

Skill Profile

Principal / Senior Protocol Stack Developer

Role

To design, code, test and debug C/C++ software for wireless user terminal protocol stacks. While the primary focus of the role is on the development of lower layers in the access stratum, a broader knowledge of the 2G/3G NAS and end-to-end User-Plane operation are also required. The successful candidate will demonstrate a passion for technology and a desire to grow his/her knowledge.

Responsibilities

- Detailed design, coding, test and debug of protocol stack software on real-time embedded platforms
- Requirements review, analysis and interpretation into code
- Module-level interface definition, integration and test
- Coding and use of peripheral ports and services
- Documentation of software design and interfaces using suitable notations and methods such as UML
- Definition of test requirements, procedures and scripts
- Test equipment specification and use

Essential Skills and Experience

- Specification and design of real-time systems
- C/C++ embedded coding and test, incorporating asynchronous and re-entrant design principles
- Memory allocation principles and debugging, including MMU operation, stack and heap
- 3G (or derived/similar) wireless protocol stack design and knowledge of applicable standards
- Use of ASN.1 encoding, SDL/MSD diagrams and TTCN
- RTOS operation and use on bespoke hardware
- Programming in Visual Studio C/C++ on Windows and/or using GNU tools on Linux
- Participation in design and coding reviews
- Use of software configuration control and build systems
- Use of defect tracking tools

Desirable Skills and Experience

- Use of JTAG emulators and BDM development tools, especially on ARM-based targets
- Use of real-time profiling tools for performance tuning
- Real-time performance optimisation techniques
- Sockets programming and TCP/IP networking



Skill Profile

Principal / Senior Protocol Stack Developer

Desirable Skills and Experience (cont'd)

- Use of static code analysers
- State machine building tools
- Development of Wireshark dissectors
- Real-time Linux
- Use of POSIX interfaces, facilities and services
- AT commands and AT Handler development
- PPP and PPPoE link protocols
- Appreciation of the degradations affecting data transmission through mobile wireless channels
- Appreciation of operations in L1-Control and L1/RF
- Specification and coding of safety-critical systems using language subsets such as MISRA C and development methodologies such as the DO-178B avionics standard
- Scripting and test automation (e.g. Perl, TCL/TcK, Python, NI TestStand)

Qualifications

Good university degree in Electronics Engineering, Physics, Maths or Computing.

Personal Profile

- Goal-oriented, with a desire to deliver on objectives as quickly as possible and a drive to meet deadlines
- Ability to operate under pressure and commitment when/if deadlines loom
- Ability to perform trade-offs and impact analyses of architectural design, coding and test decisions
- Flexible in outlook, and adaptable to change
- Able to take significant responsibility for developing a major component, and work with autonomy
- Significant initiative to help determine what is required, resolve issues, maintain progress and flag problems requiring wider resolution
- Ability to clearly express status and issues to team leaders and project management
- Able to work effectively as a key player within a small team
- Logical, thorough and methodical approach to task management and problem solving, with attention to detail in planning and execution
- A focus on quality and maintainability of work outputs
- Self-motivated and enthusiastic, with a continual desire to learn new technologies, tools and techniques