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USENIX & SAGE

The Advanced Computing Systems Association &
The System Administrators Guild

USENIX news

USENIX MEMBER BENEFITS

As a member of the USENIX Association, you receive the following benefits:

FREE SUBSCRIPTION TO *;login:*, the Association's magazine, published eight times a year, featuring technical articles, system administration articles, tips and techniques, practical columns on security, Tcl, Perl, Java, and operating systems, book and software reviews, summaries of sessions at USENIX conferences, and reports on various standards activities.

ACCESS TO *;login:* online from October 1997 to last month <*www.usenix.org/publications/login/login.html*>.

ACCESS TO PAPERS from the USENIX Conferences online starting with 1993 <*www.usenix.org/publications/library/index.html*>.

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Membership

by Daniel Geer

President, USENIX Board of Directors

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"Membership in USENIX has been growing at a sustained double-digit rate for years."

(a) Good news!
(b) Define "membership"
(c) Both

The correct answer is (c), *it is* good news but the definition of member is the crucial detail. This is not unique to USENIX – if there is anything I have learned in Washington it is that when it comes to regulations, the game is over after the definitions page; ditto employment contracts; ditto patents; ditto pre-nuptial agreements; ditto software licenses. Nearly every durable declaration of fact depends critically on what the definition of terms is. (For further reflection, re-read Humpty Dumpty's remarks in *Through the Looking Glass*.)

So what is a USENIX Member and why does it matter? A USENIX Member, as we mean it here, is someone who pays the membership fee. They get benefits, some of which are tangible and detailed on our homepage, and some of which are intangible. The intangible, like making colleagues out of people you would never otherwise even meet, tends to grow in importance to you the longer you are here. As with any membership organization, we like to see people stay around a longer time, but if you are reading this you are (likely) already a Member. We hope you stay a long time; I hope you someday find yourself leading this organization.

What USENIX does better than anything else is concentrate (information about) technical progress in the building and running of systems. We bring together people and ideas. In that tired analogy, we assemble critical mass. Sometimes, the number of people is small, but the ideas are grand, sometimes the reverse is true. Every conference, symposium and workshop we run is a risk, a risk that is exactly proportional to how good we all (you) are at deciding what is important versus merely showy. The reason we are still here and growing is simply that we have been pretty good handicappers over a sustained period. I'd claim that what Warren Buffet is to investing, USENIX is to building real systems – not always glamorous, but forever driven by results, by what actually works under load and what does not.

A former member of the USENIX Board somewhat famously said that what USENIX does is "Move information from where it is to where it isn't." I like that. As some would say, "The future is already here, just unevenly distributed." I like that, too. Putting those two together is close to what USENIX is fundamentally about – catching first light of the future and accelerating the work of our members, people both motivated by and unafraid of results, by moving information from where it is to where it is not.

So what is a Member? We have to stick with the definition we have on "paper" for who has suffrage for our elections. We'll continue to more or less make it automatic to join if you attend one of our meetings. But I want to ask you a straightforward question: If over half the attendees at any meeting are first-timers, it's clear that many of them don't come back. Is this natural selection or something else? I happen to think that it *is* natural selection, and we *are* doing the right thing when we make it easy to try

out being a Member – sort of submitting ourselves to market forces by defining our Members as those who find what we do here to be valuable to them on a sustaining basis.

Now this leads to a detail: If I am right – that our *raison d'être* is to move information from where it is to where it needs to be and that the reason Members (you) are members is that this is actually valuable to you and your careers – then how much do you want your membership to be an advantage of time and place to you? How much do you want to be a USENIX Member in order to Get It First? How much is your being part of this really rather unique organization about gaining an advantage to you personally in what you do yourself? How much do you want to make membership a ticket to things that are simply not otherwise just lying about for anyone to use? Does what you want align with what it takes to keep USENIX viable for the bulk of your productive life?

Rousseau suggested that democracy survives so long as the electorate cannot give away the treasury. If I am right about what makes USENIX valuable, our treasury is measured in information. How we (you) strike this balance between what is special for our Members and what is for just anyone only seems trivial. Until you think about it.

