

IEEE  
North Jersey Section Seminar  
PROGRAMMING IN THE LANGUAGE C

Thursdays, September 7- December 14, 1989, 6:30 PM - 9:00 PM  
Jersey Central Power & Light Co.,  
Madison Avenue & Punch Bowl Road, Morristown, N.J.

The North Jersey Section is offering an evening course titled "Programming In The Language C." The course will focus specifically on the Microsoft QuickC compiler, on the IBM PCs and compatible computers with DOS.

C is a general purpose programming language that has become one of the most widely used languages in the world. C features have been known to be efficient, economical and portable, and have proven especially useful in system programming because C facilitates writing fast, compact programs that are readily adaptable to other systems.

The lecture will be covered from fundamental to advanced data structures and handling. All the examples and techniques used throughout the course, are oriented toward the development and maintenance of serious, real-world C applications. Upon completion of the course, the student will have the skills to write useful and practical programs.

Students will be given assignments to do on their own IBM PC or compatible, if one is available; either at home or on the job. A **Microsoft QuickC compiler** and two **text books** will be supplied.

**Prerequisites:** The student should be familiar with at least one of the following languages - BASIC, COBOL, PASCAL, PROLOG and/or FORTRAN.

The instructor is Mr. Tuan Q. Nguyen, a Systems Engineer at Jersey Central Power and Light Company.

(1) **September 7** - Introduction to C: Why learn C?; Why QuickC?; Hardware Requirements; Knowledge Requirements; Convention and Style; Directories and Files Used by QuickC; Setting up QuickC; Starting QuickC; Getting Help; Fixing Errors; QuickC Editor and Environment.

(2) **September 14** - C Fundamentals: Basic Elements of C Programs; Punctuation and Spacing in C Programs; Using Comments in C; Data Types and Declarations of Variables; The Power of Printf ( ).

(3) **September 21** - Getting Input with Scanf ( ); Shortcut Assignments, Increments, and Decrements; Relational Operators; Logical Operators.

(4) **September 28** - Repetition and Looping: The For Loop; The While Loop; Debugging and Loops.

(5) **October 5** - Decisions and Branching: The If Statement; The Conditional Assignment Statement?; Multipath Branching; The Switch Statement; The Break Statement; The Continue Statement; The Goto Statement; More Complex Conditions for Branching.

(6) **October 12**- Functions and Function Calls: Functions and Program Design; Declaring and Defining a Function; Local and Automatic Variables; Register Variables; Passing Information to a Function; Functions with Many Parameters; Functions that Return Information; Recursion; Noninteger Functions; Function Prototypes.

(7) **October 19** - Arrays: How Arrays Are Stored in Memory; How to Declare Arrays; Referencing and Using Array Items; Bounds Checking Arrays in Your Code; How to Initialize Arrays; Arrays and Functions; How Array Offsets Advance; Multidimensional Arrays; Advanced Topics and Tricks; The Bitwise Operators, Tiny Arrays.

(8) **October 26** - Addresses and Pointers: Addresses Reviewed; What Is A Pointer?; Accessing Variables with Pointers; Passing Pointers to Functions; Pointers and Arrays; Pointer Arithmetic; The Interchangeability of \*amts and amts [ ]; 1value vs rvalue.

(9) **November 2** - Advanced Pointers: Type Casting pointers and Addresses; Far Pointers; Functions that return addresses; Dynamic Arrays; Advanced Pointer techniques.

(10) **November 9** - Strings: Declaring and Initializing Strings; The String Pool and String Addresses; Pointers and Initialized Strings; Formatting strings with printf ( ); String Input and Output; String Manipulation Routines; Arrays and Strings; The Arguments to main( )-argv and argc; Character Classification and Transformation.

(11) **November 16** - Managing Files: Top-level I/O; Mid-Level (Unbuffered) File I/O; The File System; Advanced Error Handling.

(12) **November 30** - Advanced Data Types: Structure - An Array of Different Types; Union-Multiple Types in the Same Space; Enumerated Data with enum; Bit Fields; Advanced typedef.

