IEEE North Jersey Section Seminar
ADVANCED C LANGUAGE PROGRAMMING
Tuesday or Thursday evenings, Starting September 25, 1990
Jersey Central Power & Light Co.,
Madison Avenue & Punch Bowl Road, Morriston, N.J.

The North Jersey Section is offering two evening classes (Tuesday or Thursdays) for a course titled "Advanced C Language Programming." The course will focus specifically on the Microsoft QuickC compilers, on the IBM PCs and compatible computers with DOS.

The lecture will cover intermediate to advanced C programming techniques that will help experienced programmers apply real world applications.

Prerequisites: The student should be familiar with the C Language.

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

The following list of topics to be covered will take place over 14 sessions:
1. Advanced C Warmup - Basic Pointers; Function Basics; Array-Processing Functions; Functions and Strings; Functions and Two-Dimensional Arrays; Storage Classes; Function Scope; Pointers to Functions.
2. More about File I/O - Text File and Binary File; Contrast Line Arguments; Low-Level I/O; Low-Level File Creation; Buffered I/O and the Standard I/O Package; Standard Files and Radication: More Functions from the Standard Package.
3. Integer Forms and Bit Operations - Integer Types; Integer Conversions and Sign Extension; Bit Operations; Using Bitwise Operators: Flag Work; Bit Fields. Summary.
4. Common I/O Problems and Solutions - Buffers and Echoes; Interactive Programming; Interactive String Input; Cursor Control; Cursor Control and Interrupts. Summary.
5. Using Your PC's Memory - Memory Models and Segments; Dynamic Memory Allocation; Video Memory. Summary.
6. Standard Library Functions - File Permissions; Checking Files and Reporting Problems; Time with Time(); Interrupt Handling; Signal(); Environment; Conversions; Deleting Files; Unlink(); Process Control; System(); Exec(); and Spraw(); More File-Related Functions; Sending(); Files, and Filopen(); Text Processing with the Cype Family; Text Processing with String Functions; Performing Math Operations. Summary.
7. IBM-Specific Facilities - B105 Calls; DOS Interrupts; Ports(); Inport() and Outport(). Summary.
8. Text and Graphic Displays - Displaying the Video Displays; The Color/Graphics Interface; The Adapter; More B105 Calls; Revisiting Interrupt 10H; Nontext Use of the Graphics Modes. Summary.
9. Reaching into Memory - Segmented Memory; Using Far Pointers; Buffer Functions; Direct Memory Access in the Text Mode. Summary.
10. Sorting and Searching - Sorting; Searching.
11. Queues, Stacks, Lists, LISTS, and TREES - Queues; Stacks; Linked Lists; Binary Trees.
12. Dynamic Allocation - The Dynamic Allocation System; Sparse-Array Processing; Choosing an Approach; Reusable Buffers; The "Unknown Memory" Dilemma; Fragmentation.

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 11, 1990 will require an additional late fee of $25.

When: Two classes. Tuesday evenings 6:30-9:00 PM and Thursday evenings 6:30-9:00 PM. Fourteen sessions starting September 25, 1990.
Cost: With Text Books and QuickC Compiler, IEEE Members $270; non-IEEE Members $345.
With Text Books only, IEEE Members $220; non-IEEE Members $275.
Contact: Mr. A. Baka at (201) 455-8534 (Business).

Registration "Advanced C Language Programming"

Name ____________________________ IEEE No. ________________
Affiliation _________________________ Phone No. __________________
Address ____________________________ Email _________________________
Course Date Preference: Tuesday ______ Thursday ______

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

Signature ____________________________

Published by the North Jersey Section of the Institute of Electrical and Electronics Engineers.
This month's article is written by Frank Lord. Frank is the past chairman of the IEEE-USA Manpower Committee. He is one of the most informed sources of information relating to engineering manpower issues.

ENGINEERING SHORTAGE
You have probably noticed a great deal of material in the press lately about an engineering shortage. So what's new? What is somewhat different is that this material appears at the same time that the public is being called to resist layoffs throughout the industry, particularly in defense related industry. Engineering unemployment is at 2% and climbing while the general nationwide unemployment rate is at the relatively favorable level of 4.5% (the transition unemployment level for engineers at times of full employment is 0.35%).

