



KITCHENER-WATERLOO SECTION

May 2004

Masthead 2
Section Officers 3
Committee Chairs 3
Society Chapter & Affinity Group Chairs 3
Student Activities Chairs and Programs 3
Upcoming Events 4
Calling All Life Members 4
Low Power RFICs for Transceiver Applications 4
Approaching the dirty paper limit for canceling known interference 5
Engineering Management Society (EMS) Education Initiatives 5
Young Professionals Network for Engineers 5
UW Lunch Seminars 5
IEEE Members Benefit at Telus 6
Recent Events 6
KW Section Website upgraded 6
Canadian Conference Successful 6
U of G racers to unveil first-of-its-kind car 6
Poker as an AI Research Area 7
Spelling Checking for Blackberry's 7
Flat Panel Displays get okay from Dalsa Cameras 7
Conestoga Starts Project-based Learning Degree 7
Perimeter Institute - The Math Circle 7
Xerox Research on Thin Film Transistors 8
UW's MBET team wins International Competition 8
UW PhD wins NSERC Doctoral Prize 8
WCI Robots Enter FIRST Robotics Competition 8
U of Guelph Software used on Mars Data 9
Local Firm Smooths Laser Pulses 9
\$33 million gift for Quantum Computing 9
Waterloo Centre for Automotive Research Initiated 9
Robot on skates scores gold medal 9
UW Engineers score in national contest 10
Engineering hires PDEng instructors 10

Multiple Antennas Have a Big Multi-User Advantage in Wireless	10
Mobile Antenna Connects Vehicles to Satellites	10
Evolutionary Computational Techniques of Antenna Structures	10
Prognostics of Hardware Systems	11
Power-Aware Branch Prediction	11
Technologies and Applications of Distributed Intelligent Systems.....	11
Application of Reconfigurable Ground Planes to RF Phase Shifters... ..	12
Reliability-Based List Decoding of Linear Block Codes	12
Microcrystalline silicon: From Material to Solar Cells	12
Cross-Layer Optimization for OFDM based Wireless Networks	13
Letters to the Editor.....	13
Alternative Energy	13
Electricity From Parkhill Dam.....	13
UW team enters 3-year vehicle contest.....	13
Statistics	13
Engineers and the World.....	14
Video Game creates Reality.....	14
Associations are key to Growth and Development	14
Engineering Humor.....	14
Brain Teaser Answer.....	14
More Math Fun	14

Masthead

The Kitchener-Waterloo Section of the Institute of Electrical and Electronics Engineers serves all members whose mailing address is in Bruce, Grey, and Perth, Waterloo or Wellington counties. It collects news relevant to local engineers and is published bi-monthly.

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Upcoming Events

Check <http://ece.uwaterloo.ca/~ieeekw/presentations.html> for updated information.

Calling All Life Members

Tom East

We are working on setting up an "Affinity Group" for life members. An affinity group is similar to a chapter, but the rules are a bit different. All Life Members in the Kitchener-Waterloo section would be part of the group: we are considering forming a joint group with the Hamilton section. Life Senior members and Life Fellows would be included, of course.

Goals of the Group could include:

a campaign to promote members to senior members,
critiquing the IEEE Virtual Museum
identifying IEEE milestones.

If you are interested in becoming active in such a group, (the position of chair is vacant) please contact me at teast@ieee.org or phone me at 519-746-7809.

Low Power RFICs for Transceiver Applications

IEEE CAS-Chapter Presentation on May 18, 10:30

Professor M. Jamal Deen

The recent explosion in wireless communication services has opened the path for implementation of fully integrated mixed signal circuits, operating in the GHz range. This explosion has been accompanied by a significant increase in research activities in low-power radio-frequency integrated circuits (RFICs) for portable or wireless telecommunications applications. These wireless systems demand low-power operation from the RF front-end, since it is expected that the portable devices be able to operate for extended periods of time before battery recharge. Furthermore, the low-cost benefits of using a CMOS process, along with ease of integrability, lend themselves well to such applications.

