Introduction to Key - Value Pairs

Today:
- What are Key-Value Pairs
- Why useful?
- Java Syntax (HashMap)
    - creating & modifying Key - Value Pairs
- Problems.

Want to store marks of 100 students.

	0	1	2	3	4								99
marks	70		85										45

Roll nos; 0, 1, 2, ... 99.

// marks[0] = 70; ← roll No.
marks[99] = 45;

Roll nos: "fw29-123" 84

I'd like: marks["fw29-123"] = 84 ;   ✗

Key = Rollno   Value = marks

"fw29-123"   84   \ — key-value pair
"fw29-224"   65
"fw29-351"   ~~92~~ 65   1 Key is unique ✓
"fw29-015"   39   ... 2. Ordering of key-value
"fw29-128"   ✗   69   is pairs
                                 not important

Also known as "Dictionary" D.S.
(Associative arrays)

Python —— Dictionary
C++ — Map . D.S
Java — HashMap D.S.

Java Syntax: (HashMap)

$int \ x = 10$

1. Create an empty HashMap

       type of key   type of value
HashMap < String , Integer) map ← var name
                                  (name of D.S)
     = new HashMap<>();

      "fw29-123" 84
      "fw29-224" ~~"Hello"~~

       char.x   int x
HashMap <Character, Integer)

    'a' : 65
    'b' : 66
    : :

HashMap (Student , Integer)

    name : ' '
    aage : ' '
    addr : ___

2. Add / Update key-value pairs

map.put ("fw29-123", 84);

map.put ("fw29-351", 65);
        key   value

map.put ("fw29-123", 95);

map

"fw29-123"	~~84~~ 95
"fw29-351"	65
~~"fw29-123"~~	~~95~~

// updates value if
the key is already
present in the D.S.

3. Search for values (given a key)

map.get ("fw29-123");   // will return value of
                         that key — 95.

map.get ("fw29-461");   → null. ← special value
                                   (null object)
              when key is
              NOT present in D.S.

map.getOrDefault ("fw29-461", -1);   → will be returned
                                       if the key is
      map   not present in
                                       the Hashmap.
   | "fw29-123"   95
   | "fw29-351"   65   can be any
   | fw29-461   -1   value of the
                            same type.

4.   Remove

   map.remove ("fw29-123");

              map
           "fw29-123"   95
           "fw29-351"   65