When one looks into these items in more detail, it turns out that none of the writers have enough information to determine if there is or will be a shortage or surplus of engineers. To do that one needs to compare supply and demand figures. There has not been one shortage story that seriously examines demand. That is not surprising, for to forecast accurately significantly far into the future is not possible. If there were, why do we have a rash of forecast articles at the beginning of each year? What these recent engineering related articles do is examine current and projected supply figures, compare them with something, and try to draw conclusions. This year's shortages articles compare present and projected supply figures with those of the last decade and see them as smaller, conclude that there will be an engineering shortage. In times past when present supply were larger than historical engineers that years, prior to the severe Japanese competition, our engineer numbers were compared with those of the Soviet Union and we were told that if we did not increase our engineer numbers we would be left out.

It has not been mentioned how much cruder Soviet technology was because of the ties in their system of government and management.

Another thing that a reader will notice is that the supply numbers used in various articles look familiar. That is because they come from one or two of the sources. The sources are not necessarily accurate or authoritative, but when the numbers are repeated enough by organizations that are generally thought to be responsible it is easy to believe them. Even Spectrum fell into this trap by producing a short article which appears on page 23 of the January 1990 issue and is titled "Demand to exceed supply for engineers." The supply numbers in this case were questionable and taken from a National Science Foundation (NSF) report. There was no consideration of demand in the NSF report. So the end result was that the respected publication misrepresented a questionable report of a respected organization and gave credence to a misleading notion. This occurred in spite of an IEEE USA position paper, "Interpretation of Demand to Exceed Supply," which suggests extreme care in interpreting this type of material.

One of the safest wagers in the world would be to bet that in any year there will be an engineering shortage projected there will not be one. The historical precedent goes back to World War II, at least.

This would be expected in most occupations in any free economy because, at least in theory, there is no such thing as a shortage in such an economy. Supply and demand come into equilibrium at some price even if the demand exceeds the supply. In the United States the supply of engineers is quite elastic because there are so many sources of them which include immigration for the temporary intensive periods when demand is high due to supply increases. In the United States the supply of engineers is quite elastic because there are so many sources of them which include immigration for the temporary intensive periods when demand is high due to supply increases. In the United States the supply of engineers is quite elastic because there are so many sources of them which include immigration for the temporary intensive periods when demand is high due to supply increases.
IEEE North Jersey Section and United Societies of Engineering & Science of New Jersey, Inc. (USES)
HighTech PC/Workstation Applications Conference
Wednesday, November 14, 1990, 9:00 AM – 6:00 PM
Governor Morris Inn (Roya Hotel), Morristown, N.J.

On November 14, 1990, the IEEE North Jersey Section will sponsor a one-day conference on Hi-Tech PC/Workstation Applications. USES and its affiliated societies are cooperating in the conference planning and operation. The sessions will be divided into six tracks as follows:

Track 1: Technology, Session Topics: HDTV, Local Area Networks, CAD/CAM/CAE, Network Control and Electronic Data Interchange
Track 2: Physics, Science, Session Topics: Chemistry, Chemical Engineering, Biomedical, Biotechnology
Track 6: Exhibits. Space is available for 50 exhibitors.

Registration will take place from 8:30 – 9:00 AM. Cost to the attendees registering before September 15, 1990 is $75 for IEEE and USES affiliates, including refreshments, lunch, and proceedings. A fee of $150.00. The fee for late registration is an additional $25. The $20 fee for student members does not include lunch or proceedings.

USES Representatives
IEEE, D.P. Perry; ASME, Mel Human; SPIE, Maury Kahn; ISA, Robert Lindner; ISNA, Steve Lohn; TIMBOSFA, Toon Sijt; NUT, Dean George Pincus; Stevnes, Audry Smith.