What's Up with Charity?

by Andrew Hume

Vice-President, USENIX Board of Directors

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Over the last seven years, USENIX has funded a modest number of projects that I would describe as "charitable." By this I mean projects primarily benefiting the community at large, rather than the specific technical community to which nearly all our members belong. Much to my surprise, the current USENIX board now has a majority opposed to such projects. This opposition is ideological in nature and has little to do with the amount of funds involved. Of course, the board is quite responsive to "what the membership wants," and frankly, I want you to let the board know if you agree with me, so that we can continue to fund community projects when they present themselves. It would also help the board develop a strategy for such proposals so that decisions can be made on a less ad hoc basis.

I believe that every person and organization has a responsibility to help those in need; this is a significant part of what makes us a society. This is why I personally donate money to the United Way, and it's why AT&T, amongst its other charitable works, contributes the overhead for my donations. Of course, everyone has to decide for themselves how to express that responsibility. I want to give a couple of (I think good) examples of how USENIX has done this in the past.

In 1996, we spent about $50K on a project centered on a settlement house in lower Manhattan. "Settlement houses" are basically community centers in poorer urban neighborhoods, albeit with a long history of service. The two main activities affecting this discussion are after-school programs for kids and evening outreach for adults. The settlement houses already had some computer labs set up, but they were not being utilized well. In collaboration with a local university, we paid for a better network connection (T1) to the Internet, and we funded undergraduates to teach/tutor people in the computer labs in the use of computer technology. This program has been very successful, and we are being asked to fund a similar effort in a settlement house in Boston.

In August 1999, we funded a request for $40K from SOS Children's Village near Chicago. The village is part of the Illinois adoption system; it is the destination of last resort for children who have been bounced through several placements. Physically, the village is a set of several houses around a cul-de-sac. The project involved setting up a LAN between the houses, and buying a couple of computers for each of the houses (each of which has 6–10 children), to be used mainly for homework. We also involved a SAGE volunteer to help with configuring, ordering, setting up, and maintaining the network, and teaching the "villagers" how to run the network themselves.

I think both these cases exemplify effective charity; we helped those in real need, we did so in areas that we are familiar with, and we set up connections between the recipients and others in their local community (students and volunteers). I think continuing to support this type of project is a no-brainer, especially at the level of funding (~3% of our good-works budget) we have done in the past. Actually, I think it is so obviously a good idea I am gobsmacked that any reasonable person would oppose it! Dan Geer revealed in the last *;login:* that he thinks we ought to put all our resources into benefiting our members directly. Certainly, that should be our main thrust, but to not set aside a few percent seems mean-spirited and inconsistent with the generosity and camaraderie displayed at our conferences by our members.

If you agree with me, or even if you don't, please do let the board know!

Twenty Years Ago in U[SE]NIX

by Peter H. Salus
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There was no June 1976 meeting/conference. Lew Law hosted meetings at Harvard in April (with 60 attendees) and October (with double that number). So 25 comes up empty for me.

The June 1981 conference was hosted by Wally Wedel at the University of Texas. While it was well-attended (500), the numbers were but half of those at San Francisco (Tom Ferrin) and Santa Monica (Mike O'Brien, long before Mr. Protocol) which bracketed it.

The community was still bi-coastal: Urbana, IL, Toronto, Denver, Austin all attracted far fewer attendees than Cambridge, MA, New York, Berkeley, San Francisco, or San Diego.

But June 1981 saw the released of 4.1BSD, which contained a large number of performance improvements, support for a new VAX model, and auto-configuration. The summer also saw Kirk McKusick join the CSRG.

Kirk says: "4.1BSD was the high point of performance, in the sense that it was really 4.0BSD [October 1980] but tuned to a fine hone, especially for the 750. The 4.1BSD system was taken back into Bell Labs to become the 8th Edition UNIX."

