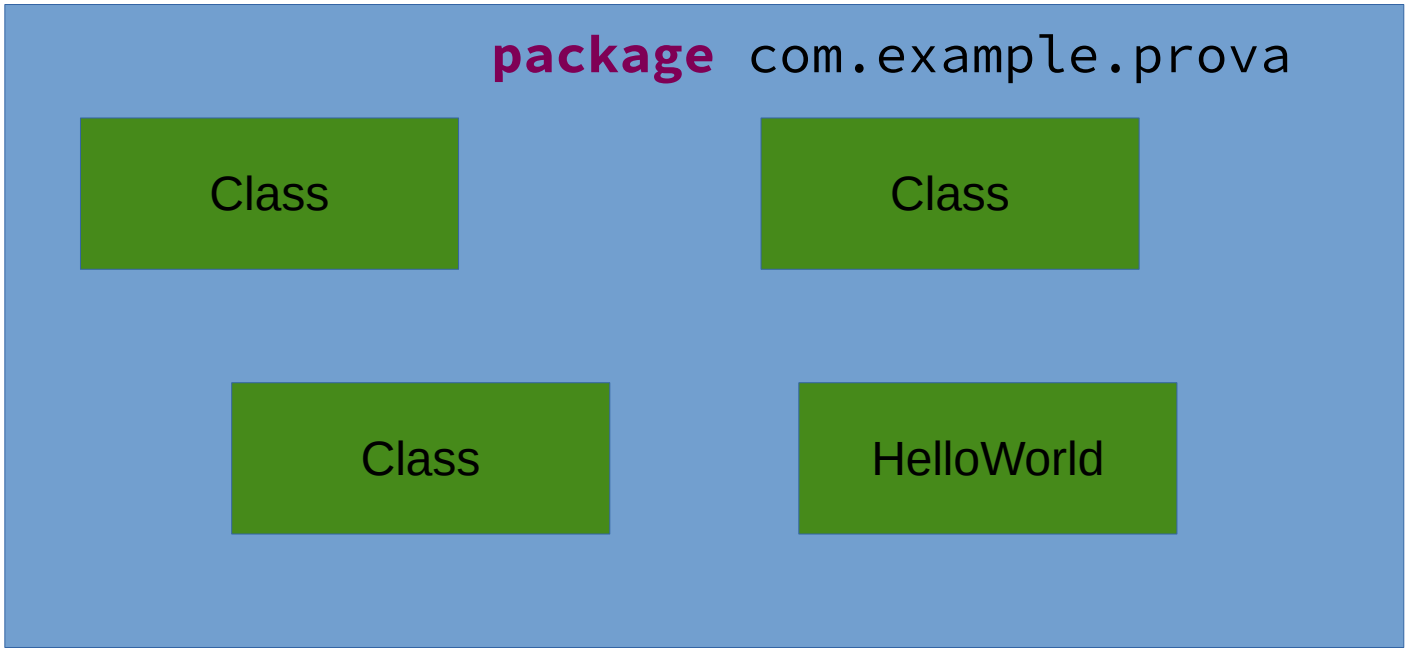
Java

15 Luglio 2021

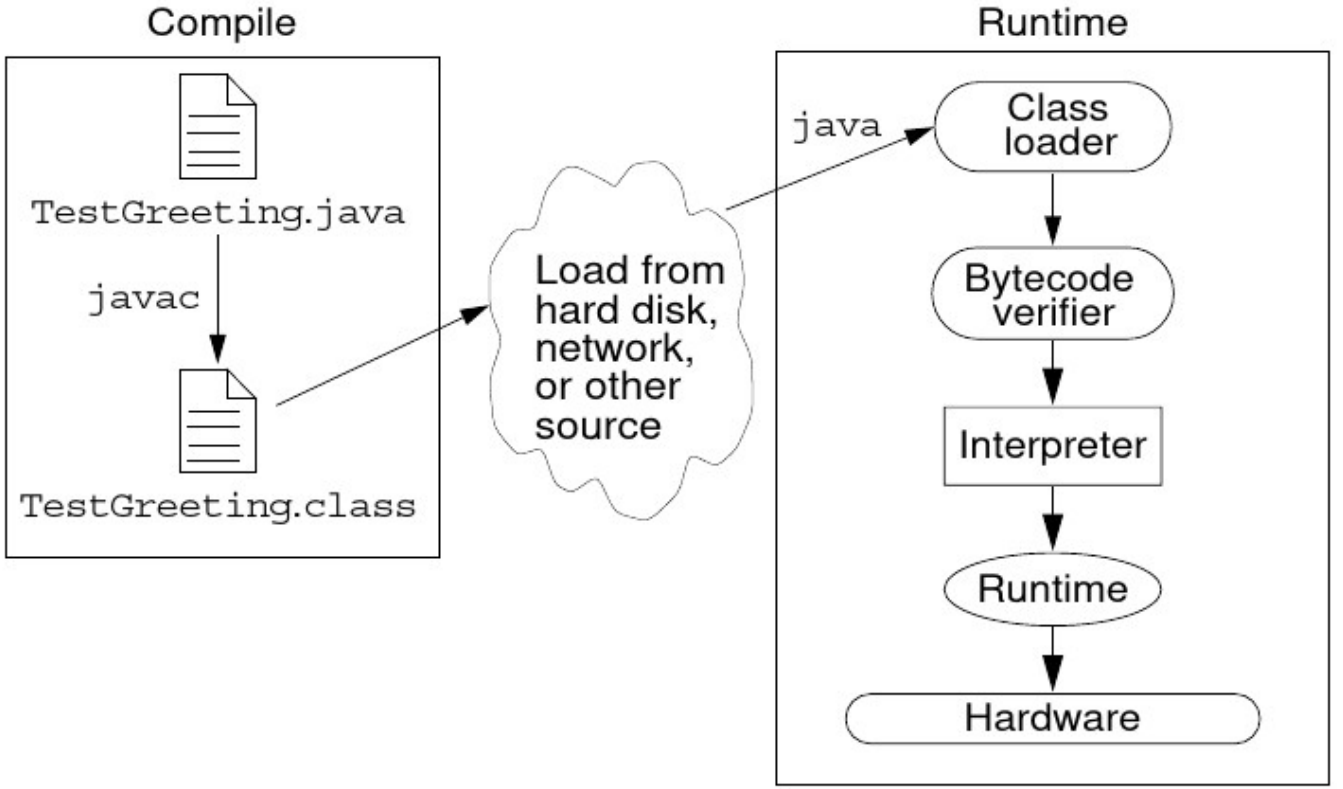
Java - Sorgenti

Package (pkg1.pkg2.pkg3….pkgn => /pkg1/pkg2/pkg3/...)



The Java Runtime Environment

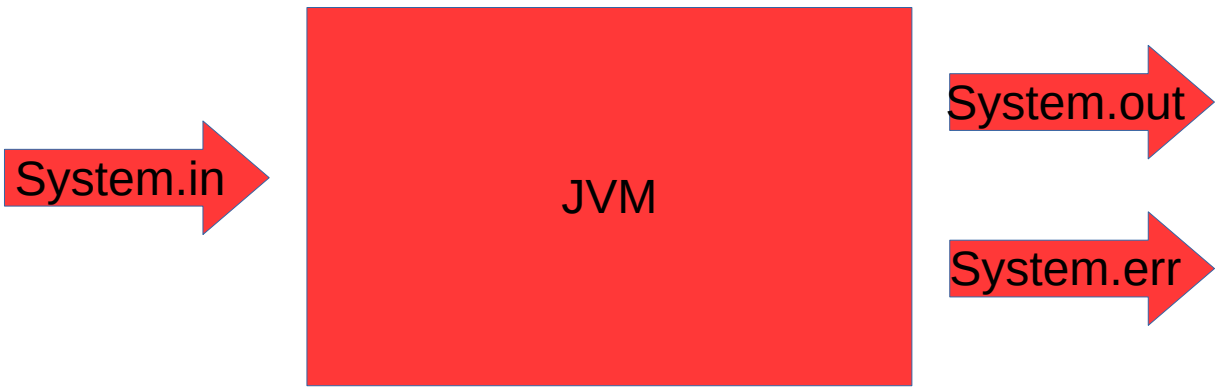
The Java application environment performs as follows:



Package

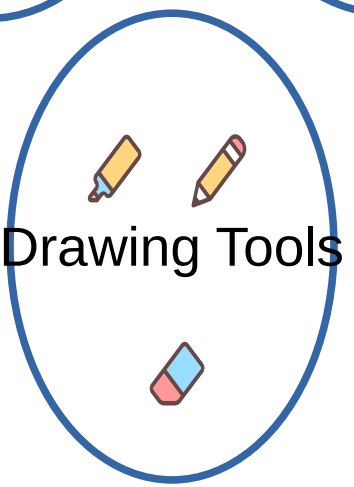
- Raggruppamento di “classi” in qualche modo collegate logicamente.
- Il package viene realizzato tramite una struttura di directory nel file-system.

