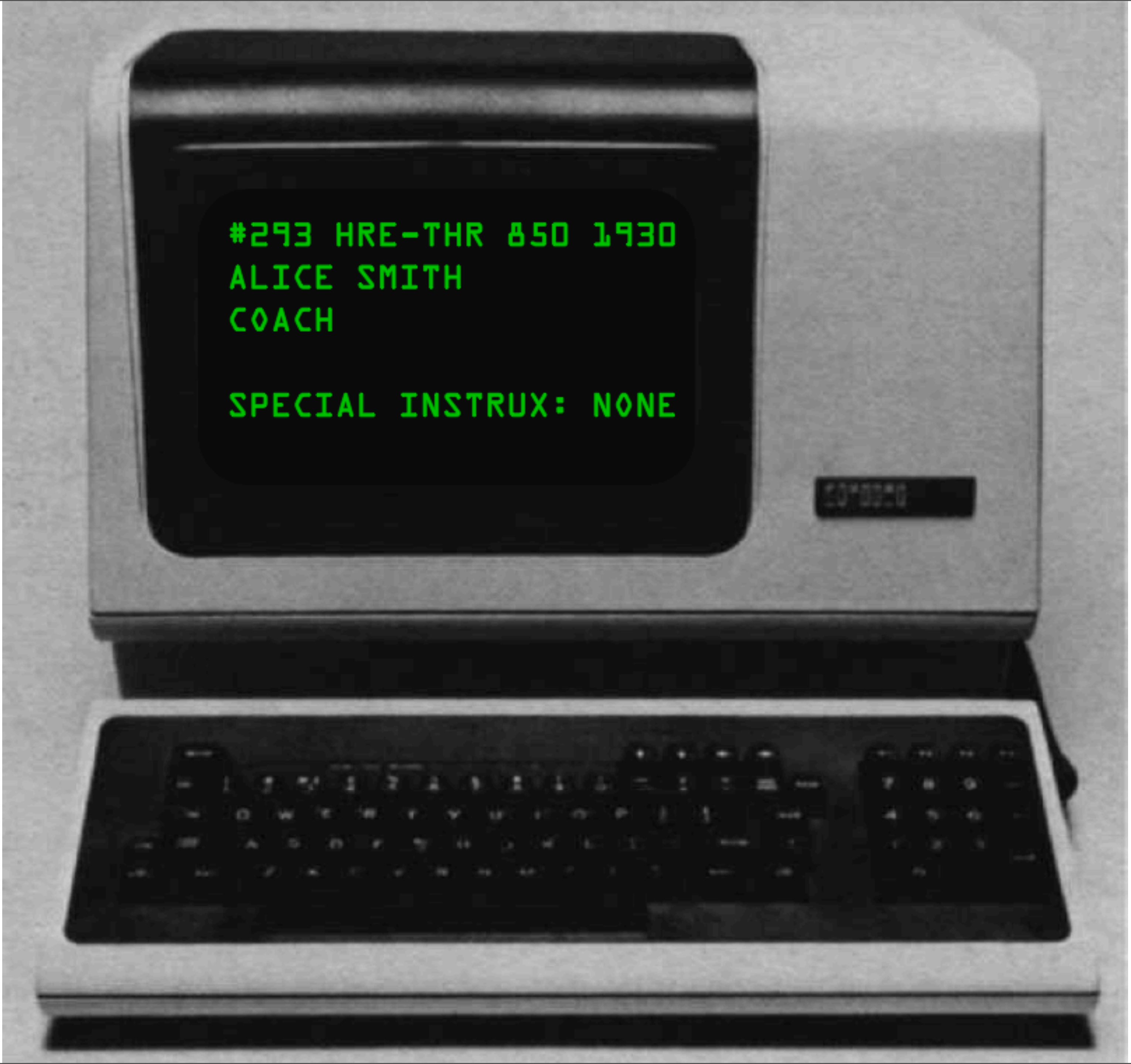
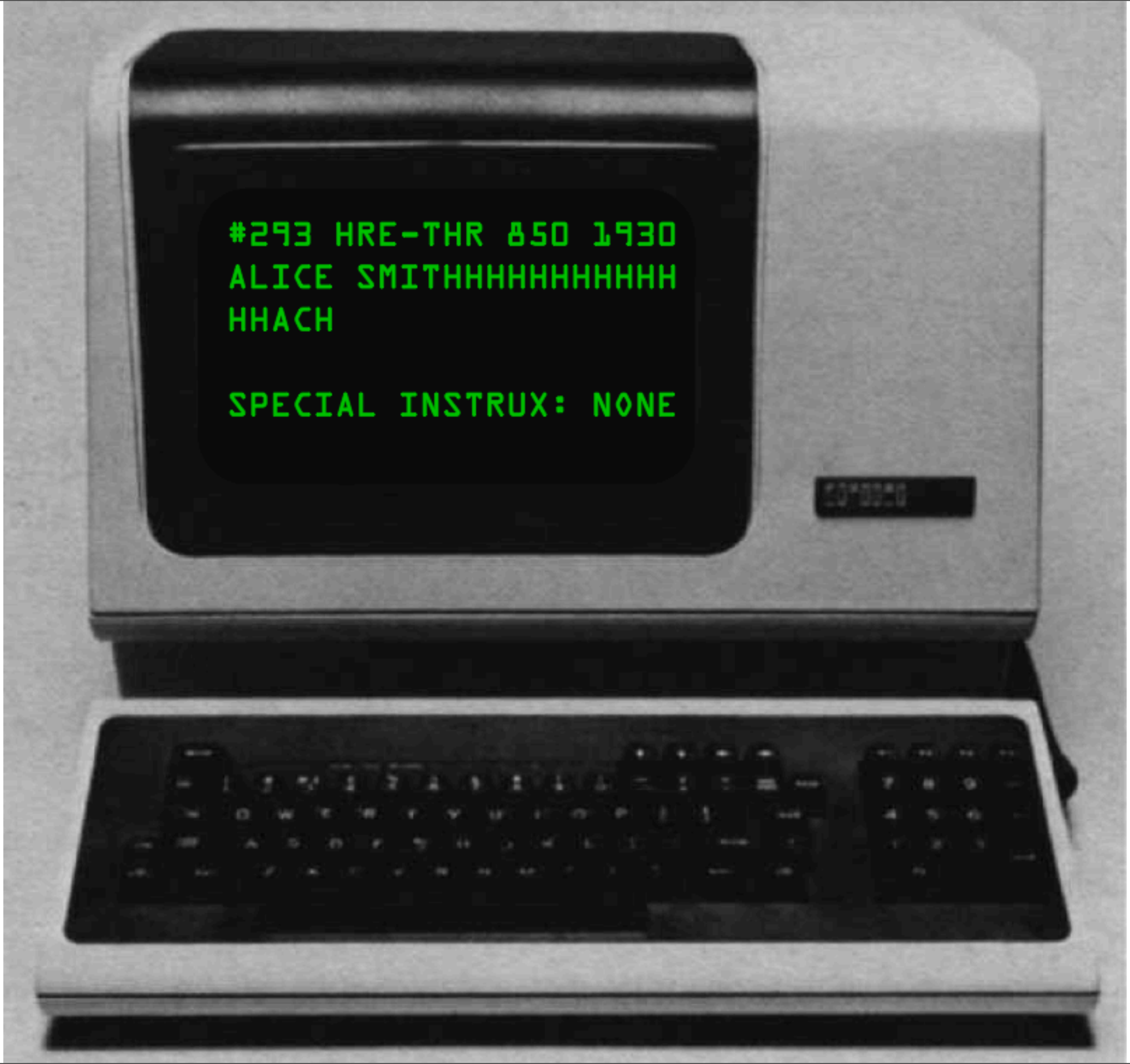
# Software Security, Implementation Flaws, and Memory Safety