This presentation discusses some of our recent work on several low-power RFIC building blocks that are suitable for wireless and portable transceiver applications. All RFICs were designed in 0.18 μ m standard CMOS technology. For example: the design and performance of a 1.8V, 10GHz fully integrated monolithic CMOS voltage-controlled oscillator (VCO) with automatic amplitude control and temperature compensation. Also, new results on the effects of hot carrier degradation of integrated CMOS oscillators on its performance parameters - oscillation power, phase noise and frequency - and their evolution with stressing times will be presented.

Approaching the dirty paper limit for canceling known interference

DSS-IEEE seminar June 14, 10am By Uri Erez, Massachusetts Institute of Technology

It has recently been recognized that Costa's "Writing on dirty paper" channel model offers an information theoretic framework for precoding techniques for canceling arbitrary interference known to the transmitter. In particular, this observation implies that lossless precoding is theoretically possible at any SNR. Among the applications are broadcast over multiple-input multiple-output (MIMO) channels, intersymbol interference (ISI) mitigation and digital watermarking. We review the dirty paper coding framework as well as its applications. We describe a dirty paper coding scheme using lattice strategies coupled with MMSE scaling. Realizing such a system however has proven to be challenging, posing numerous problems of independent interest, and necessitates the introduction of novel coding techniques. We will address these issues and present an end-to-end coding realization of a system materializing a significant portion of the promised gains.

Engineering Management Society (EMS) Education Initiatives

IEEE

The IEEE announced a new EMS Education Initiative to bring to EMS and IEEE members the training in skills and best practices needed for technical managers to be successful. EMS Education in 2003 has made commitments to serve our practitioner members more broadly. The KW section is looking to help organize a local EMS chapter or make the Education program available through joint ventures with other area sections (Toronto, Hamilton, London).

For more information on this initiative, see attached.

If interested contact the section at: ieee_kw@ece.uwaterloo.ca

Young Professionals Network for Engineers

IEEE

The new chair of the Young Professionals Network (or GOLD), Kevin Ma, is initiating a number of events directed at new graduates and recent graduates. Keep an eye on the presentation link above for events as they are scheduled.

UW Lunch Seminars

various

The Brown Bag (BRAG) Seminar Series is a monthly sequence of informal, lunchtime talks by faculty members of the Electrical and Computer Engineering Department of the University of Waterloo. Aimed at non-specialists, the seminars are intended as an introduction to the Department's wide range of research activities. They should be of interest to general technical audiences.

<http://www.brag.uwaterloo.ca/index.html>

May 13, Mechanically Flexible Electronics - Welcome to The Future! By Arokia Nathan

June 10, seminar by Manoj Sachdev, topic to be announced

July 8, The August 2003 North-east Blackout by Claudio A. Cañizares

IEEE Members Benefit at Telus

The student chapter have arranged a special offering for the IEEE members from the new Telus store in the University Shops Plaza.

When you show your IEEE card...

\$25 Mail In rebate!!! This is in addition to any other current Telus offerings. As well, 10% Discount off all accessories in the store and a free BACKPACK!

Recent Events

KW Section Website upgraded

The IEEE KW Section is proud to announce the revised Section website at:

<http://kw.ieee.ca>

Our goal is to better serve our members by providing the most relevant and up-to-date information quickly and efficiently through our online portal.

Any feedback, comments and corrections will be highly appreciated!

Canadian Conference Successful

Tony Kormos

The Canadian Conference on Electrical and Computer Engineering was held May 2-5 in Niagara Falls and was a very successful conference. 570 papers were presented over three days - sixty oral sessions and one poster session. This CCECE conference drew record number of papers and attendance of previous annual CCECE conferences. Check:

<http://ewh.ieee.org/reg/7/ccece04/index.html> for followup comments.

U of G racers to unveil first-of-its-kind car

UofG Website

An all-wheel-drive race car designed and built by University of Guelph engineering students for an international competition was unveiled on May 7.

