environments, manual seat assignments become a challenge, and real-time tracking is nonexistent.
- Current solutions are outdated and not user-friendly.
- **Supporting Statistics:**
  - 80% of companies report inefficiencies in office space management.
  - Hybrid work models demand flexible seating solutions for optimal space utilization.

# Our Game-Changing Solution

- **Smart Office Seat Allocation Using QR Codes**
  - **Scan QR Code** - Instantly see real-time seat availability.
  - **Reserve or Occupy a Seat** in seconds, reducing time spent searching for a spot.
  - **No app installation needed** – Fully web-based and mobile responsive.
  - **Dynamic Seat Updates** – Available or occupied seats update in real time.
- **Why It Works:**
  - Instant and Seamless
  - Reduces Confusion and Saves Time
  - Scalable and Easy to Implement

# Live Demo / Working Prototype



PROBLEMS

6

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

```
PS C:\Users\Aryan Patel> cd ~/Desktop/HACKATHON
```

```
PS C:\Users\Aryan Patel\Desktop\HACKATHON> python test_requests.py
```

```
Status Code: 201
```

```
Response: {'message': 'User registered successfully!'}
```

```
PS C:\Users\Aryan Patel\Desktop\HACKATHON> █
```

PS C:\Users\Aryan Patel\Desktop\HACKATHON> python book\_request.py

[✓] Logged in successfully!

[🔑] JWT Token: eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJmc2Vzc2U5ImIhdCI6MTczODQ2MzQ1NCwianRpIjoizTEwZTk4OTMtOWE5MC00NjVjLWJMTctNzEyMDVhMGUwZmM0IiwidHlwZSI6ImFjY2VzcyIsInN1YiI6eyJlbXBsb3llZV9pZCI6IktuXDEyLjY2bG95ZmUifSwibmIjoXNzNDNDYzNDU0LCJjc3MjIjoieyJmZkMTMTOTF1Yi00ZDU2LWJlY2MtYWU0MzJjOWFkMzE3IiwizXhwIjoXNzNDNDYzNDU0fQ.ZHwyd5x2nEVTHhvb\_DSMU5-JAxmCyat6UcleeibkAI

Enter Seat ID to Book: 10

Enter booking duration (in hours): 8

[✓] Seat booked successfully!

[i] Raw Response: {"message": "QR Code generated successfully!", "qr\_code\_url": "/static/E181103\_qr.png"}

[✓] QR Code generated successfully! Access it here: /static/E181103\_qr.png

Press Enter to simulate Check-in (QR Scan)...

[i] Raw Response: {"check\_in\_time": "2025-02-02 08:01:19", "message": "Check-in successful!", "seat\_id": 10}

[i] Status Code: 200

[✓] Check-in successful: {'check\_in\_time': '2025-02-02 08:01:19', 'message': 'Check-in successful', 'seat\_id': 10}

Press Enter to simulate Check-out (QR Scan)...

[i] Raw Response: {"check\_in\_time": "2025-02-02 08:01:19", "check\_out\_time": "2025-02-02 08:01:24", "duration\_hours": 0.0, "message": "Check-out successful!", "seat\_id": 10, "total\_cost": 0.0}

[i] Status Code: 200

[✓] Check-out successful: {'check\_in\_time': '2025-02-02 08:01:19', 'check\_out\_time': '2025-02-02 08:01:24', 'duration\_hours': 0.0, 'message': 'Check-out successful!', 'seat\_id': 10, 'total\_cost': 0.0}

Press Enter to retrieve cost details...

[i] Raw Response: {"error": "Access denied"}

[✗] Failed to retrieve cost data: {"error": "Access denied"}

PS C:\Users\Aryan Patel\Desktop\HACKATHON> █

# Technology Stack

## Frontend Technologies:

- **HTML, CSS, JavaScript** for building the web application.
- **QR Code Scanner** – JavaScript-based library for handling QR code scanning and processing.
- **Real-time Updates** – Firebase Firestore / WebSockets for live data updates.

## Backend :

- **Node.js /Flask** -For handling user data, seat reservations, and real-time interactions

# Competitive Edge

## Why Our System Stands Out:

**Real-Time Dynamic Updates** – No manual intervention needed for seat status changes.

**Web-Based Solution** – No app required; accessible on any device.

**Interactive & Professional UI** – Seamless user experience with clean animations and responsive design.

## Comparison with Existing Solutions:

**Our System:** Quick, dynamic updates, no app installation required, mobile-responsive.

**Traditional Systems:** Static, require app installation, limited accessibility



# Business & Scalability Potential

## Revenue Model:

SaaS model for **co-working spaces** and **corporate offices**.

**Integration with access control systems** for seamless entry and seat allocation.

## Future Scope:

**AI-based Seat Recommendations** – Based on user preferences and activity patterns.

**IoT Integration** – For smart desks, lights, and more.

**Voice-Controlled Seat Booking** – Integration with Alexa and Google Assistant

# Conclusion & Impact

- **Key Takeaways:**

Optimizes **office seating efficiency** in real-time.

**User-friendly** and **scalable** for small or large office environments.

**Reduces confusion** and **saves valuable time** for employees.

- **Impact Statement:**

"Our system creates a seamless, hassle-free experience for employees, increasing productivity and making office management more efficient than ever."

# Thank You

Project Link:

<https://github.com/ashvijavm/hack...project>