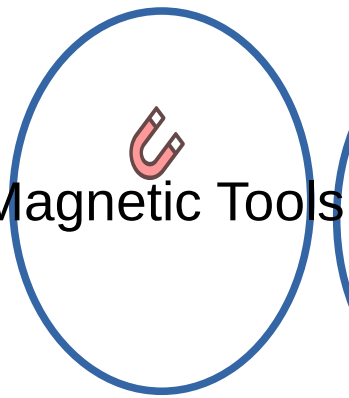
Canali i/o standard



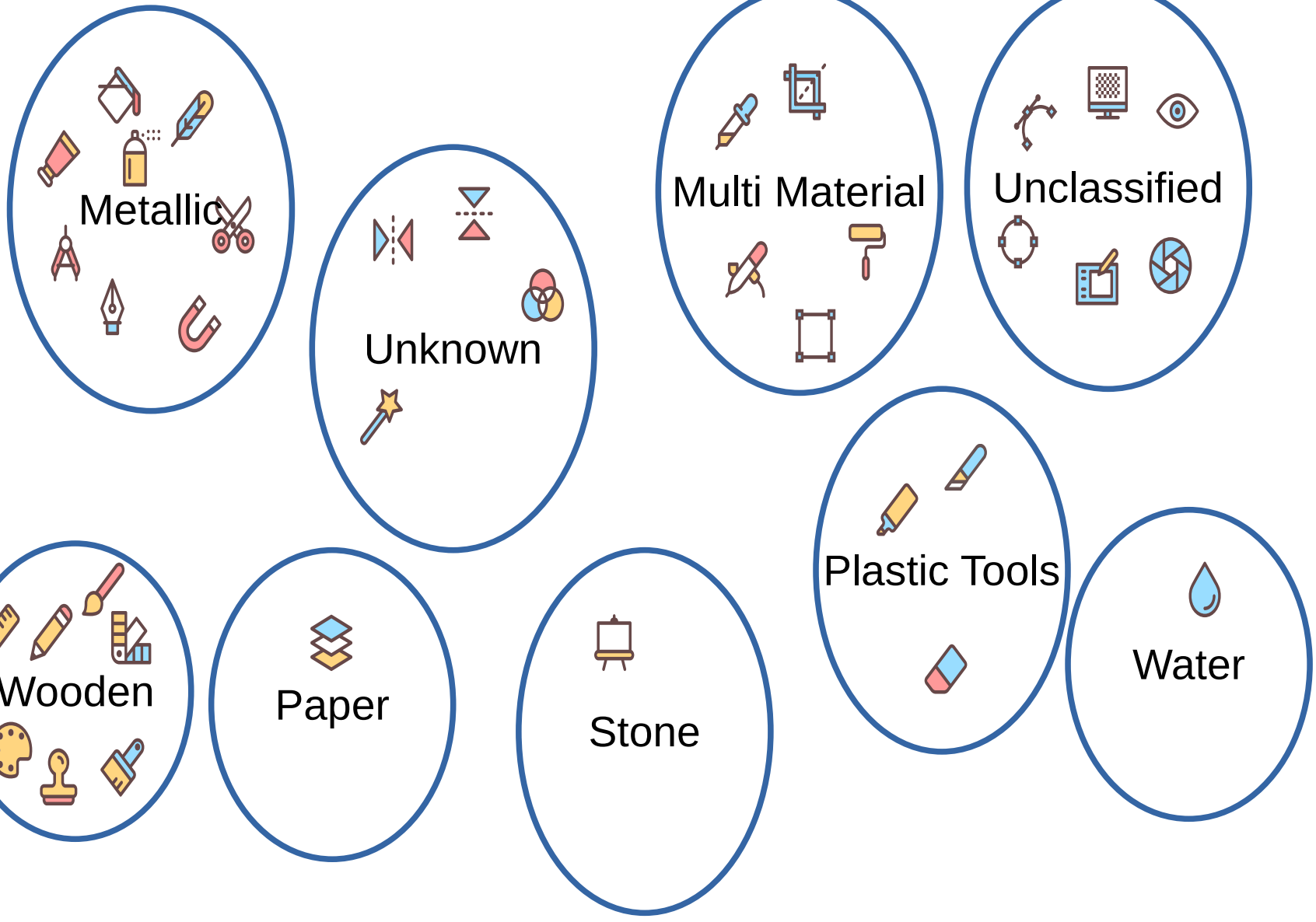
Objects

What is an Object?