The vehicle will be the only one of its kind at the Formula Society of Automotive Engineers (FSAE) competition, which will run May 19 to 23 in Michigan. The largest prototype race in the world, the event is expected to attract entries from some 140 universities. This is the second year U of G has participated.

“Our car will be the first all-wheel-drive car ever to compete,” said engineering student Jason Griffith, co-manager of Guelph’s FSAE race team. “The cars in the competition are generally so light and so powerful that the rear wheels are always spinning when you go around corners or accelerate.” Having four-wheel-drive will improve the car’s traction and control. The car built by the U of G students can go from “zero to 60” in about four seconds, Griffith said.

Teams have always had the option of building and entering all-wheel-drive cars but it’s never been done before because of the complexity, he explained. “You need a lot more components. We just started talking about doing it, started brainstorming, and decided to give it a try.”

Poker as an AI Research Area

Seminar by Jonathan Schaeffer on April 6

Poker is a challenging problem for AI research: multiple agents (up to 10), stochastic element (cards being dealt), imperfect information (don't know the opponent's cards), user modelling (identifying player patterns), and risk management (betting decisions). For over 10 years the University of Alberta Computer Poker Group has been working on building a high-performance poker program.

This work has led us through four distinct phases of program design: 1) knowledge-based system, 2) simulations, 3) game theory, and 4) tree searching with learning. The prospect of a program successfully challenging the best human players in the near future is excellent.

Spelling Checking for Blackberry's

KW Record, selected by C.Hulls

DynoPlex Inc of New York is selling a package that provides spell-check on the RIM handhelds. It doesn't use any memory on the device but can scan emails and documents in "just a nick of time"

Flat Panel Displays get okay from Dalsa Cameras

KW Record

Dalsa's high-resolution cameras are used to verify each pixel on LCD displays for some manufacturers. The increased market for LCD screens is increasing demand for the special use cameras.

Conestoga Starts Project-based Learning Degree

KW Record

The college's new Bachelor of Applied Technology program will teach in an environment similar to a regular work environment rather than the traditional lectures. The faculty members will work with teams of students as the students learn by doing.

Perimeter Institute – The Math Circle

Tom East

The Waterloo Collegiate Institute Auditorium was again filled almost to capacity on April 7th for a Perimeter Institute public lecture on Mathematics, given by Bob and Ellen Caplan. They teach math by a program of courses called "The Math Circle".

On this occasion, the entire 90 minutes was given over to the solution of one geometrical problem, that of filling a rectangular floor with square tiles, all different sizes. The audience were invited to offer suggestions, and the solution gradually emerged: at various stages, the lecturers handed out partial solutions to focus the discussion. It turns out that the problem can be solved for rectangles with particular ratios of the sides, for example, 32 to 33, for which a configuration of 9 squares is possible.

After some initial difficulties with the use of the microphones, the audience was lively and enthused throughout.

Xerox Research on Thin Film Transistors

Tom East

On May 3rd, Professor Beng Ong described the work being done at the Xerox research lab in Mississauga, where he is a Fellow. The object is to use organic materials to make arrays of transistors on a thin film. Silicon based transistors can achieve extremely high speeds, but their fabrication requires processing at high temperatures with toxic, environmentally unfriendly materials in high vacuum equipment which costs billions of dollars. Organic transistors can be made at room temperature in air in equipment costing only millions of dollars, and give adequate performance for many purposes.

His lab has produced an array of 128 x 128 transistors on a single sheet, to be used as a display backplane. His favourite material is PQT - poly(quarterthiophene). The straight polymer molecules can be stacked in a very regular three dimensional array like cordwood. When used as printed wiring, it has better conductivity even than silver paste. The aim is to use inkjet printing rather than photolithography.

Prof. Ong closed by asking the key question - " Will our materials and processes bring low cost organic TFTs closer to commercial reality?"

