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--
-- Address management for Addressbook application
--
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module AddressDB (
  Address(..),
  AddressBook,
  newAddressBook, -- :: AddressBook
  insertAddress,  -- :: AddressBook -> Address -> AddressBook
  deleteAddress,  -- :: AddressBook -> Address -> AddressBook
                  -- delete address in adr. book, returns
                  -- org. book if adr. not in book
  changeAddress,  -- :: AddressBook -> Address -> Address -> AddressBook
  findMatches,    -- :: AddressBook -> String -> [Address]
                  -- given a search string, find all entries
                  -- where str is a prefix of first or last name
) where

import Database

type FirstName = String
type LastName  = String
type PhoneNr   = Int

data Address = Address FirstName LastName PhoneNr
  deriving (Ord, Eq)

type AddressBook = Database Address

-- create new address book
newAddressBook :: AddressBook
newAddressBook = newDB

-- insert address
insertAddress :: AddressBook -> Address -> AddressBook
insertAddress adrBook addr =
  insertItemDB adrBook addr

-- delete address in adr. book, returns
-- org. book if adr. not in book
deleteAddress :: AddressBook -> Address -> AddressBook
deleteAddress = deleteItemDB

-- find all entries where search string is a
-- prefix of first or last name
findMatches :: AddressBook -> String -> [Address]
findMatches adrDB str =
  searchDB adrDB preFixAddr
  where prefix [] s = True
        prefix (x:xs) (y:ys) = (x == y) && (prefix xs ys)
        preFixAddr (Address fn ln _) =
          (prefix str fn) || (prefix str ln)

-- update an existing address
changeAddress :: AddressBook -> Address -> Address -> AddressBook
changeAddress = changeItemDB

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