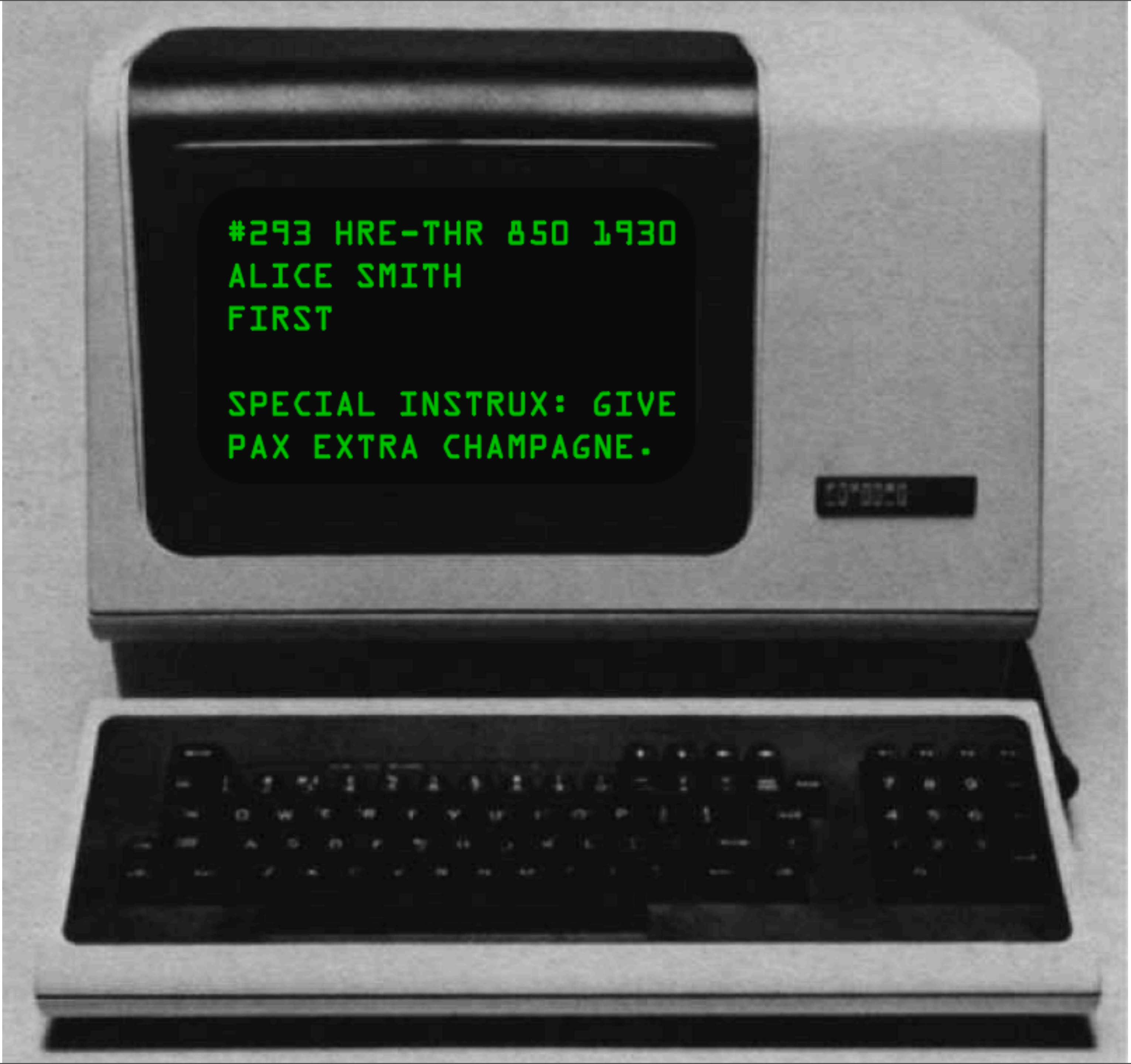
```
#293 HRE-THR 850 1930
ALICE SMITH
COACH

SPECIAL INSTRUX: NONE
```



```
#293 HRE-THR 850 1930
ALICE SMITHHHHHHHHHHH
HHACH

SPECIAL INSTRUX: NONE
```



```
#293 HRE-THR 850 1930
ALICE SMITH
FIRST

SPECIAL INSTRUX: GIVE
PAX EXTRA CHAMPAGNE.
```

```
char name[20];

void vulnerable() {
  gets(name);
}
```

```
char name[20];
char instrux[80] = "none";

void vulnerable() {
  gets(name);
}
```

```
char line[512];
char command[] = "/usr/bin/finger";

void main() {
  gets(line);
  ...
  execv(command, ...);
}
```

```
char name[20];
int  seatinfirstclass = 0;

void vulnerable() {
  gets(name);
}
```

```
char name[20];
int  authenticated = 0;

void vulnerable() {
  gets(name);
}
```

```
void vulnerable() {
  char buf[64];
  gets(buf);
  ...
}
```

```c
void still_vulnerable() {
  char buf = malloc(64);
  gets(buf);
  ...
}
```

```
void safe() {
  char buf[64];
  fgets(buf, sizeof buf, stdin);
  ...
}
```

```
void vulnerable() {
  char buf[64];
  if (fgets(buf, 64, stdin) == NULL)
    return;
  printf(buf);
}
```

```
void vulnerable(int len, char *data) {
  char buf[64];
  if (len > 64)
    return;
  memcpy(buf, data, len);
}
```

```
void safe(size_t len, char *data) {
  char buf[64];
  if (len > 64)
    return;
  memcpy(buf, data, len);
}
```

```
void vulnerable(size_t len, char *data) {
  char *buf = malloc(len+2);
  memcpy(buf, data, len);
  buf[len] = '\n';
  buf[len+1] = '\0';
}
```