UW's MBET team wins International Competition

Dan Colquhoun

The MBET team, mentioned in the previous newsletter won the competition by having the best new product and implementation plan. For more info see:

<http://www.usa-canada.les.org/press/archives/competition.asp>

UW PhD wins NSERC Doctoral Prize

UW Bulletin, selected by C.Hulls

Four of the best students completing doctoral degrees in engineering and computer science each year win Doctoral Prizes from the Natural Sciences and Engineering Research Council, and for 2003 one of them is a PhD from Waterloo. He is Karim S. Karim, whose degree in electrical and computer engineering came in May 2003. He's now on the faculty at the school of engineering at Simon Fraser University, and doing research largely on microelectronic circuits for medical imaging applications. The prize from NSERC includes a silver medal and a cash award of \$10,000, both of which will be presented in an Ottawa ceremony later this year. It's the sixth time since 1991 that a UW graduate has won one of the NSERC prizes.

WCI Robots Enter FIRST Robotics Competition

KW Record

Teens at WCI built a robot that aims to collect balls, climb and lift itself off the ground. From start to finish they had 6 weeks to get it built. A school from Ithaca won the top prize.

U of Guelph Software used on Mars Data

KW Record

A 20-year old software package developed by the UofG Physics lab will be used to interpret X-rays data returned from the Mars rovers.

Local Firm Smooths Laser Pulses

KW Record

Claire Lasers Corp is developing a new technology that smooths the “noisy pulse” of solid state lasers. This smoothing increases the efficiency of the laser and reduces damage to the optical components of the laser.

\$33 million gift for Quantum Computing

UW Bulletin

The biggest gift in UW's history was announced Friday afternoon: \$33.3 million from Mike Lazaridis, founder of Research In Motion, and his wife, Ophelia. Matched two-for-one by the government and other sources, the donation brings \$100 million to UW for work in quantum computing and the construction of a quantum research building.

A UW news release said the money will be used "to help create a world-class centre for quantum-related research and teaching. . . . A new quantum science research building (est. 120,000 sq. ft.) with state-of-the-art equipment will be constructed on the east side of the campus and is expected to attract talented researchers from all over the world." The funds will also provide an endowment for professorships and help establish labs for theoretical and experimental work.

<http://www.newsrelease.uwaterloo.ca/news.php?id=4067>

Waterloo Centre for Automotive Research Initiated

UW Bulletin

Researchers working on everything from fuel cells to "smart control" of vehicles are now part of WatCar, the _Waterloo Centre for Automotive Research_. A new web site to promote UW's automotive expertise has just been created -- through the work of co-op student Anthony Yuzhi Zhang -- and points to work going on across the engineering faculty, and beyond it, in such fields as mechatronics, human factors and alternative fuels. Automotive research is also summed up in the second, expanded edition of UW's brochure "Driving Force", first produced just a few months ago. The number of researchers listed has gone up from 27 in the first version to 47 now.

<http://watcar.uwaterloo.ca/>

Robot on skates scores gold medal

UW Bulletin

A team of fourth-year systems design engineering students is back from Calgary with a gold medal from Skatebot 2004, a competition for robots on skates. Sarah Hamilton, Katherine McLean and Mark Greco took first place with "Waterbot" in the "open" category. There was also a competition for Lego robots.

"The robots must propel themselves using skates," Greco explains, "and the race is held on the long-track rink of the Olympic Oval in Calgary.

<http://www.enel.ucalgary.ca/People/Macnab/skatebot/>

UW Engineers score in national contest

UW bulletin

Waterloo engineering students collected two first-place finishes, a second place and a fourth place in the annual Canadian Engineering Competition, held in March at McMaster University.

Engineering hires PDEng instructors

UW Bulletin

A new unit of "nine or ten people, full-time" will be set up to operate the courses that engineering students will soon be taking during their co-op work terms. The courses, dealing with such topics as management, health and safety, and risk management, will make UW students "even better", says Adel Sedra, the dean of engineering. "We are about to hire our first one or two instructors," the dean said in an interview. He said he doesn't know the total cost of the program -- "we're just working out the business plan."

