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record.sml

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(* Author: Flavio Lerda *)
(* 15-212 Section C      *)
(* Code from recitation *)
(* March, 24th 2004     *)

type person = { name: string, age: int };

val person1 = { name = "Jack", age = 27 };
val person2 = { name = "Michael", age = 22 };
val person3 = { name = "Samantha", age = 21 };

val people = [ person1, person2, person3 ];

(* val age_of : person -> int *)
fun age_of (p: person): int =
  #age p;

val a1 = age_of person1;

(*
val age_of' = #age

  Error: unresolved flex record
  (can't tell what fields there are besides #age)
*)

(* val average_age : person list -> real *)
(* average_age l returns the average age *)
(* of the people in the list                *)
fun average_age (l: person list): real =
  let
    val ages = map #age l
    val reals = map real ages
    val sum = foldl op+ 0.0 reals
    val count = length l
  in
    sum / (real count)
  end;

val a = average_age people;

datatype pet_kind = CAT | DOG | BUNNY

type pet = { name: string, age: int, kind: pet_kind };

val pet1 = { name = "Fluffy", age = 3, pet_kind = BUNNY }

val a2 = #age pet1;

val a3 = #age person3;

(*
val _ = age_of pet1;

  Error: operator and operand don't agree [tycon mismatch]
  operator domain: person
  operand:          {age:int, name:string, pet_kind:pet_kind}
*)

```