(13) **December 7** - Large Project: Advanced C Preprocessor; Using QuickC for Large Projects.

(14) **December 14** - C and the Hardware: Keyboard Input functions; Reading Non-ASCII Keys; Console I/O Functions; Keyboard Control with ANSI.SYS; Using QuickC to Access BIOS; Cursor and Screen Control with BIOS Calls.

Class Size will be limited to a maximum of 25 with a minimum registration of 15. Early registration is recommended. Phone Reservations will not be accepted. Reservations accepted after September 1, 1989 will require an additional **late fee** of \$25.

**Where:** Jersey Central Power & Light Co., Madison Ave. & Punch Bowl Rd., Morristown, N.J.

**When:** Fourteen sessions, Thursday evenings, starting September 7, 1989 from 6:30 PM to 9:00 PM.

**Cost:** With Text Books and QuickC compiler, IEEE Members \$220; non-IEEE Members \$295.

With Text Books only, IEEE Members \$150; Non-IEEE Members \$225.

**Contact:** Mr. John A. Baka at (201) 455-8534 (Business)

Registration "Programming In The Language C"

To: Mr. John Baka, Distribution Engineering, JCP&L Company, Madison Avenue at Punch Bowl Road, Morristown, NJ 07960

Name \_\_\_\_\_ IEEE No. \_\_\_\_\_

Affiliation \_\_\_\_\_ Phone No. \_\_\_\_\_

Address \_\_\_\_\_

Check if QuickC Compiler is needed or not Yes [ ] No [ ] Enclose required fee made payable to "North Jersey Section IEEE"

Signature \_\_\_\_\_



PUBLICATION OF THE NORTH JERSEY SECTION OF THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

PACE Meeting:  
IMPROVING  
COMMUNICATIONS SKILLS

The North Jersey Section's Professional Activities Committee for Engineers will meet on Thursday, July 13, 1989. The meeting will feature a presentation entitled "Developing And Delivering An Effective Technical Presentation." Our guest speaker, Deborah Flaherty Kizer, will address issues such as planning, organization, structure and substance of a presentation and the use of visual aids, and how to handle the question and answer session.

This subject is a must for anyone interested in improving their communication skills in or out of the office.

Deborah Flaherty Kizer is an International Market Planning Manager with AT&T International in Basking Ridge, New Jersey. She holds an MS in Technical Writing from Rensselaer Polytechnic University and an MBA in International Business/Marketing from New York University. Ms. Flaherty Kizer is a member of the NY/NJ chapter of the IEEE's Engineering Management Society's NY/NJ chapter Administrative Committee, a member of the IEEE Professional Communication Society's (PCS) Administrative Committee, and the editor of the IEEE Professional Communication Society's "Newsletter". She is the author of "How To Develop And Deliver An Effective Technical Presentation," a booklet in the IEEE-PCS Commuguide series, which will be published this summer.

All IEEE members and guests are encouraged to attend. Refreshments will be served

**Time:** 7:30 PM, Thursday, July 13, 1989.

**Place:** ITT Auditorium, 500 Washington Ave., Nutley, N.J.

**Further Information:** Richard Tax (201) 664-0803.

Congratulations  
New Senior Members

Sankar Basu  
John C. Bean  
Daniel F. Daly  
Thomas J. De Genaro  
Arthur Freund  
J.J. Harrington  
Lawrence F. Hogrebe  
Ming-Yee Lai  
Krishnaswa Nagaraj  
Kwok K. Ng  
Krishan K. Sabnani  
Joseph J. Salko  
Joseph W. Timko  
Won-Tien Tsang

You may qualify for Senior Member grade. Get the information and application form by contacting Don Weinstein, Kulite Semiconductor, One Willow Tree Road, Leonia, N.J. 07605 (201) 461-0900, ext. 238.

CHAIRMAN'S  
CORNER

Our Section sponsored a successful Region 1 Careers Conference on April 29th at the ITT Club House. There were about 100 in attendance with about 25 percent unemployed. Dr. John Miller, P.E., retired engineer and businessman, presented an excellent overview of the steps to take in career development and employment assistance. All feedback

was very positive and Dick Tax deserves a lot of credit for organizing the conference and for presenting the High Tech Recruitment Index forecast during the conference.