Multiple Antennas Have a Big Multi-User Advantage in Wireless

Distinguished Seminar Series

Bertrand Hochwald

Advanced multiple-antenna wireless techniques, while a hotbed of exciting research, are only slowly gaining commercial acceptance. One of the main stumbling blocks is that although base stations (or access points) are often provided with two or more antennas, it is difficult to equip small terminals with more than one. Since we may be stuck with single-antenna terminals for a while, it becomes important to find techniques that obtain throughput on a multi-user system that scales linearly with the number of antennas. I will show how it is possible, provided that accurate channel information is available at the access point.

Mobile Antenna Connects Vehicles to Satellites

KW Record

A UW research team has prototyped an antenna which receives satellite TV and radio channels in a package able to fit on the family car. The antenna, along with a mechanical mount developed by Farsighttech, may allow two-way communication as it continues to evolve.

Evolutionary Computational Techniques of Antenna Structures

IEEE MTT-Chapter Presentation

Prof. Ahmad Hoorfar

In optimization and synthesis of antenna and microwave structures for applications in communication and radars one typically deals with objective functions that are highly non-linear and have a large number of optimization parameters. For such problems, the evolutionary computational techniques can yield robust globally optimized solutions that otherwise are not possible by using traditional gradient-based local-search optimization methods. These probabilistic techniques, collectively known as Evolutionary Algorithms (EAs), try to emulate, in one way or the other, the Darwinian model of natural evolution on a computer. One can in general identify three main branches of EAs in the literature: Evolutionary Programming (EP), Evolution Strategies (ES) and Genetic Algorithms (GAs). All these algorithms are multi-agent stochastic search methods that incorporate

random variation and selection. Of the three paradigms of EAs, GAs have been widely used and are well known to the electromagnetics community, whereas the application of EP in electromagnetics appeared more recently.

In this talk, we present details of various EP algorithms using Gaussian, Cauchy, Poisson, and hybrid of these mutation operators for continuous, discrete or mixed parameter optimization problems.

Prognostics of Hardware Systems

IEEE KW Signal Processing Neural Network Chapter

Professor Mo Jamshidi

Prognostics of hardware systems is an active area of research that revolves around the development of techniques for assessing and ensuring the integrity of engineering systems. System integrity is particularly important for physical and industrial systems that are mission critical and with massive amounts of output data. The objective of this talk is to describe a number of data-driven and knowledge-based paradigms and algorithms to reduce data and provide robust prognostics of hardware faults. Two case studies - a chiller system and a laser pointing system will be discussed.

Power-Aware Branch Prediction

IEEE MTT-Chapter Presentation

Amirali Baniyasadi

The goal of the work presented in this talk is to reduce branch predictor energy consumption without harming accuracy and hence overall performance. Reducing branch predictor's energy consumption is important for two reasons: First, branch predictors already account for a large fraction of on-chip dynamic power dissipation. Second, their power is bound to increase as further improvements in prediction accuracy may call for even larger and more complex branch predictors. The trivial option of reducing energy by using smaller predictors is not acceptable as that would lead to unacceptable accuracy and hence performance degradation.

In this talk we introduce power efficient techniques that exploit instruction behavior to reduce predictor energy. We use branch instruction past behavior to eliminate unnecessary predictor accesses.

Key to success of our heuristics is power-efficient techniques that could identify well-behaved branches accurately and without compromising performance. We suggest techniques that do so by taking into account branch confidence and temporal locality.

Technologies and Applications of Distributed Intelligent Systems

IEEE and Systems Design

Prof. William A. Gruver

Most information and processing systems are based on centralized technologies and design principles in which the information and knowledge are centralized at strategic sites, with access, command, and control organized in client-server architectures. Centralized systems have many disadvantages that make them unsuitable for large-scale integration. By distributing implementation details of the logistical and integration requirements, it is possible to achieve greatly improved reliability, scalability, and security.

This lecture describes distributed system technologies and applications being developed in cooperation with Canadian industry and partners of the Holonic Manufacturing

Systems Consortium, a major international project of the Intelligent Manufacturing Systems Program. Intelligent distributed systems are based on the use of cooperative agents, organized in hardware or software components, that each independently handle a small set of specialized tasks and cooperate to achieve system-level goals and a high degree of flexibility. Some recent applications of intelligent distributed systems will be described, including manufacturing scheduling, robotic finishing, utility monitoring, and energy resource management.

