1.1 OCaml code examples: Dictionary (k,v)

In this example, we will see a data structure called dictionary, which has some unique keys are associated to values.

Listing 1: dictionary

```ocaml
let students = [(1,"alice");
    (2,"bob");
    (3,"cathy");
    (4,"david")
];;

let rec lookup x l =
  match l with
  | [] -> raise Not_found
  | (k, v)::t ->
    if k = x then v else lookup x t
 ; ;

let rec add k v d=match d with
  | [] -> [(k,v)]
  | (k',v')::t ->
    if k=k' then (k,v)::t
    else (k',v'):: add k v t
 ; ;

let rec remove k d=match d with
  | [] -> []
  | (k',v')::t ->
    if k=k' then t
    else (k',v'):: remove k t
 ; ;

let rec key_exists k d= try
  let _=lookup k d in true
 with Not_found->false
 ; ;
```
let s = lookup 3 students;;
print_string ("3"^s^"\n");;
let students = add 5 "ethan" students;;
let s = lookup 5 students;;
print_string ("5:"^s^"\n");;
let students = remove 3 students;;
let s = key_exists 3 students;;
print_string (string_of_bool s);;

References

[OCaml from the very beginning]  JOHN WHITTINGTON Coherent Press