Ref. No. IKGPTU/CRA/..847..... Dated..07/July/2026..

Directors/ Principals
All the University Campuses & it's Affiliated Colleges
I K Gujral Punjab Technical University, Jalandhar

Sub: POD Expert Talk: "Stacks to system design."

Respected Sir/Madam

I K Gujral Punjab Technical University invite students of its campuses & affiliated colleges to participate in **POD Expert Talk: "Stacks to system design."**

The session will be led by **Kartik Sundriyal**, a **Backend Expert** with expertise across the entire software development spectrum. Known for translating complex technical concepts into clear, practical insights, Kartik combines strong foundations in data structures and algorithms with the product sensibility of a frontend practitioner and the engineering rigour of a backend developer. He is passionate about helping developers bridge the gap between academic CS fundamentals and production-grade software design.

The session details are as below:-

Topic	:	Stacks to system design
Mode	:	Virtual / Online
Date	:	9th July 2026 (Thursday)
Time	:	7:00 PM – 8:00 PM IST

For more details & registration students may register at the link mentioned below:-

https://events.pod.ai/pages/webinar/stacks-to-system-design

Why Attend?

In the dynamic tech landscape, foundational data structures like Stacks and Queues are crucial for system resilience. From stacks powering a browser back button to queues managing flash sale orders, choosing the wrong structure isn't just a theoretical mistake—it can collapse an entire architecture.

In this session, Kartik will bridge computer science theory with real-world application, exploring how LIFO and FIFO principles operate in production environments. Students will gain practical scaling insights, learn how modern systems handle massive traffic spikes, and discover how to master these essential structures for modern software engineering.

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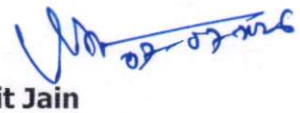
Key Takeaways:

- **LIFO vs. FIFO isn't just theory** — choosing the wrong data structure in system design can collapse an entire architecture.
- Understanding when to use a Stack versus a Queue is a core engineering decision.
- **Monotonic Stacks unlock linear-time solutions** — a pattern critical in production systems like stock price analysis and compiler optimization, replacing brute-force $O(n^2)$ approaches with O(n) efficiency.
- **The call stack is always running under the hood** — every function call, every nested recursion, every Stack Overflow crash is your stack in action. Understanding it helps you debug real production memory issues.
- **Circular Queues solve the memory waste problem** — by turning a linear queue into a ring buffer, they enable high-frequency and real-time systems to reuse memory without costly shifts or allocations.
- **Message Queues are the backbone of scalable systems** — the producer-consumer pattern with tools like Kafka or RabbitMQ is how modern systems handle massive traffic spikes (like 10,000 users hitting Buy Now) without crashing the database.
- **Interview red flags matter as much as correct answers** — missing safety checks like isEmpty(), confusing Queue with Deque, or ignoring thread safety and edge cases are what separate a good engineer from a great one.

You are requested to kindly direct the Training & Placement Officer/ Faculty Coordinator of your college/ campus to share the information with the concerned students.

With profound regards,



Er. Mohit Jain
Assistant Registrar (CR&A)

CC:

1. SVC: For kind information of the Hon'ble Vice Chancellor
2. Head (CR&A): For his kind information
3. DR (ITS) - To upload at University website
4. File.