Exercise 8.1:  
(4 points)  
Construct a protocol for the following problem:  
Given three players, 32 cards shall be dealt out as in a skat game, i.e., each player  
gets ten cards and two cards—the skat—are put aside. It must be impossible that  
any player can influence the cards dealt out for any player. Furthermore, it is not  
allowed to use a trusted center.  

Exercise 8.2:  
(4 points)  
Construct a protocol for the following problem:  
Three students want to determine who has the most money, but none of them  
wants to say how much money he has actually. Furthermore, no other information  
except who has the most money must be revealed; in particular, it must not be  
revealed who has the least money. The number of communication rounds shall be  
independent of the capital. It is not allowed to use a trusted center.  

Hint: Assume that the money of the three students is less than 10,000 €.  

Exercise 8.3:  
(4 points)  
Construct a protocol for the following problem:  
Three persons, A, B, and C, know secret numbers $s_A$, $s_B$, and $s_C$, respectively. They  
want to know whether their numbers are different, but none of them wants to reveal  
his number. If there are equal numbers, no one may discover which numbers are  
equal. It is not allowed to use a trusted center.  

Exercise 8.4:  
(4 points)  
Construct a protocol for the following problem:  
Three people want to elect one of them randomly. It must be possible that two  
people cooperate in order to manipulate the election arbitrarily. If this happens,  
the third person must not discover it. It is not allowed to use a trusted center.  

Deadline: Wednesday, December 12, 2012, 15:00,  
in the lecture or in the letterbox in front of i1.