## "Weekend Workshop on Linux File System Drivers" by **Anil Pugalia**

### Day 1

+ *Goal 1: Understanding the Project & its Pre-requisites*
- W's of this project? – Goals & Expectations
- Setting up the Project Development Environment
- First level debugging Techniques: syslog & Oops
- Fundamentals of 'Kernel C' programming: Concurrency, Delays, Work Queues
- Linux USB Drivers Refresher

+ *Goal 2: Understanding the Block Drivers*
- Request Queue Ecosystem
- Kernel C APIs & Data Structures
- Creating a RAM Block Device
- Partitioning a Block Device
- Coding for LDDK as a USB Block Device

+ *Goal 3: File System Design & Implementation*
- Virtual File System & its Role
- File System Design & Challenges
- Hardware File System & Formatting

### Day 2

+ *Goal 4: File System Implementation (Contd.)*
- Kernel File System
- The 5 Operation Sets
- Coding for the bunch of System Calls

+ *Goal 5: File System in Action*
- Modifications, Enhancements, Feature Additions

+ *Wrap Up*
- Conclusion
- What Next?

*Caution: All sessions are highly interactive & hands-on with hardware*

## Project Guidance Details

+ Provided with an individual PC
+ Feel free, if you want to bring & setup your laptop
+ Decide yourself to do the project individually, or as a team
+ Initiate yourself with design discussions
+ Indulge yourself in TODO based Coding
+ Guidance available for:
  • Setting up the Development Environment
  • Kernel C APIs & Data Structures
  • Debugging Techniques
  • Project Flow & Design

## Hands-On Details (Goal-wise)

+ *Goal 1: Project Development Environment*
  • Setting up the project development environment

+ *Goal 2: Understanding the Block Drivers*
  • Experiments with a RAM-based Block driver
  • Creating Partitions and Formating them
  • Integrating the LDDK's memory into Block vertical over USB

+ *Goals 3 & 4: File System Design & Implementation*
  • Designing your custom File System
  • Application to Format your File System
  • Coding for a hardware-less File System
  • Mounting the File System over LDDK

+ *Goal 5: File System in Action & TODOs*
  • Experiments with fundamental File System operations
  • Add the feature of (efficient) renaming of files (Homework)
  • Enhance the File System to Support bigger file sizes (optional Homework)