Armando Stettner remarked to me that given the choice between 4.1BSD and V7, "no one ever wanted to go back to V7."

In June 1981, the new Internet was growing, too. It had 200 host sites and well over 2,500 users.

USENIX Funds Electronic Frontier Foundation

The USENIX Board of Directors recently decided to fund the Electronic Frontier Foundation's efforts to protect copyright and fair use rights related to the Digital Millennium Copyright Act (DMCA) legal cases. The Electronic Frontier Foundation (EFF) is pursuing several legal cases to protect copyright and fair use rights by opposing the anticircumvention rules of the Digital Millennium Copyright Act (DMCA) as violating constitutional rights to free expression. The cases build on EFF's earlier precedent-setting victory, Bernstein vs. U.S. Department of Justice, where a federal appeals court ruled that code is free speech and, therefore, protected by the Constitution.

The USENIX Association also helped fund the Bernstein case in 2000.

The USENIX Association recently renewed its support for the Electronic Frontier Foundation (EFF) by committing $150,000 over the next three years to protect copyright and fair use rights related to the Digital Millennium Copyright Act (DMCA) legal cases. EFF expects that approximately $1.5 million will be needed over the next three years to fully support the project. See their website *<http://www.eff.org/support/20010419_eff_fund_drive.html>* for information about contributing to this effort.

ABOUT THE ELECTRONIC FRONTIER FOUNDATION:
The Electronic Frontier Foundation is the leading civil liberties organization working to protect rights in the digital world. Founded in 1990, EFF actively encourages and challenges industry and government to support free expression, privacy, and openness in the information society. EFF's objectives are to ensure that fundamental rights are at least as well secured online as they are offline; to educate the press, policymakers, and the general public about online civil liberties; and to act as a defender of those liberties when they are attacked. For more information about EFF, please see: *<http://www.eff.org>*.

Notice of Annual Meeting

The USENIX Association's Annual Meeting of the Board of Directors with the membership will be held during the 2001 USENIX Annual Technical Conference in Boston in June. The exact date, time and place will be announced on site.

We welcome all to come and participate.

USACO News

by Rob Kolstad
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The first phase of the USACO contest season is wrapping up. We've held the US Open and chosen the finalists for training camp in addition to recognizing dozen and a half "USACO All Americans." From the finalists, four will be chosen to attend the IOI contest in Tampere, Finland in July.

The US Open had 358 total contest entries from 40 different countries, including 187 from the USA (which is an improvement in USA participation!). The contest was run both in a proctored version (for USA and other participants) and a week-long (but five-hour limited) non-proctored version. Contestants chose to enter either of two divisions:

- The Green division with really hard problems
- The Orange division with somewhat difficult problems

This year, the Green problems were really, really challenging. Scores were much lower than usual and the contestants made it clear that they thought the problems were much harder. It's a challenging task to get the problems "just right."

The top five proctored USA winners along with their HS graduation years, states, and schools, were:

Thuc Vu, 2001, Fairmont Preparatory School, CA.
Songzi Du, 2003, Ben Davis HS, IN.
Reid Barton, 2001, Home Schooled, MA.
Jacob Burnim, 2002, Montgomery Blair HS, MD.
Yuran Lu, 2001 Presque Isle HS, ME.

Thuc Vu placed second last year, nine points shy of perfect.

The not-necessarily-proctored International Division top eight:

Doan Ngoc Minh, 2001, Viet Nam
Li Yiming, 2001, China
Ivan Georgiev, 2001, Bulgaria
Li Rui, 2002, China
Pengxu Li, 2002, China
Wenjie Fu, 2002, China
Martin Pettai, 2002, Estonia
Jozef Tvarozek, 2002, Slovakia

Vietnam and China continue their winning ways. China often takes four gold medals at the IOI.

