Dept. Math. & Comp. Sc.	**Midterm Operating Systems**
Vrije Universiteit	**27.03.2006**

1a Explain what a character special file is, and how it can be used to transfer data over a network. *5pt*

1b What does the following program establish? *5pt*

```
int main() {
  if ( fork() )
    wait();
  else {
    execve( program, parameters, 0 );
    exit(0);
  }
}
```

1c How are files deleted in UNIX systems, given that there is no delete operation? *5pt*

2a Explain what a binary semaphore is. Be precise! *5pt*

2b Give a solution to the producer/consumer problem using binary semaphores. *10pt*

3a What is the difference between memory-mapped I/O and I/O-mapped I/O? *5pt*

3b Wat is an interrupt vector? *5pt*

3c What is the role of the system task in MINIX 3? *5pt*

Grading: *The final grade is calculated by accumulating the scores per question (maximum: 45 points), and adding 5 bonus points. The maximum total MT is therefore 50 points. The final exam consists of two parts. Part 1 covers the same material as the midterm. Let $P1$ be the number of points for part 1, and $P2$ the number of points for part 2 (each being at most 50 points). The final grade E is computed as $E = \max\{MT, P1\} + P2$. The midterm exam counts only for first full exam.*