Our annual banquet, held on May 3rd, was a big success with about 190 attending, thanks to Ray Sears, Banquet Chairman and his committee. Twelve new Fellows were recognized for their contributions to electro-technology. Recognizing twelve new Fellows at our annual banquet has to be an all time high for our Section. Also, the recognition of Fellow Prathima Agrawal was significant as there are only about 14 women Fellows in the IEEE.

Recognition of Bob Sinusas, Junior Past Chairman, and George Graul, Vice Chairman 2, with Region 1 awards was well deserved for their significant contributions not only at the Section level, but at other levels within the IEEE.

The Awards committee under Professor Gerald Herskowitz deserve a lot of credit for the detailed work they do to endorse worthy candidates to the Fellow membership grade. For this year, as of April 10th, the committee had endorsed five nominees for the Fellow grade.

Finally, on May 5th, Ken Oexle, Past Chairman, on behalf of the Executive Committee of our Section, presented savings bond awards to three winners in the Student Exposition on Energy Resources held in Morristown, N.J. Although I could not be there, I wish to add my congratulations to James Bellemare, of Asbury, N.J., Brian Sullivan, of Hopatcong, N.J., and Kristen Campbell Berrian of Morristown, N.J. We wish them continued success with their scientific studies of energy resources.

**HOWARD LEACH**  
*North Jersey Section Chairman*

JULY, 1989  
Volume 36, Number 1

PACE NEWS

By R. Tax

ENGINEERING EMPLOYMENT

On Saturday, April 29, 1989 the North Jersey Section conducted a Careers Conference sponsored by and for members of IEEE's Region 1. Unfortunately, it was a resounding success reflecting the need to give this issue more attention. It is also unfortunate that engineers, as highly educated professionals, should have a need for such a conference. Can you imagine the American Medical Association holding a careers conference for its members?

The Region 1 Executive Committee, chaired by Victor Zourides, recognized that layoffs and a severe unemployment problem exists for its members. It was by the direction of Vic Zourides that the Conference was made possible. The excellent response to this conference indicates that the problem is real.

We had a total of 111 pre-registered. There were 96 engineers and 15 students. Of the 96 engineers, 27 were unemployed. The remaining were probably dissatisfied with their present position or concerned about their future. My interest is not to embarrass anyone with these figures, but to emphasize the magnitude of the problem.

One electrical engineer, educated off shore, has been here for more than 10 years. Now, unemployed for more than a year, this engineer's salary at the last place of employment was \$20,000 per year. IEEE supports the premise that foreign engineers should be offered the same salary levels as American engineers and engineers should not be imported to drive down engineering salaries. This low salary reflects an oversupply of engineers and the abuse of our engineering work force.

Another electrical engineering student, graduated 2 years ago from NJIT, is employed at a sales counter in a clothing store. I know of another E.E. graduate on the Deans list of Rutgers University, class of '88, installing sheet rock for a building contractor. Indeed, there are many more unfortunate experiences to relate. Again, I tell you this not to belittle these people, but to emphasize the magnitude of the problem.

Is being an unemployed electrical engineer your fault? Is being an unemployed new graduate with an electrical engineering degree your fault? Is being underemployed or underutilized your fault? Well, I don't believe it is.

The following is a list of some of IEEE's, United States Activities Board, committees:

Employment Assistance, Pensions, Intellectual Property (patents), Manpower, Women and Minorities, Age Discrimination, Ethics, Career Maintenance and Development, Student Professional Awareness. Some of the relevant subjects are; salary compression, unemployment of engineers and underutilization of engineers.

All of these committees and subjects address hardships for the electrical/electronics engineering community and are indicative of an imbalance in the Manpower Supply/Demand ratio. In fact, they all reflect conditions indicative of a High Supply and Low Demand for EEs or an engineering manpower surplus. Surely, if there were a true shortage of electrical engineers we would not have needed a Careers Conference and the USAB committees listed above would not be necessary. The mere existence of these committees suggests a severe problem for our members. We should note that USAB was formed in 1974 during the last large high tech recession (see figure).