From the results of this year's four contests, the USACO chose 18 students recognize as the USACO All American Programming team. These students participated strongly and scored consistently high on the contests:

Reid Barton, 2001, Home Schooled, MA
Jacob Burnim, 2002, Montgomery Blair HS, MD.
Kevin Chen, 2002,Western Branch, VA
Jeff Cohen, 2002, TJHSST, VA
Adam D'Angelo, 2002, Phillips Exeter, CT
Songzi Du, 2003, Ben Davis HS, IN
Richard Eager, 2001, TJHSST, VA
Joseph Jaewhan Lim, 2004,Taejeon Christian School
Yuran Lu, 2001, Presque Isle HS, ME
Vladimir Novakovski, 2002 TJHSST, VA
Anatoly Preygel, 2003, Montgomery Blair HS, MD
Gregory Price, 2002, TJHSST, VA
Alex Schwendner, 2005, Homeschool, TX
Gary Sivek, 2002, TJHSST, VA
Steven Sivek, 2002, TJHSST, VA

Thuc Vu, 2001, Fairmont Preparatory School, CA
Tom Widland, 2001, Albuquerque Academy, NM
John Zhu, 2001, Gilbert HS, AZ

The criteria for the final contest rounds to be held at USACO programming camp were slightly different. Among the criteria was a requirement to be able to attend the IOI! This results in slightly different selection for training camp:

Reid Barton, 2001, Home Schooled, MA
Jacob Burnim, 2002, Montgomery Blair HS, MD.
Jeff Cohen, 2002, TJHSST, VA
Adam D'Angelo, 2002, Phillips Exeter, CT
Songzi Du, 2003, Ben Davis HS, IN
Neil Herriot, 2002,Palo Alto HS, CA
Joseph Jaewhan Lim, 2004,Taejeon Christian School
Yuran Lu, 2001, Presque Isle HS, ME
Vladimir Novakovski, 2002 TJHSST, VA
Anatoly Preygel, 2003, Montgomery Blair HS, MD
Alex Schwendner, 2005, Homeschool, TX
Gary Sivek, 2002, TJHSST, VA
Steven Sivek, 2002, TJHSST, VA
Thuc Vu, 2001, Fairmont Preparatory School, CA
Tom Widland, 2001, Albuquerque Academy, NM

Problem four presented a serious challenge to the contestants.

Designed by Greg Galperin, formerly of MIT and now at an airline scheduling startup, it required the students to reorder mixed up cow signs in order to form an advertisement:

Farmer John decided to make the most out of his highwayside farm and sell advertising. He found a client and hiked to his fence which runs along the highway and painted the message on the sides of the cows grazing along the fence. He painted exactly K letters (2 <= K <= 4) on each of C (2 <= C <= 20) cows and ignored spaces.

Although cows are fairly lazy creatures, they are not immobile. After milking the next morning, FJ noticed that the message he was being paid to display was now in pieces in his barn. Worse still, FJ also forgot the original message.

Help FJ reconstruct the original message. Given K, the cows' letter groupings (which all happen to be unique), and a dictionary that contains all the possible words, figure out all the possible messages (note that the message ABCD EF is different from AB CDEF). Each dictionary word is unique and can be used more than once in any given message. All C cows are used exactly once. Being advertising, it is important to ignore grammar and any possible meaning of the message.

It is guaranteed that the number of possible original messages will not exceed 2,000,000,000. Furthermore, all data in this problem is supplied in upper-case.

PROBLEM NAME: sign

INPUT FORMAT:

Line 1: Three integers, K, C, and D (1 ≤ D ≤ 150, the number of words in the dictionary)

Lines 2..C+1: Each line contains K letters of the scrambled message

Lines C+2..C+D+1: Each line contains a single word from a dictionary; no word is longer than ten characters

SAMPLE INPUT (file sign.in):

```
3 5 7
TEN
ATT
NAT
BAR
ACK
AT
ATTACK
BARN
CHICKENS
CHOPPERS
COWS
TEN
```

OUTPUT FORMAT:

Line 1: The first (in alphabetical order) possible message. Note that "A B" precedes "AB" alphabetically.

Line 2: A single integer which is the number of possible messages

If no solutions exist, print a single line containing the word "NOSOLUTIONS".

