

# homework 8

cs201.1

due 30 march 1999

## real problems

1. A relation  $S$  is a symmetric closure of  $R$  if and only if it has the following three properties:

I)  $R \subseteq S$ .

II)  $S$  is symmetric.

III) For any other relation  $Q$ , if  $R \subseteq Q$  and  $Q$  is symmetric, then  $S \subseteq Q$ .

Prove that  $R \cup R^{-1}$  is a symmetric closure of  $R$ . ( $R^{-1}$  is the reverse of  $R$ , i.e.  $aRb \Leftrightarrow bR^{-1}a$ .)