Raggruppamento per **utilizzo**



Raggruppamento per **materiale**

Objects

Raggruppare =

Classificare

What is a **Class**?
= Blueprint (Progetto)
(Modello)(Astrazione)
=
Tipo

Objects

What is an Object? qualcosa che si costruisce a partire dalla classe.

Oggetto?

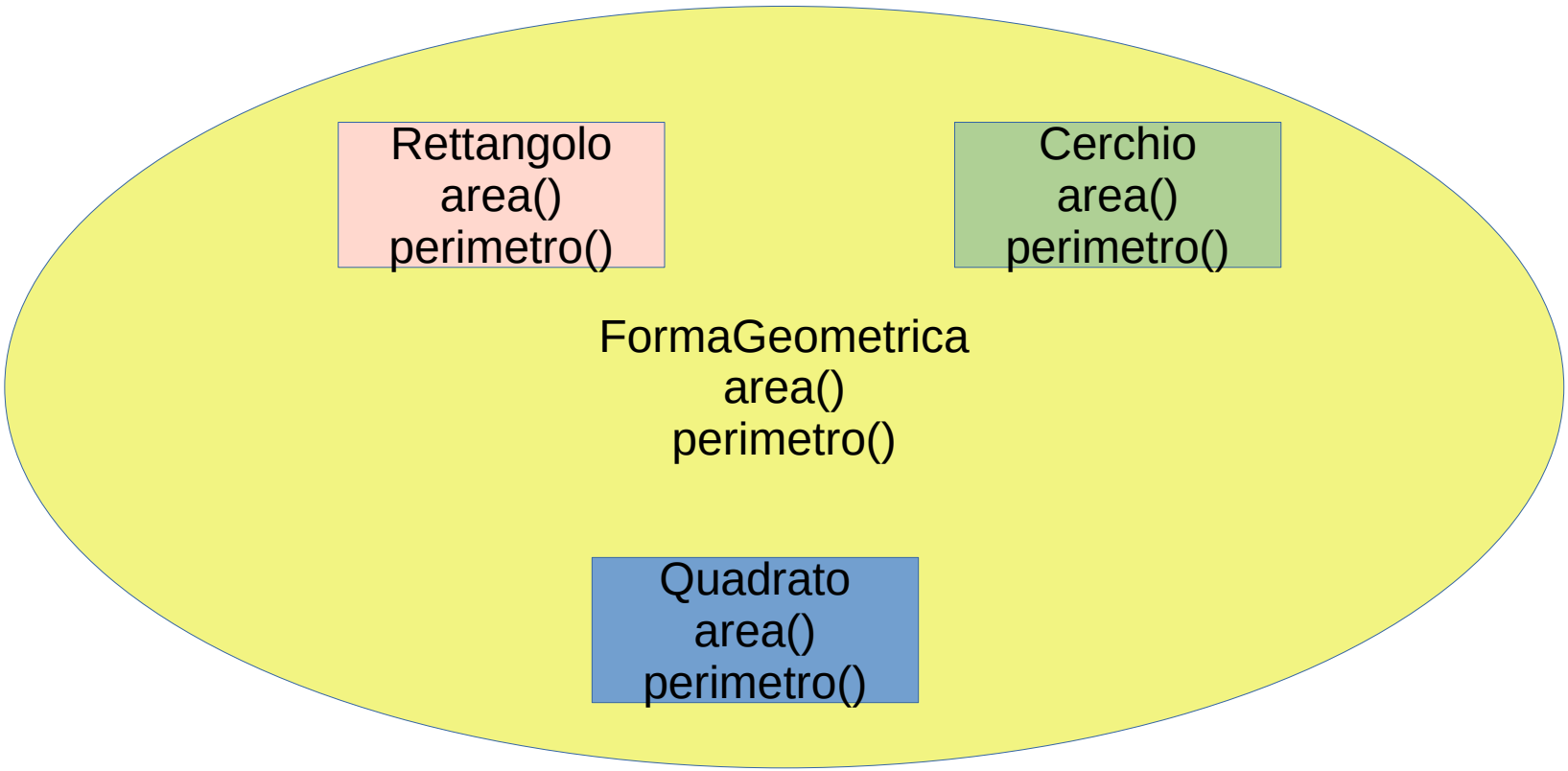
- Un oggetto è **l'istanza** di una classe
- In JAVA si realizza tramite la parola chiave **new**