Application of Reconfigurable Ground Planes to RF Phase Shifters...

IEEE MTT-Chapter Presentation

Dr. Cyrus Shafai

This presentation will give a background to some of the RF MEMS work which has been done at the University of Manitoba. Focus will be on reconfigurable ground plane technology. Two technologies have been developed; thin film membranes in the ground plane, and micro-spring supported membranes in the ground plane. These flexible membranes allow the reshaping of the ground plane location, and so enable control of the performance of microwave devices over the ground planes. Usage in phase shifters and frequency agile antenna will be shown. Benefits of reconfigurable geometry structures include analog control of device performance and they are not limited to low power handling capacity. Performance of reconfigurable RF MEMS devices constructed and tested in our laboratories will be shown.

Reliability-Based List Decoding of Linear Block Codes

DSS-IEEE seminar

By Prof. Marc Fossorier, University of Hawaii

Several reliability-based soft decision decoding techniques, which allow to achieve near-MLD performance of rate-1/2 block codes of lengths up to 200 bits were reviewed. The ordered statistic decoding (OSD) algorithm is first reviewed. Its recent improvements, which include the use of memory and an iterative approach, was then presented. It is shown that these new techniques reduce the original worst case complexity of the OSD algorithm to its squared-root. A general method to tightly bound the error performance of these algorithms was also presented. Results for both binary linear codes and Reed Solomon codes based on their binary images are finally given.

Microcrystalline silicon: From Material to Solar Cells

IEEE EDS/SSC-Chapter Presentation

Professor Nicolas Wyrsh

Hydrogenated microcrystalline silicon ($\mu\text{c-Si:H}$) deposited at low temperatures ($<250^\circ\text{C}$) is an attractive material for solar cell applications. $\mu\text{c-Si:H}$ can be deposited using the same deposition techniques used for amorphous silicon, but, compared to the latter, it offers an enhanced infrared absorption and an improved stability against light soaking. However, depending on the deposition conditions and type of substrates, $\mu\text{c-Si:H}$ may exhibit various morphologies (grain size, shape, surface morphology, etc). A careful control of the growth of the material is therefore required for optimal device performance.

Several material aspects were discussed, with a focus on those important for solar cell applications. Recent progress in the development of single-junction and micro morph

(amorphous/microcrystalline) tandem devices were presented, underlining the potential and limits of these devices. Finally, some industrial and scientific perspectives regarding this material and its applications were shown.

Cross-Layer Optimization for OFDM based Wireless Networks

Seminar by Dr. Ye (Geoffrey) Li on May 5, 2004

Wireless networks provide users the promise of anywhere and anytime communications. In this talk, we present our recent research results on joint optimization of the media access control (MAC) and physical layers according to each user's channel condition at different locations and times so that a high quality of service can be provided with limited wireless resources. We have used utility function as a bridge between the MAC and physical layer and to balance the efficiency and fairness. We have established theoretical frameworks and developed practical approaches for OFDM based wireless networks with three different types of traffic: best effort, streaming, and real time.

Letters to the Editor

In Annual General Meeting section of the last newsletter, it was reported about the split of Computer Chapter. "The Information Theory/Computer Chapter has been split ...". (page 6)

The correct sentence is "The Signal Processing/Neural Networks/Computer Chapter has been split ..."

Alternative Energy

Electricity From Parkhill Dam

KW Record

Grand River Conservation Authority is dusting off plans for converting the Parkhill dam into a 1.2MW hydro station. Many smaller plants can be as efficient as a single big station as well as more flexible and robust.

UW team enters 3-year vehicle contest

KW Record, UW Bulletin

General Motors of Canada Limited, Hydrogenics Corporation, and Natural Resources Canada announced that they'll help sponsor a team of UW students as the only Canadian entry in Challenge X, a competition series that challenges engineering students to decrease a vehicle's energy consumption and emissions while maintaining performance. Challenge X teams will work to improve the fuel economy and emissions of the Canadian designed and built 2005 Chevrolet Equinox, a compact SUV.

