INF223 Categories for Software Engineering
Spring 2006

— Obligatory Exercise Set 1 , Deadline 20.02.2006 (lecture) —

1. Prove the following statement:
   A graph homomorphism $\phi = (\phi_0, \phi_1) : G \to H$ is iso in **GRAPH iff** $\phi_0 : G_0 \to H_0$ and $\phi_1 : G_1 \to H_1$ are iso's in **SET**, i.e., bijective maps.
   Hint: Be aware that you have to show, for one direction, the homomorphism property!

2. Prove that the composition of monos is mono as well.

3. Prove the following equivalence for any morphism $f : x \to y$ in any category **C**:

$$f \text{ iso iff } f \text{ epi and split mono.}$$