Operating System Essentials
HRDF Registration No. - 10001406976

DESIGNED FOR

Software Engineers, System Architects, Computer Science Students, Embedded Systems Engineers, IT Professionals

📅 10 - 14 June 2024

⏰ 9 AM - 5 PM

📍 AC hotel, Marriott, Penang, Malaysia

Operating System Essentials

🚀 Who is this course for?

This OS Essentials course targets professionals seeking to strengthen their grasp of operating system fundamentals. Whether you're an experienced developer or an IT enthusiast, this course is tailored to deepen your understanding of core OS concepts and modern architecture.

🔷Why you should join?

Unlock the power of OS essentials with our course. Acquire expertise in modern architecture, resource optimization, and concurrency management to drive impactful projects. Stay ahead in technology, boost your career prospects, and innovate with confidence in the dynamic IT landscape. Don't miss this opportunity to elevate your skills. Enroll now!

🧭 What We Offer:

With our OS essentials course, we provide:

🚀 Cutting-edge Techniques: Delve into advanced operating system concepts, including architecture, resource optimization, and concurrency management, guided by industry experts with deep expertise in OS fundamentals.

🔍 Hands-on Activities: Participate in hands-on activities and simulations, gaining practical experience and actionable insights to tackle complex OS challenges with confidence.

🧰 Ongoing Support: Benefit from continuous support and personalized guidance tailored to your OS learning journey. Our dedicated team ensures your success in mastering essential OS concepts, empowering you to excel in diverse IT domains.

📚 Course Outline

Day-1

Session 1: Introduction to Operating System

· What is OS?
· Need for OS
· Task of OS
· Types of OS & Selection Criteria

Session 2: Process

· Process Overview
· Process Management
· Process Control Block
· Process Creation & operations
· Waiting for the Process termination
· Zombie & Orphan Processes

Day-2

Session 1: Task Management

· The Task Life-Cycle
· Creating Tasks
· Deleting Tasks
· The Endless-Loop Pattern
· Task Priorities
· Assigning Task Priorities
· The Idle task
· Idle Task Hooks
· Analyzing the MIPS for a Task

Session 2: Context Switching

· Task Context
· Context Saving & Restoring
· Context Switching Flow
· Context Switching between Tasks
· Context Switching among tasks & Interrupts

📚 Course Outline

Day-3

Session 1: Scheduler & Scheduling Policies

· Pre-emptive & Non-Pre-emptive Scheduling
· Round-Robin Pre-emptive Scheduling
· Pre-emptive Priority based Scheduling
· Deadline Monotonic Scheduler & Rate Monotonic Scheduler
· Deciding on Priorities

Session 2: Memory Management
· Need for Memory Management
· Memory Management in Linux
· Memory Management in FreeRTOS
· Memory Layout of a Program
   ○ Code Segment
   ○ Data Segment
   ○ Stack Segment
   ○ Heap Segment
· Caches & its Side-Effects

Day-4

Session 1: Concurrency Management

· Need for Concurrency Management
· Various Mechanisms to Manage the Concurrency
· Atomic Operations
· Mutex
· Semaphores
· Side-Effects of Synchronization Mechanisms
· Deadlocks, Livelocks and Starvation
Session 2: Inter-task Communication
· Need for ITC
· Waiting & Waking up the Tasks
· Events
· Mailboxes
· Queues
· Task Notifications

📚 Course Outline

Day-5

Session 1: Inter-Process Communication (IPC)

- Need for IPC
- Pipes & FIFOs
- Messages Queues
- Shared Memory
- Process Semaphores
- Which IPC to use where?

By the end of this course!

You will gain:

🔧 **Master OS Essentials:** Acquire advanced skills in operating system fundamentals, including architecture, concurrency management, and memory optimization.

🔧 **Enhance Problem-Solving:** Develop the ability to analyze complex OS issues and make informed decisions to optimize system performance.

🔧 **Optimize System Efficiency:** Streamline workflows and maximize resource utilization, ensuring efficient system operation in various IT environments.

🔧 **Unlock Career Opportunities:** Expand your career prospects as a proficient OS specialist, sought after in industries requiring expertise in operating system concepts.

If you struggle with:

🧩 Complex Operating System Challenges

🧩 Technical Implementation Obstacles

🧩 Decision-Making Dilemmas

🧩 Resource Limitations

🧩 Staying Competitive in the IT Industry

Implementing our course will lead to:

✅ Enhanced OS Essentials Skills

✅ Improved Decision-Making in System Development

✅ Efficient Resource Utilization in Projects

✅ Professional Growth as an OS Specialist

✅ Organizational Success with Optimized System Solutions

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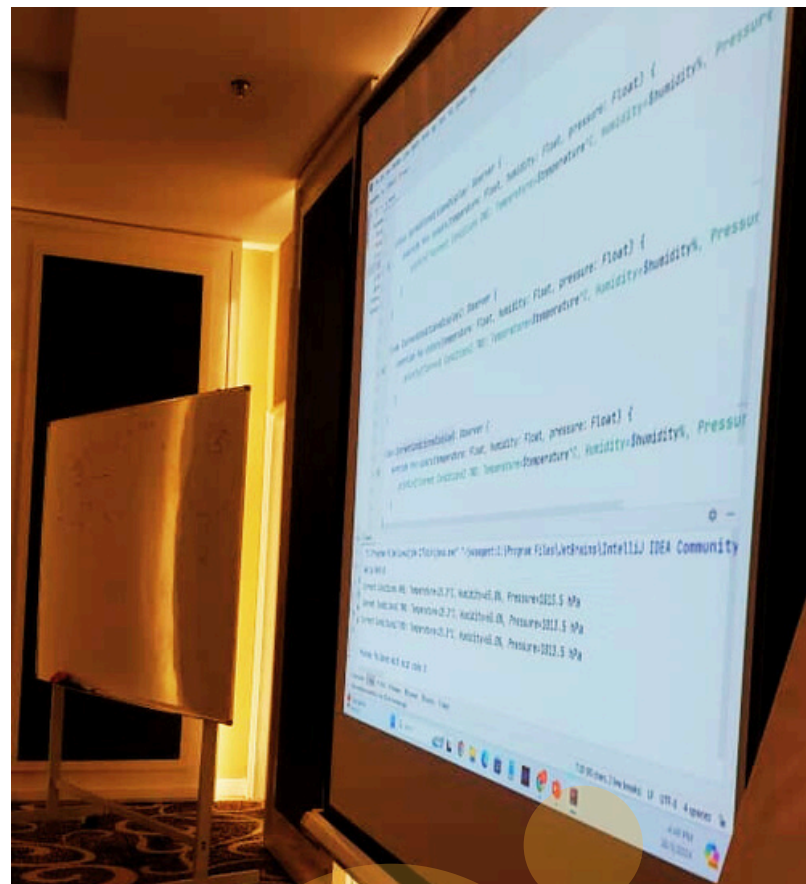
With over 8 years of experience, we serve various domains including Embedded Software Development, Full Stack Development, Mobile App Development, 5G, Business Intelligence, and more.

Our trainers are subject-matter experts with years of hands-on experience in their specialized areas. They bring practical insights to help you excel in your journey.

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