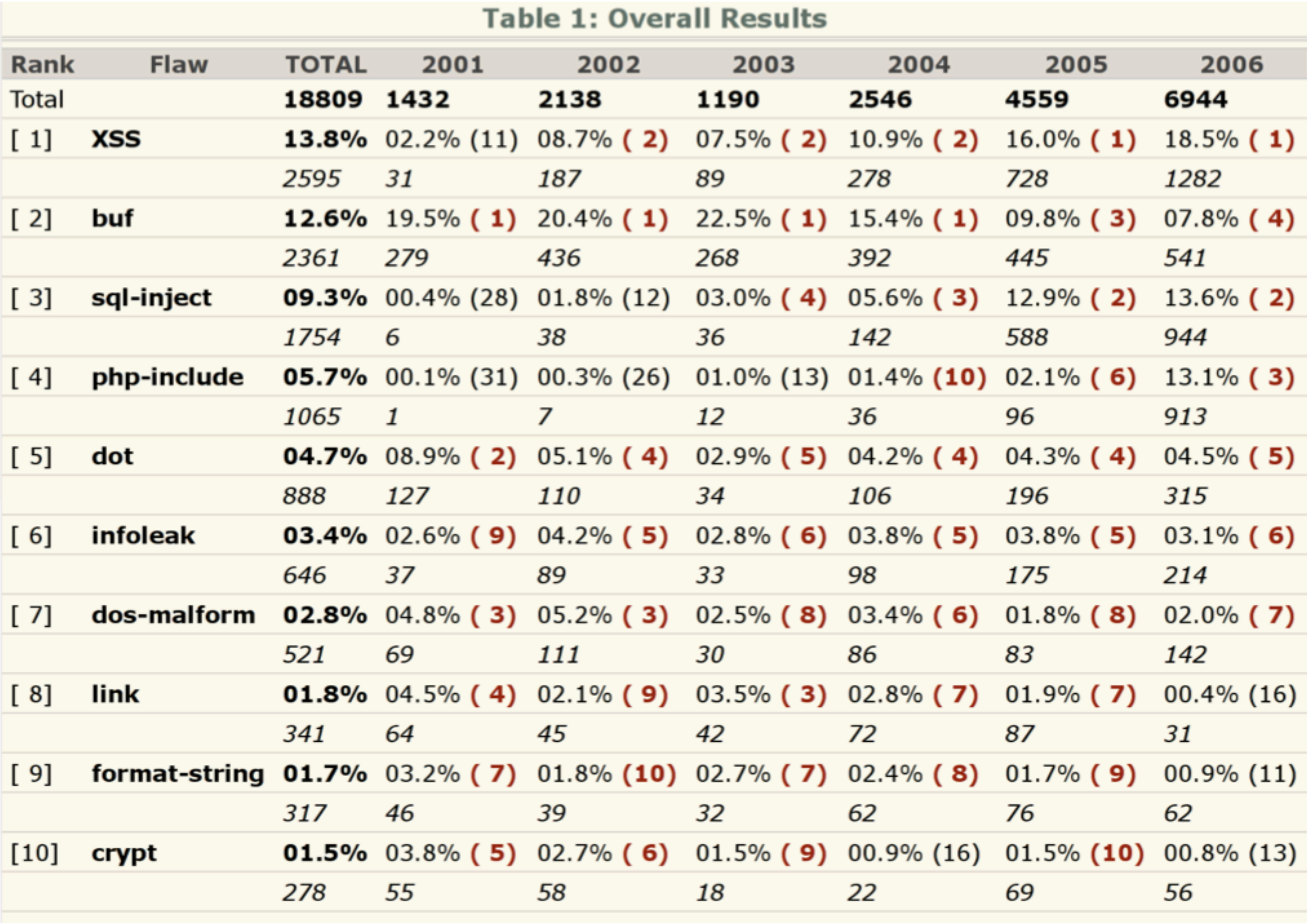