The Waterloo team will be concentrating on hydrogen fuel cell technology.

<http://www.newsrelease.uwaterloo.ca/news.php?id=4075>

Statistics

The state with the highest percentage of people who walk to work: Alaska

Engineers and the World

Video Game creates Reality

Rudolph Balaz

The video game Pacman has become a live action game played on the streets of Manhattan. Pacmanhattan has 5 costumed participants running the streets and controlled through cell phones from a control center.

<http://www.pacmanhattan.com/>

Associations are key to Growth and Development

Peter de Jager in ComputerWorld Canada (pg25)

Peter describes the disturbing trend of decreased membership in professional associations. Training and advertising are 2 examples of areas that drop off as business pressures increase. But often, these are the areas that people and businesses need to use to grow. Some of the answers can come from associations such as the IEEE by providing opportunities to see new ideas, meet new people and compare.

Engineering Humor

Brain Teaser Answer

Selected by C.Hulls

From last issue, the question was:

Three men entered a hotel and wanted a room for the night. They paid \$30, each putting in \$10. After they had gone to their room the receptionist realized he had made a mistake by overcharging them \$5. He sent the bellboy with the \$5 to give to the men. On the way to the room he couldn't figure out a way to split the money evenly between the 3 men, so he gave them \$1 each keeping the remaining \$2 for himself. This meant the 3 men paid \$9 each for the room, which equals \$27. Add the \$2 that the bellboy kept-where is the remaining \$1?

Answer:

subtract the \$2 (Not add) to arrive at the New total of \$25 (not the old total of \$30)

Old: $\$10+\$10+\$10=\30 in the cash register

new: $\$9+\$9+\$9+\$3\text{refunds}+2\text{stolen/tip}=\30 actual cash of which $\$9+\$9+\$9=\27 which is MINUS \$2 for a real \$25 in register so the fallacy is in the verbage set up of "Add the \$2 that the bellboy kept" setting the solver up for a "huh?" moment

More Math Fun

$111,111,111 \times 111,111,111 = 12,345,678,987,654,321$

EMS Education Initiatives

by EMS Education Committee

For many years the Engineering Management Society has been committed to providing educational opportunities for its members. Most of this has been accomplished through publication of the Transactions, the Review, and the Newsletter.

We are excited to announce a new EMS Education Initiative to bring to EMS and IEEE members the training in skills and best practices needed for technical managers to be successful. EMS Education in 2003 has made commitments to serve our practitioner members more broadly. In this article we introduce the programs becoming available to you as professional business management training with real time access to skills and information.

There is no doubt that "lifelong learning" is an absolute necessity for the future. A recent article in *Educause Review* (37(1): 29-38, 2002) by Donald Buckley entitled "In Pursuit of the Learning Paradigm" discusses the primary characteristics of learner centered technology. These include; interactivity, varied information formats, electronic communication, formative assessment, opened-ended assessment, authoring tools, and simulation. Your IEEE EMS Education Committee is committed to utilizing the full potential of such new instructional technologies that can be best tailored to your learning style. Continuing education, training, and professional growth will always be with us.

We have adopted a four-program approach to provide you the training and information you require as a technical manager in a time of challenging expectations such as Time to Market", staffing reassignments, resource issues and so on. The three programs are:

- Seminars
- Information/Knowledge Work Solutions
- eLearning
- Web networking

We are delivering these elements by sponsoring the following offerings:

Seminars

<http://www.effectivetraining.com/>

We are delivering six seminars through Effective Training Associates Inc. (ETA). These are instructor led workshops on topics such as Project Management, Leadership, Negotiation, Writing, Presentation and Communication skills tailored for engineers and technology managers. These have been highly acclaimed over the last 14 years by IEEE engineers in the San Francisco Bay Area and now we are taking them transnational. The seminars will each consist of four courses

tailored to topics of local interest and supported by EMS Chapter / Sections along with local participating corporate sponsorship.

