FEW, Afdeling Informatica
Vrije Universiteit

Voortentamen bedrijfssystemen
26 March 2003

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All questions count equally. The final grade is the sum of the grades for the questions.

1. Suppose that a MINIX user, Jan, has a file A. A second MINIX user, Els, makes a link to A and calls it B.
   Then Jan types: rm A
   Afterwards Els types: cat B
   What happens? Explain your answer.

2. UNIX has a system call CHROOT. Only the superuser may make this call. Why?

3. Below is a proposed solution for the producer-consumer problem described in the book. It uses semaphores. Is this solution correct? Explain.

```
void producer(void)
{ int item;
while(1) {
  produce_item(&item);
  down(&mutex);
  down(&empty);
  enter_item(item);
  up(&mutex);
  up(&full);
}
```

```
void consumer(void)
{ int item;
while (1) {
  down(&mutex);
  down(&full);
  remove_item(&item);
  up(&mutex);
  up(&empty);
  consume_item(item);
}
```

4. Explain the difference between policy and mechanism. Give an example.

5. MINIX is largely written in C. Still, there is a little bit written in assembler. Name three parts of MINIX that are almost impossible to write in assembler. Explain.