

**Algorithms in Genome Research**  
**Winter 2009/2010**

**Exercises**

**Number 3, Discussion: 2009 November 13**

1. Obviously there exist bijective mappings between the numbers  $1, 2, \dots, n!$  and the (unsigned) permutations over  $\{1, 2, \dots, n\}$ . Find such a mapping that is computable in both directions in polynomial time.
2. Given again the two signed permutations from last week

$$A = 0 \ 1 \ 2 \ 3 \ 4 \ 5 \ 6 \ 7 \ 8 \ 9 \ 10 \ 11 \ 12 \ 13 \ 14 \ 15 \ 16$$

and

$$B = 0 \ -3 \ 1 \ 2 \ 4 \ 6 \ 5 \ 7 \ -15 \ -13 \ -14 \ -12 \ -10 \ -11 \ -9 \ 8 \ 16.$$

- (a) Find the components
- (b) Which of the components are hurdles?
- (c) Are there any super hurdles or fortresses?
- (d) Sort the components separately.