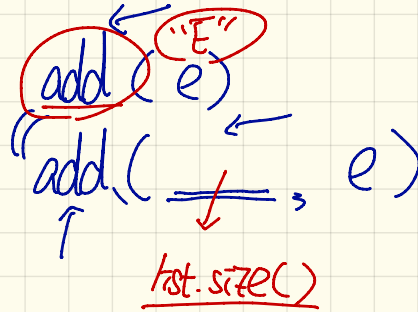
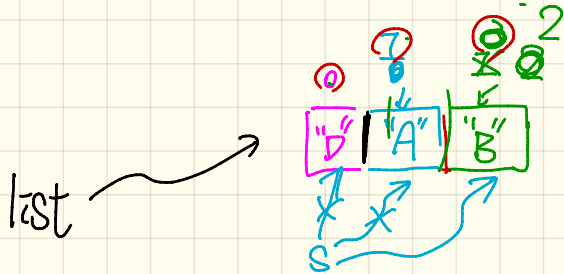


Tutorial on  
Java Collections

# ArrayList: Resizable Array

- indices start from 0



```
list.size() 0
list.add("A")
list.add("B")
list.add(1, "C")
list.add(0, "D")
```

```
list.remove("C")
```

```
ArrayList<String> list = ...
for (String s : list) {
    // re-assigned to an elem. in list
    s
}
}
```

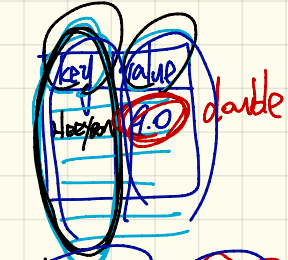
# HashMap: a Two-Column Table

- collection of **entries**
- each **entry**: **key** & **value**
- keys are **unique**

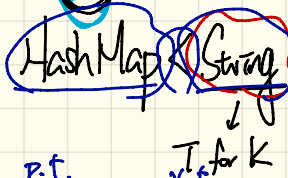
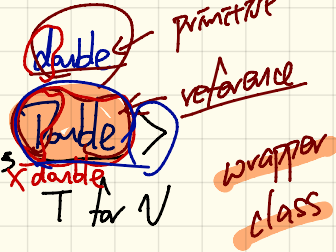
grades

String	Table
key	Value
"Alan"	8.0
"Mark"	7.5
"Tom"	6.0

5.5



double  $\leftrightarrow$  Double  
 primitive boxing/unboxing

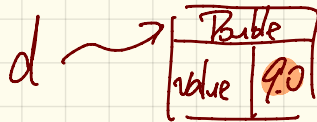


p.t.

int	Integer
char	Character
bool	Boolean
double	Double

v.t. for K

Double d = new Double(9.0);



```
grades.put("Alan", 8.0)
grades.put("Mark", 7.5)
grades.put("Tom", 6.0)
grades.put("Mark", 5.5)
```

HashMap < <sup>k</sup>String, <sup>v</sup>Double > grades = new ...

Approach 1 key by key

{ "Alan", "Mark", "Tom" }

```
for (String student : grades.keySet()) {  
    k. student  
    v. grades.get(student)  
}
```

Approach 2 entry by entry

{ Alan = 8.0, Mark = 5.5, Tom = 6.0 }

```
for (Entry<String, Double> e : grades.entrySet()) {  
    e.getKey() ←  
    e.getValue() ←  
}
```