Walter Karas

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Ideal Position

Software Engineer writing 10KLOC or more per year, working on applications with performance/feasibility challenges, with work/life balance, flexibility.

Summary of Experience

C++ (through TR1) 20+ years, Embedded/multi-threading/ISRs 20+ years. See my open source work on github.com/wkaras and wkaras.webs.com .

Experience

Software Development Engineer at Nokia (formerly Alcatel-Lucent)
June 2003 - April 2016 (12 years 11 months), Raleigh, North Carolina
o Modifications to assembly code for Xelerated dataplane IC for card that terminates PONs running NGPON2.
o Assembly code for processors in multi-processor array in (Ethernet) packet-switching dataplane IC for card that terminates GPONs. Handles TCAM lookups, other packet classification, VLAN tag manipulation, interface to policers. Prototype code in C. Wrote C++ code to simulate TCAM lookups and other external logic in host-based simulation environment. Also wrote host-based code preprocessor in C++.
o Driver software in C++ for multiple (Ethernet) packet-switching dataplane ICs for cards that terminates GPONs. Implemented aging of learned addresses in C++, based on scanning and clearing bitmap in dataplane IC where bits are set when MAC address TCAM entry matches an upstream packet. Wrote a reusable C++ class to handle the TCAM entry positioning when multimatch is possible and higher-priority entries must be at lower addresses. Wrote a reusable C++ class for matching a range of numeric values usinga minimal number of TCAM entries.
o C++ implementation of a complex algorithm involving interprocessor communication to put a rack with multiple cards into low-power mode if overheating is occurring.
o Maintenance of 802.1x server-side code in C++.
o Driver software in C++ for a third-party network processor (Infineon ConverGate-C) on a card terminating BPONs. Implemented (interrupt-driven) learning and aging for the bridge. Wrote reusable intrusive container templates (like the public domain AVL Tree template I wrote while laid off) for hash tables and other data structures, which I reused in later projects.
o Development in C++ for Gigabit Ethernet terminating card for DSLAM. Maintenance of an ATA driver for CompactFlash. Implementation of three file system partitions on the CompactFlash, with management (including reversible upgrade) of redundant code partition. Implemented hash table of MAC addresses for learning Ethernet bridge.

Software Development Engineer at Alcatel
June 1998 - April 2002 (3 years 11 months), Raleigh, North Carolina
Development for admin processor of a DS0/E0 cross-connect. Coded in C++, C and Shell, targeted to UNIX (mostly embedded Chorus, some Solaris). Designed and coded a "framework" of C++ base classes and templates for event-driven processes handling commands from a CMIP-like interface, plus command/response and autonomous messages to/from the line card microcontrollers. Utilized C/C++ preprocessor to reduce bulk and repetitiveness of code. Wrote code to handle cleanup of objects activated by a transaction. Wrote a data base record manager that handles contending record locks by commands and autonomous events. In order to handle wildcards/ranges in facility and line card specifiers, wrote a library of classes and class templates to encapsulate and handle iteration.

Contract Software Engineer
March 1997 - June 1998 (1 year 4 months)
o Lucent Technologies, Raleigh, NC, 10/97 - 6/98. Maintained SPARC-based Mediation Device linking TCP/IP-based Network Management System with trunk switches having X.25/RS-232 craft ports. Coded in C++, shell scripts. Berkeley TCP/IP socket programming, multi-tasking. Wrote a manual of project procedures which were previously undocumented.
o Alcatel, Raleigh, NC, 3/97 - 9/97. Development for admin processor of a SONET add/drop multiplexer. Coded in C. Implementation of Performance Monitoring configuration TL1 commands. For commands that were unacceptably slow, found a bottleneck in database manipulation code that accounted for 80% of command execution time.

Software Engineer at Tekelec
September 1995 - March 1997 (1 year 7 months), Raleigh, North Carolina
OA&M software for STP (router/gateway) in SS7 network. Coded in C targeted to real-time OSes. Principal designer of subsystem that collected measurements made by line card microcontrollers.

Contract Software Engineer
November 1988 - September 1995 (6 years 11 months)
o Asea Brown Boveri (ABB) Power T&D, Raleigh, NC, 3/94 - 9/95. Interface/support software for electric power usage meters. Coded in C/C++ targeting MS-DOS. Principal developer of a graphical display application for power usage data, which utilized virtual base class to allow for displaying or printing multiple graph types.
o Tekelec, Raleigh, NC, 8/93 – 12/93. High-level design of finely-detailed measurement collection system for STP.
o Asea Brown Boveri (ABB) Power T&D, Raleigh, NC, 11/90 - 7/93. Developer of software tools to allow single executable with CUI to use different screen sizes and human languages. Developed IC interface code, hardware ISRs.
o Pratt & Whitney, East Hartford, CT, 11/88 - 9/90. Machine vision inspection system with rate of 30 part images/second, achieved using multi-stage pipelined processing. Principal software designer and coder. Coded in C, QuickBasic, vision computer proprietary language, 68000 and 8086 Assembler. Image processing, asymmetric multi-processing, multi-tasking, MS-DOS internals.

Volunteer Work in Central America
February 1988 - August 1988 (7 months)

Programmer at Industrial Technology Institute
November 1985 - January 1988 (2 years 3 months), Ann Arbor, Michigan
Software development for manufacturing research. Process control, simple CAD. Designed a relational data base of car plants, models, subassemblies and parts.

Programmer at Environmental Research Institute of Michigan
January 1984 - November 1985 (1 year 11 months), Ann Arbor, Michigan
Software development to support remote sensing research projects.

Education
Eastern Michigan University, Bachelor's 1983, double majored in Computer Science and Mathematics, GPA: 3.69/4.00, also attended University of Michigan-Flint