SAMPLE OUTPUT (file sign.out):

```
ATTACK BARN AT TEN
6
```

[in case you were wondering, here are the six: TEN ATTACK BARN AT, TEN BARN AT ATTACK, ATTACK TEN BARN AT, ATTACK BARN AT TEN, BARN AT TEN ATTACK, and BARN AT ATTACK TEN]

Problem eight, in the orange division, challenged the next tier of students. Designed by Don Piele, USACO director, it asks the students to find numbers with certain properties to enable a combination lock to be opened:

To unlock a combination lock you must rotate a dial alternately right and left through a sequence of positive numbers. For this problem, a sequence (C1, C2, ..., Cn) is called a combination for M if it has the following properties:

1) n > 1
2) Ci - C(i-1) = 1 for all i
3) C1 + C2 + ... Cn = M

Create a program which will find all possible combinations for a given M. Express each combination by giving the first and last number in the combination.

Example: 1998 2002 denotes the following combination for M=10,000:

1998+1999+2000+2001+2002 = 10000

PROBLEM NAME: combo

INPUT FORMAT:

A single line with the integer M ($10 \le M \le 2{,}000{,}000$).

SAMPLE INPUT (file combo.in):

10000

OUTPUT FORMAT:

A set of lines with two numbers as described above. Order the lines by increasing first number (with ties broken by consulting the second number). It is guaranteed that at least one answer exists.

SAMPLE OUTPUT (file combo.out):

18 142
297 328
388 412
1998 2002

All in all, the year has gone extraordinarily well. A new contest grading system enables the competitors to be confident that their programs read and write the proper files in addition to compiling correctly. The program execution system has moved from DOS (with an average of one reboot per minute) to Linux. Multiple grading machines have enabled contest grading time to be reduced from several days to several minutes. The maximum memory allowed has increased from 640KB to 16MB. The number of grading protests has dropped to the low single digits.

If you know a pre-college programmer who would like to compete, potentially for various prizes, or even just learn more about procedure-oriented programming, please have them stop be at <*http://www.usaco.org*>.

USENIX Needs You

People often ask how they can contribute to the USENIX organization. Here is a list of needs for which USENIX hopes to find volunteers (some contributions reap not only the rewards of fame and the good feeling of having helped but also a slight honorarium). Each issue we hope to have a list of openings and opportunities.

- The *;login:* staff seeks good writers (and readers!) who would like to write reviews of books on topics of interest to our membership. Write to <*peter@matrix.net*>.
- The *;login:* editors seek interesting individuals for interviews. Please submit your ideas to <*login@usenix.org*>.
- *;login:* is seeking attendees of non-USENIX conferences who can write lucid conference summaries. Contact Tina Darmohray, <*tmd@usenix.org*> for eligibility and remuneration info. Conferences of interest include (but are not limited to): Interop, Internet World, Comdex, CES, SOSP, Linux World, O'Reilly Perl Conference, Blackhat (multiple venues), SANS, and IEEE networking conferences. Financial assistance to cover expenses may be available. Contact <*login@usenix.org*>.
- *;login:* always needs conference summarizers for USENIX conferences too! Contact Alain Hénon <*ah@usenix.org*> if you'd like to help.
- The *;login:* staff seeks columnists for:
  - Perl
  - Large site issues (Giga-LISA),
  - Hardware technology (e.g., the future of rotating storage)
  - General technology (e.g., the new triple-wide plasma screens, quantum computing, printing, portable computing)
  - Paradigms that work for you (PDAs, RCS vs. CVS, using laptops during commutes, how you store voluminous mail, file organization, policies of all sorts)
  - Comics/cartoons (need to find them, not necessarily draw them).

  Contact <*login@usenix.org*>.
- The *;login:* staff seeks editors for "special topics" issues or partial issues. If you would like to assemble a collection of articles on a particular topic please contact Rob Kolstad, <*kolstad@usenix.org*>. (See, for example, the November 2000 issue on Security). This is a paid position.