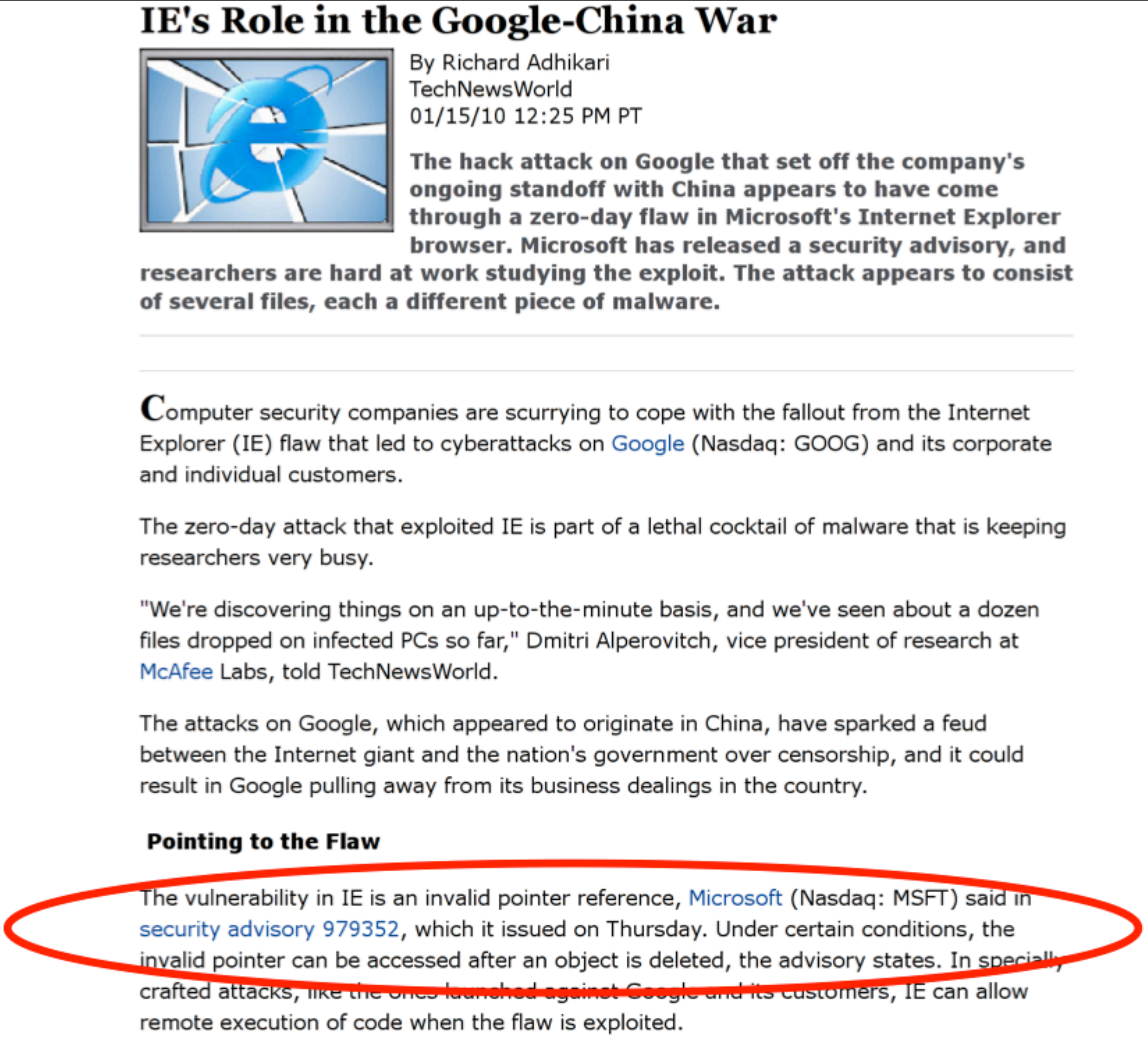