For further information
Dave Perry, Conference Chair (201) 325-6415
Donald Hsu, Exhibits Chair (201) 585-1226

Registration for “Hi-Tech PC/Workstation Applications Conference”
To: Jay Shah, Conference Treasurer, 7 Tonnele Avenue, Apts. 3Q, Jersey City, N.J. 07306
Name _____________________________
IEEE No. __________________________
Society ____________________________
Member No. ________________________
Company __________________________
Phone No. __________________________
Address ____________________________
City __________________________ State __________ Zip __________

North Jersey Section Activities

AUGUST

August 9, 1990—“Starting Your Own Business: Is It Really What You Want?”—North Jersey Section’s Professional Activities Committee for Engineers (PACE), 7:30 PM, ITT Auditorium, 500 Washington Ave., Nutley, N.J. George D. Graul (201) 788-4403.


Upcoming Meetings

September 6—“Noise In Electrical Circuits Update”—NY/LI/NJ North Jersey joint Instrumentation and Measurement Society, 7:00 PM, ITT, Tower Auditorium, 500 Washington Ave., Nutley, N.J. George D. Graul (201) 788-4403.


September 25—“Symposium: Reliability and Risk Assessment (RA) of Industrial Utility Systems”—IEEE North Jersey Section Industry Application Society, 9:00 AM-2:00 PM, Saturday, Meadowlands Hilton, Secaucus, N.J. Vitali Robbargndr (201) 804-2011.

September 25—“Seminar: Advanced C Language Programming”—North Jersey Section, Two classes, Tuesday & Thursday Evenings (14 Sessions), 6:30-9:00 PM, JCP&L Co., Madison Ave. at Punch Bowl Rd., Morristown, N.J. John Baka (201) 455-8554.

Sept. 25-Dec. 4—“10-Week Seminar: Advanced Microwave Component Design”—North Jersey Section IEEE, Tuesdays, 6:30-9:00 PM, ITT-Avionics, Auditorium or Clubhouse, Nutley, N.J. John Baka (201) 455-8554.


October 17—“Gas Insulated Switchgear (GIS)—North Jersey Section IEEE Power Engineering Society, 7:30 PM, JCP&L, Punch Bowl Road and Madison Ave., Morristown, N.J. Angeli Fransani (201) 908-6923.

North Jersey Section and United Societies of Engineering & Science of New Jersey, Inc. (USES), 9:00 AM-8:00 PM, Governor Morris Inn, Morristown, N.J. Dave Perry (201) 325-8415.

Members, Student Members and Non-Members Welcome

PLEASE POST
IEEE North Jersey Section Seminar ADVANCED MICROWAVE COMPONENT DESIGN Tuesday 6:30-9:00 PM - September 25-December 4, 1990

ITT-Avionics Auditorium or Clubhouse, Nutley, N.J.

This evening course, offered by the North Jersey Section of the IEEE, is designed for those graduate Electrical Engineers who have taken the IEEE Introduction to Microwave Component Design course (or the equivalent) and who are working in the microwave design field.

The course will go into depth in the particular combination of electromagnetic and network theory that is required for efficient passive and active microwave component design. Design problems will be assigned each week. Familiarity with PC usage is helpful but not required; however, the student will use matrix combination in the design process. Equivalent circuits will be developed that will be both network and E-M based. These will form the basis for the various designs of filters, couplers, ferrites and other non-reciprocal components. Design philosophy will cover the frequency range from 1 MHz well into the millimeter region.

The instructor is Dr. Richard V. Snyder, RS Microwave (201) 492-1207.

(1) September 25 - Review of electromagnetic wave theory, including temporal and spatial aspects and its application to components. 3 hours
(2) October 2 - Scattering and other linear matrices, including mathematical application to characterization of resonators, obstacles and structures. 3 hours
(3) October 9 - Chaining and cascading multiport networks. Application of equivalent circuit principles to lumped and distributed situations. Local equivalent circuits. Lumped networks coupled with field vectors. 3 hours
(4) October 16 - Filter design from the lumped equivalent circuit point-of-view. Network transformations. 3 hours
(5) October 23 - Filter design from the distributed circuit point-of-view, including combination of lumped and distributed variables. Principles of optimization applied to active and passive filter design. 3 hours
(6) November 6 - Evanscoats mode components, effects of dispersion, various printed structures, Microwave Cross. 3 hours
(7) November 13 - Multiplexing. Common junction combinatorial techniques, including crossover at less than 3 dB points. Active multiplexing. 3 hours
(8) November 20 - Cascade design principles. Diode mixer, hybrid, power dividers, magic tee, quadrature couplers, etc. Lumped and distributed versions of various coupled structures. 3 hours
(9) November 27 - Principles and equivalent networks for various ferrite and other non-reciprocal devices, including the principles of active circuits.

