



By Chris Cobbs

OF THE SENTINEL STAFF



A banger, a swinger and an engineer will spend five hours Saturday locked in abstract thought, seeking the perfect algorithm and churning out code in Pascal, Java and C++,

with no spare time for debugging.

These three are University of Central Florida computer science whizzes Ambrose Feinstein, Jonathan Kolb and Phillip Dexheimer, who will compete in the 24th annual World Finals of the Association for Computing Machinery International Collegiate Programming Contest at the Radisson Hotel Universal in Orlando.

Sponsored by IBM, the event amounts to the Super Bowl of collegiate computer programmers. Sixty teams from such schools as Harvard, Stanford, Massachusetts Institute of Technology and California Institute of Technology will attempt to solve eight computer programming problems in five hours. The winners will receive scholarships, IBM hardware and software and the association's "smartest trophy in the world."

The 60 teams are survivors of the overall competition that began last fall, involving 2,400 teams and 13,000 students from 69 countries.

"It's fair to say these are some of the best computer programmers in the world," said Gabriel Silberman, program director of IBM's Centre for Advanced Studies and sponsor executive for the contest. "The field is extremely competitive."

The UCF group will try to uphold a track record that includes eight first-place finishes in regional competition and five top-10 finishes in the finals since 1982.

## 3 UCF whizzes ready to rumble at programmers' Super Bowl

"We don't expect to win," Dexheimer, 21, said, "but we do expect top 10 and we would be happy with top five."

Feinstein, 19, who enrolled at UCF when he was 13 and is partial to such statements as "I like more abstract things without a clear-cut GUI in front of them," is more optimistic about the team's chances.

"If we have a good day, and we get a good problem set, we can win," he said.

Like the other teams, UCF's threesome — all graduates of Orlando's Edgewater High School — will share a computer terminal and take turns inputting solutions. Problems are divided according to individual programming specialties.

Feinstein, the designated "banger," attacks the fast and easy problems. Kolb, 21, the "engineer," takes on the more complex, grueling problems, while Dexheimer, the "swinger," gets the leftovers.

Directed by faculty adviser Ali Orooji, the team also has an alternate member, Sandra Powers, a graduate student who attended Merritt Island High School.

Powers can fill any role but specializes in swinging.

"I'm generally more comfortable as swinger," she said. "That term causes some joking in practice. I don't have the speed to be a good banger, but I can engineer when I need to."

Problems are written in regular language, but the solutions are couched in computer programming languages — Pascal, Java and C++. Because of the



**Geniuses at work.** Jonathan Kolb (left), Ambrose Feinstein and Phillip Dexheimer concentrate during a practice session. The real test will be held Saturday.

### COULD YOU DO THIS?

Here's an example of the problems a team must solve:

Consider a 14-digit credit card number such as 312-5600-196-431-2. Let's say the card holder is buying from a mail-order catalog and writes out his credit card number on the form. His handwriting is sloppy, and when the order arrives at the company, the

sales clerk is having a bad day. She punches 313 into the computer instead of 312, or perhaps transposes the 56 to 65.

Write a program that, given a credit card number, determines whether the number is valid.

**ANSWER: PAGE F-5**

Please see **TEAM E-5**



ANGELA PETERSON/THE ORLANDO SENTINEL

**Second opinion.** Jonathan Kolb (left), Ambrose Feinstein consult. 'We want to live up to the legacy of other UCF teams,' says Feinstein.

## Bragging rights rest on steely nerves, practice

**TEAM** from E-1

five-hour time limit, there's a premium on finding solutions without wasting time on false starts.

"It's very important to be careful so you get a problem right the first try," said Orooji, who has served as faculty adviser for 11 years. "The top teams usually finish six problems, but some teams only finish one. It's a great joy to get a problem right."

Teams from such countries as China, Germany, Poland and Russia will compete in Saturday's world finals. All must be fluent in English, since problems and contest rules are written in that language.

Even if the contestants didn't speak the same language, they all speak programming.

"Two programmers who don't share a spoken language could understand each other's code," Feinstein said.

The magic word for computer geeks the world over is algorithm.

In simplest terms, an algorithm is a recipe or set of instructions. Of course, Feinstein describes it a bit differently: "You have a problem. An algorithm is a mechanical means of transforming an input for a problem to the correct output for the problem. An algorithm must be the correct solution to the problem."

With so much at stake, the contestants are bound to be tense. "We're not always friends during the contest," Dexheimer said. "We may snap at each other, then calm down before it's over."

But the programmers know their stuff so well, frayed nerves shouldn't be a problem, Orooji said. "World bragging rights are on the line, but these guys are not nervous. We have practiced a lot. These guys are ready to go."

And if there is any fear, it's the fear of not doing well, Kolb said.

"It's not a personal fear of failure," Feinstein said. "It's that we want to live up to the legacy of other UCF teams. We want to continue the tradition."

## PIECE OF CAKE, RIGHT?

*Here's the answer to the problem on E-1. We know, you would have figured it out if you had just a little more time...*

```
#include <stdio.h>
#include <stdlib.h>
#include <ctype.h>
#include <string.h>
int nums [32];
void main()
{
    FILE *fin = fopen("credit.in", "rt");
    if (fin == NULL)
    {
        printf("unable to open credit.in\n");
        return;
    }
    char data[200];
    fgets(data, 190, fin);
    int num_cases = atoi(data);
    int offset,j;
    for(int i=0; i<num_cases; i++)
    {
        fgets(data, 190, fin);
        for(j=0, offset=0; data[j]; j++)
            if (isdigit(data[j]))
                nums[offset++] = data[j]-'0';
        int odd_sum = 0, over_four = 0, even_sum = 0;
        for(j=0; j<14; j+=2)
        {
            odd_sum += nums[j];
            if (nums[j]>4) over_four++;
        }
        odd_sum *=2;
        odd_sum += over_four;
        for(j=1; j<13; j+=2)
        {
            even_sum += nums[j];
        }
        int total = odd_sum + even_sum;
        int next_higher = ((total+9)\10)*10;
        int check_num = next_higher-total;
        while (data[strlen(data)-1] <= ' ')
            data[strlen(data)-1] = 0;
        printf("%s is %s valid\n", data, nums[13] == check_num ? "" : "not");
    }
    fclose(fin);
}
```