Table 1: Overall Results

| Rank | Flaw | TOTAL | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|---|
| Total | | **18809** | **1432** | **2138** | **1190** | **2546** | **4559** | **6944** |
| [ 1] | **XSS** | **13.8%** | 02.2% (11) | 08.7% ( 2) | 07.5% ( 2) | 10.9% ( 2) | 16.0% ( 1) | 18.5% ( 1) |
| | | *2595* | *31* | *187* | *89* | *278* | *728* | *1282* |
| [ 2] | **buf** | **12.6%** | 19.5% ( 1) | 20.4% ( 1) | 22.5% ( 1) | 15.4% ( 1) | 09.8% ( 3) | 07.8% ( 4) |
| | | *2361* | *279* | *436* | *268* | *392* | *445* | *541* |
| [ 3] | **sql-inject** | **09.3%** | 00.4% (28) | 01.8% (12) | 03.0% ( 4) | 05.6% ( 3) | 12.9% ( 2) | 13.6% ( 2) |
| | | *1754* | *6* | *38* | *36* | *142* | *588* | *944* |
| [ 4] | **php-include** | **05.7%** | 00.1% (31) | 00.3% (26) | 01.0% (13) | 01.4% (10) | 02.1% ( 6) | 13.1% ( 3) |
| | | *1065* | *1* | *7* | *12* | *36* | *96* | *913* |
| [ 5] | **dot** | **04.7%** | 08.9% ( 2) | 05.1% ( 4) | 02.9% ( 5) | 04.2% ( 4) | 04.3% ( 4) | 04.5% ( 5) |
| | | *888* | *127* | *110* | *34* | *106* | *196* | *315* |
| [ 6] | **infoleak** | **03.4%** | 02.6% ( 9) | 04.2% ( 5) | 02.8% ( 6) | 03.8% ( 5) | 03.8% ( 5) | 03.1% ( 6) |
| | | *646* | *37* | *89* | *33* | *98* | *175* | *214* |
| [ 7] | **dos-malform** | **02.8%** | 04.8% ( 3) | 05.2% ( 3) | 02.5% ( 8) | 03.4% ( 6) | 01.8% ( 8) | 02.0% ( 7) |
| | | *521* | *69* | *111* | *30* | *86* | *83* | *142* |
| [ 8] | **link** | **01.8%** | 04.5% ( 4) | 02.1% ( 9) | 03.5% ( 3) | 02.8% ( 7) | 01.9% ( 7) | 00.4% (16) |
| | | *341* | *64* | *45* | *42* | *72* | *87* | *31* |
| [ 9] | **format-string** | **01.7%** | 03.2% ( 7) | 01.8% (10) | 02.7% ( 7) | 02.4% ( 8) | 01.7% ( 9) | 00.9% (11) |
| | | *317* | *46* | *39* | *32* | *62* | *76* | *62* |
| [10] | **crypt** | **01.5%** | 03.8% ( 5) | 02.7% ( 6) | 01.5% ( 9) | 00.9% (16) | 01.5% (10) | 00.8% (13) |
| | | *278* | *55* | *58* | *18* | *22* | *69* | *56* |



