

## Ocaml examples

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## 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

```
1 (* dictionary look up *)
2 let students = [(1,"alice");
3                 (2,"bob");
4                 (3,"cathy");
5                 (4,"david")
6 ];;
7
8 let rec lookup x l =
9     match l with
10    [] -> raise Not_found
11    |(k, v)::t ->
12        if k = x then v else lookup x t
13 ;;
14
15 let rec add k v d = match d with
16 [] -> [(k,v)]
17 |(k',v')::t ->
18     if k=k' then (k,v)::t
19     else (k',v')::add k v t
20 ;;
21
22 let rec remove k d = match d with
23 [] -> []
24 |(k',v')::t ->
25     if k=k' then t
26     else (k',v')::remove k t
27 ;;
28
29 let rec key_exists k d =
30     try
31         let _ = lookup k d in true
32     with
33         Not_found -> false
34 ;;;
```

```
35  
36 let s = lookup 3 students;;  
37 print_string ("3" ^ s ^ "\n");;  
38 let students = add 5 "ethan" students;;  
39 let s = lookup 5 students;;  
40 print_string ("5:" ^ s ^ "\n");;  
41 let students = remove 3 students;;  
42 let s = key_exists 3 students;;  
43 print_string (string_of_bool s);;
```

## References

[OCaml from the very beginning] JOHN WHITTINGTON *Coherent Press*