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| Programming Skills for E3 Engineers  *Certification Program Curriculum* | | | | |
| *Certification Rules: All mandatory assignments/course work must be completed for participant to be eligible for certification exam. Mandatory assignments/course work is marked in orange.* | | | | |
| *Communication Channels: All updates regarding study materials, assignments, due dates, classroom sessions, etc., will be shared via emails/notifications from platform. Classroom sessions will be announced in the monthly learning calendars.* | | | | |
| SME and Mentor: IOT Talent Labs | | | | |
| L&D Lead: Tanmoy Bandyopadhyay | | | | |
| *Module* | ***Topic Covered*** | ***Learning Objective*** | ***Course Work*** | ***Available when?*** |
| 1 | Pretest | Self-Assessment |  | July’2017 |
| 2 | Algorithm Design | * Ability to translate clear or ambiguous requirements to specifications. * Design and implement an algorithm to meet functional, performance and reliability requirements. * Modularity, portability, parallelism, extensibility considerations. | * Study Material * White papers on problem solving techniques. * Assignments * Self-Assessment * Graded Assessments | Aug' 2017 |
| 3 | Code Analysis | * Ability to analyze and review the code for expected inputs outputs and behaviors. * Ability to creating flow charts, FSMs, timing charts. * Ability to analyzing for possible logic compilation and runtime issues. | * Study material - Code segments of components, modules and systems * White papers on good quality code. * Assignments * Self-Assessment * Graded Assessment | Aug. 2017 |
| 4 | Debugging | * Ability to analyze and review the code for code, logic, core dump and performance errors. * Given the erroneous behavior, ability to identify the root cause and solve the issue using debugging tools. | * Whitepapers and curated reference material for standard debugging processes using common tools * Study Material - Simple to complex codes with common code issues - Race Condition, non-reentrancy, missing volatile keyword, stack overflow, heap fragmentation, memory leaks, deadlock, priority inversion, incorrect priority assignments, jitter. * Assignments * Graded Assessment | Sept. 2017 |
| 5 | Unit Testing | * Ability to creating comprehensive unit test plan for a code segment given the expected behavior and specifications; * Ensuring code coverage, performance, profiling, space and time complexity analysis | * Whitepapers and curated reference material on good unit testing practices for ensuring quality. * Assignments. * Graded Assignment | Sept' 2017 |
| 6 | Review skills | * Ability to review the development against design requirements at a system and module level | * Study Material. * Design Requirements * Technical specifications * Assignments. * Graded Assignment | Oct. 2017 |
| 7 | Optimization | * Analyze and review the code for performance like response time, latency for large computational algorithms; | * Study Material * Code segments * Assignments * Graded Assignment | Oct’ 2017 |
| 8 | Examination for Certification | * Assess learning | * Certification Exam | Nov 2017 |