In reviewing some of our engineering manpower history we cite a paper by Milton Alpern entitled "Quantity Instead of Quality: A Sabotage of Engineering and Its Education by 'Engineer Shortage' Propaganda?" Mr. Alpern refers to our economic insecurity, shortened career span and professional impotence brought about by the "engineering oversupply syndrome." He

blames Engineering Shortage Propaganda (ESP) as the direct cause of the over supply. Mr. Alpern refers to the analysis by Robert Rivers and the Deutsch, Shea and Evans, High Technology Recruitment Index (HTRI). Rivers' comments are included on the HTRI curve. He defines periods of economic insecurity (unemployment) whenever the Index is below the 130 reference line. The Index plots demand history for the last 28 years and is based on a monthly count of recruitment ads directed to degreed engineers and scientists.

However, since more engineering graduates are not getting jobs and more engineers are being underutilized the original lines projected by Rivers may now be shifted by the influence of a greater supply of electrical engineers. This increased supply is derived from the induction of foreign students to U.S. engineering schools and the importation of foreign engineers. Both sources have been promoted by the use of false reports and erroneous mathematical models that project engineering manpower shortages. We know who is responsible!

While our students are having difficulty finding engineering jobs, local state funded (with taxpayer dollars) colleges are recruiting students from other countries. These students then stay here and take the jobs our graduates need. Meanwhile, the foreign student pays only the tuition or about 20 percent of the actual cost of the education. Our tax dollars pay for the other 80 percent of the cost of the education. How much? I seem to recall an estimate in excess of 40 million dollars for the State of New Jersey alone or 2.2 billion dollars for the nation.

If you're an unemployed engineer or recent engineering graduate it may not be your fault. It appears to be a game with the deck stacked against you. If you or your friends are suffering from these career problems call me at 664-6954 and try to attend our IEEE meetings.

WORK NEEDED

If you have any work that needs to be done by members with engineering background or education please call. Even temporary assignments may be helpful to some of our members. Call: (201) 664-6954, or write to: Richard Tax, 630 Mountview Place, River Vale, NJ 07675.

NEER, GEER, PEER, SEER

IEEE-USA is adding the Non-Employed Engineers Registry to its family of employment database services. NEER will be operated as a non-confidential database available to IEEE members and all employers free-of-charge. Thus, employers can reach individuals listed in the NEER database by going to them directly.

NEER supplements three other IEEE-USA employment database services: the Graduating Engineers Employment Registry (GEER), established in 1988; the Self-Employed Engineers Registry (SEER), begun in 1987; and the Professional Engineering Employment Registry (PEER), initiated in 1984. Like NEER, GEER and SEER are non-confidential services. PEER, however, is a confidential service, i.e., prospective employees' and employers' names are not included in the registry requiring job-seekers to authorize the release of information to prospective employers. All four services are operated under contract with Career Technologies Corp., (CTC). Registration forms can be obtained from CTC, 138 Old River Road, Andover, MA 01810, or call (508) 683-0098.