December 4 - Review and question week (topics of the day)

Class size will be limited to 35 maximum. Early registration is recommended. Phone reservations are NOT accepted. The course will not be held unless registration is received. Class notes handed out each week. Text: "Evanscoats Microwave Components," George H. Kye and Richard Swidi, Artech Books.

Registration - "Advanced Microwave Component Design"
To: Mr. John Baka, Distribution Engineering, Jersey Central Power & Light Co., Madison Ave. at Punch Bowl Rd., Morristown, N.J. 07960

Name ____________________________
Affiliation ________________________
Address __________________________

Please enclose required fee made payable to “North Jersey Section IEEE.”

IEEE North Jersey Section Seminar ACCENT AND SPEECH IMPROVEMENT COURSE

Wednesday, 6:30-9:00 PM - September 26-December 12, 1990

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

The North Jersey Section IEEE is offering an evening course titled "Accent and Speech Improvement." The format of this course is a combination of four seminars and eight small-group sessions. The 7-1/2 hour seminars will be attended by the entire class. The instructor is Dr. Anita E. Sicilfo, Director, Corporate English.

Seminars 1 & 2: Basic principles of American English pronunciation.
Seminars 3-6: Techniques for improving oral presentations.
Small Group Sessions: Students will be divided according to their proficiency into three small-group sessions for one hour of individualized instruction on weeks 3, 4, 5, 7, 8, 9, 10, 11, and 12.

Objectives: Lasting improvement in comprehensibility, fluency, and accent reduction.
Course Content: Primary focus is on pronunciation, with some attention to grammatical or vocabulary errors that interfere with fluency.
Assignments: Students will be given assignments and expected to make short weekly recordings which the instructor will review and comment on. The purpose of the tapes is to provide feedback on student progress.

(1) September 26 - Introduction: What constitutes accent; How it affects communication; How English differs from other languages; An overview of American English Pronunciation; Sounds, Rhythm, stress, intonation; Realistic individual goals for a 12-week course; How to practice and improve.
(2) October 3 - Seminar: Speech organs and the articulation of vowels and consonants; Phonetic symbols; Voicing; Reading phrases & sentences; Non-verbal language; Placement into groups.
(3) October 10 - Practice with vowels according to group and individual needs. Stress patterns in compound words.
(4) October 17 - Consonants and intonation patterns. Practice.
(5) October 24 - Pronunciation techniques - teaching s, sh, th, and ch, -s, -es. Practice.
(6) October 31 - Review. Pronouncing technical terms. Reading technical material.
(7) November 7-8 - Seminar: Voicing and intonation; seminar on how to discuss a chosen problem. Instructor and participant feedback and critique. Body language. Techniques for interrupting, getting a point across, opening and closing a meeting.
(8) November 14-15 - Practice. Practice is necessary to achieve results.
(9) November 21 - Contractions, blinding, intonation. Practice.
(10) November 28 - Problem solving; fluency. How to get a point across in 30 seconds. Practice.
(11) December 5-6 - Seminar: Oral Presentation Techniques. How to prepare for the presentation; How to deal with nervousness; Voice projection; position of feet and hands; eye contact; audio-visual aids.
(12) December 12-13 - Working in groups; self-evaluation; peer-evaluation; group: individual short talks. Feedback from group to instructor and from instructor to group. Questions answered.

Class size will be limited to a maximum of 12 with a minimum registration of 8. Early registration is recommended. Phone reservations will NOT be accepted. Reservations accepted after September 7, 1990 will require an additional late fee of $25.


Contact: Mr. John A. Baka at (201) 455-8354 (Business)

Registration - "Accent & Speech Improvement Course"
To: Mr. John Baka, Distribution Engineering, Jersey Central Power & Light Co., Madison Ave. at Punch Bowl Rd., Morristown, N.J. 07960

Name ____________________________
Affiliation ________________________
Address __________________________

Please enclose required fee made payable to “North Jersey Section IEEE.”