# IE's Role in the Google-China War

By Richard Adhikari
TechNewsWorld
01/15/10 12:25 PM PT

**The hack attack on Google that set off the company's ongoing standoff with China appears to have come through a zero-day flaw in Microsoft's Internet Explorer browser. Microsoft has released a security advisory, and researchers are hard at work studying the exploit. The attack appears to consist of several files, each a different piece of malware.**

Computer security companies are scurrying to cope with the fallout from the Internet Explorer (IE) flaw that led to cyberattacks on Google (Nasdaq: GOOG) and its corporate and individual customers.

The zero-day attack that exploited IE is part of a lethal cocktail of malware that is keeping researchers very busy.

"We're discovering things on an up-to-the-minute basis, and we've seen about a dozen files dropped on infected PCs so far," Dmitri Alperovitch, vice president of research at McAfee Labs, told TechNewsWorld.

The attacks on Google, which appeared to originate in China, have sparked a feud between the Internet giant and the nation's government over censorship, and it could result in Google pulling away from its business dealings in the country.

### Pointing to the Flaw

The vulnerability in IE is an invalid pointer reference, Microsoft (Nasdaq: MSFT) said in security advisory 979352, which it issued on Thursday. Under certain conditions, the invalid pointer can be accessed after an object is deleted, the advisory states. In specially crafted attacks, like the ones launched against Google and its customers, IE can allow remote execution of code when the flaw is exploited.

# Broward Vote-Counting Blunder Changes Amendment Result

POSTED: 1:34 pm EST November 4, 2004

**BROWARD COUNTY, Fla. --** The Broward County Elections Department has egg on its face today after a computer glitch misreported a key amendment race, according to WPLG-TV in Miami.

Amendment 4, which would allow Miami-Dade and Broward counties to hold a future election to decide if slot machines should be allowed at racetracks, was thought to be tied. But now that a computer glitch for machines counting absentee ballots has been exposed, it turns out the amendment passed.

Broward County Mayor Ilene Lieberman says voting counting error is an "embarrassing mistake."

"The software is not geared to count more than 32,000 votes in a precinct. So what happens when it gets to 32,000 is the software starts counting backward," said Broward County Mayor Ilene Lieberman.

That means that Amendment 4 passed in Broward County by more than 240,000 votes rather than the 166,000-vote margin reported Wednesday night. That increase changes the overall statewide results in what had been a neck-and-neck race, one for which recounts had been going on today. But with news of Broward's error, it's clear amendment 4 passed.