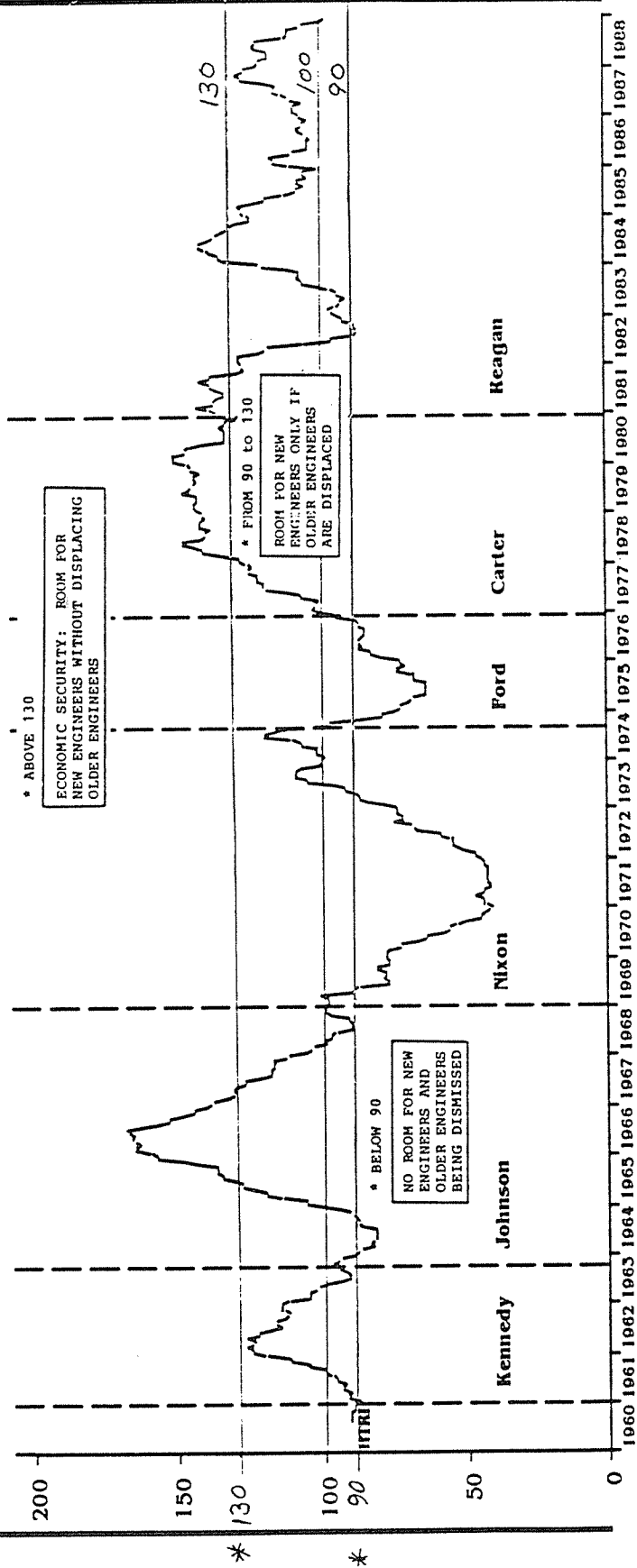
PACE Committee Meets Monthly

The PACE Committee meets on the second Thursday of every month at the ITT Auditorium, 500 Washington Avenue, Nutley, N.J. (near the the ITT Tower) at 7:30 PM. Our Section Executive Committee meets there on the first Wednesday of every month (except in December) at 7:00 PM. Any questions or comments will be well received. Contact Richard Tax at (201) 664-0803 (after 7:00 PM) or write to R. Tax, 630 Montview Place, River Vale, N.J. 07675.

Deutsch, Shea & Evans High Technology Recruitment Index

(Seasonally Adjusted; Base: 1961=100)

\* Modified from analysis by Robert Rivers, 1975.



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REPORT ADDRESS CHANGES TO:  
IEEE Service Center  
445 Hoes Lane, P.O. Box 1331  
Piscataway, N.J. 08854-1331  
(201) 981-0060

It is not necessary to inform the North Jersey Section when you change your mailing address. The NEWSLETTER and other section mailings use a list provided by IEEE's national headquarters in New York. This means the Section has no need to maintain a mailing list or addressing plates. Section membership records are changed when Headquarters notifies us.

SECTION OFFICERS  
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Member-At-Large..... David A. Dietsche  
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Jr. Past Chairman..... Robert Sinusas

The North Jersey Section Executive Committee meets the first Wednesday (except holidays and December) of each month at 7 PM. These meetings (held at ITT, 500 Washington Ave., Nutley, N.J.) are open to all members. Information on each meeting agenda is available from Richard Snyder, Section Secretary at (201) 492-1207.

Elected Section Officers are listed above.