Information / Knowledge Work Solutions

Information/Knowledge

<http://www.projectconnections.com/>

Our second thrust is to provide a window into best practices, working tools and practical reference information that are available to support you. Our first effort is with ProjectConnections, a leading provider of web-delivered just-in-time knowledge on project and people management. This site provides practical easy-to-use information and work templates that assist in developing projects, running meetings, building effective team communications, and other essential business management skills.

Many site resources are free to registered site members, including items such as manuscripts, presentations, and pointers to management sites and books. Registration is free!

The site's crown jewels are valuable, use-it-today resources including how-to information for situations such as managing conflicts and planning projects and downloadable work templates for tasks such as project planning project visions, design review agendas, and more. These resources require a Premium subscription and we have negotiated a special arrangement for EMS and IEEE members.

Our EMS and IEEE members get a Premium subscription at a 33% discount. Check out the site's resources

<http://www.projectconnections.com/member/emsoffer> to take advantage of the special IEEE EMS Premium offer.

Web Learning

Recognizing that the web is a logical choice for meeting our key objectives of real time applicability and global accessibility we are initiating the IEEE EMS eLearning program as our third education thrust with the following 2 initial offerings.

Communication Skills for Managers

<http://www.rgilearning.com/ems>

Communication skills are vital for effective management. We want to provide a focused set of courses to assist you in this crucial everyday skill. EMS is making available a suite of communications eLearning courses. This an eight course series of Web-based effective communication courses that are designed

specifically to help technical professionals prepare better e-mails, letters, reports, and proposals.

Now you can learn communication skills at your own pace, on your own time, in the office or at home. To monitor your progress they provide an optional exam and course completion certificates. If you prefer, you can choose to have a writing consultant evaluate examples of your work.

A special discount for the full Communication Series is available.

EMS Collaborative Online Learning

<http://www.msilearning.com/ems>

We are partnering with an eLearning provider, MSI Learning, to deliver two major Web-based opportunities:

- A catalog of project management/ team building/ virtual team's workshops immediately available on line.
- An eLearning infrastructure and turnkey course development service giving us the opportunity to obtain new online courses easily and cost-effectively.

EMS will offer six unique online instruction-led interactive workshops starting this spring or early summer.

- EMS Technology Project Management Program
- Virtual Teams 1: Effective Project Communications and Control
- Virtual Teams 2: Building Teams, Commitment and Culture
- Managing Multiple Projects
- Rapid Project Development: Creating Agility and Balance in the Organization
- E-Business Rapid Application Development (RAD)

Network with other professionals and expert instructors while learning your new skills, combined with the convenience of learning online. A significant benefit here is the capacity to bring intact teams together in global communities with travel or absence from your work commitments. The results you need will be available in a timeframe of days not months. Please visit the website above for course descriptions and registration information.

EMS Virtual Community

<http://www.ieeecommunities.org/ieee.ems>

Virtual Communities are the latest information sharing and learning vehicles offered by IEEE. Each community consists of a group of individuals who have a shared purpose and a common interest. EMS has joined the IEEE Virtual Communities to assist us in administrative activities and more importantly foster management topics addressing EMS member fields of interest. We will do that by establishing communities of interest around such topics as you select. IEEE EMS invites you to be our Guest and come and view the Virtual Communities. If you like what you see and are interested in joining, you can do so for FREE!

Feedback: Your opportunity

We seek your feedback on your needs and participation opportunities. Do you have an opportunity for an EMS educational activity? Send an email to IEEE EMS Education Vice President Dave Kemp at *d.kemp@ieee.org* or John Barrett at *johnbarrett@ieee.org*.

Help us by identifying the education needs of the working practitioner. If you want a technically focused management society responsive to those needs join us and make it happen! Tell us if you know of programs or material that we might include in our offerings.

A final point. The Engineering Management Society is your organization and we need you! You can volunteer on an ad hoc basis to participate in defining and building a technically-focused hands-on management resource for yourself and your IEEE peers within EMS.