OOP → Incapsulamento

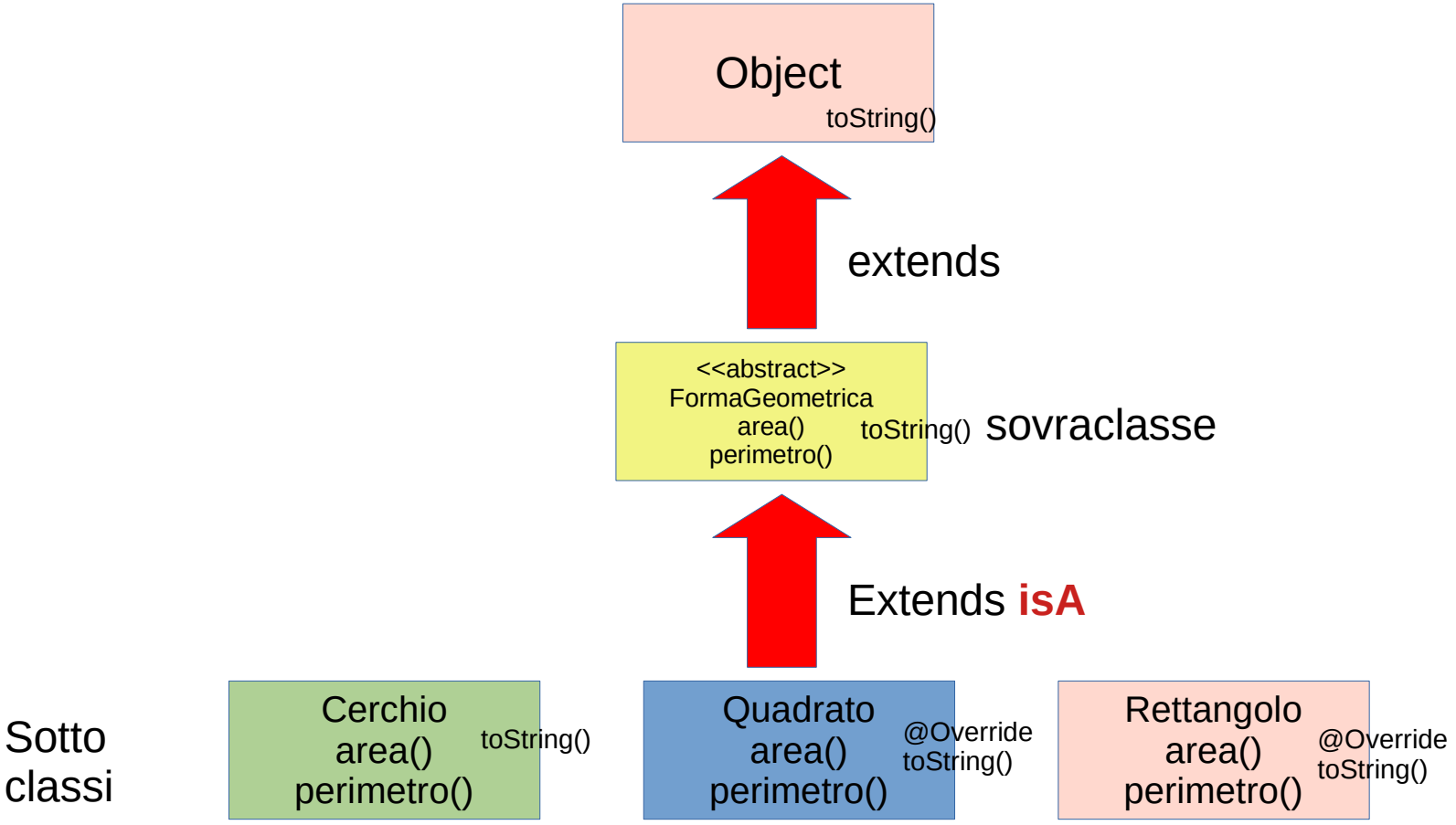
protected Visibile solo nella gerarchia

default Visibile solo nel package

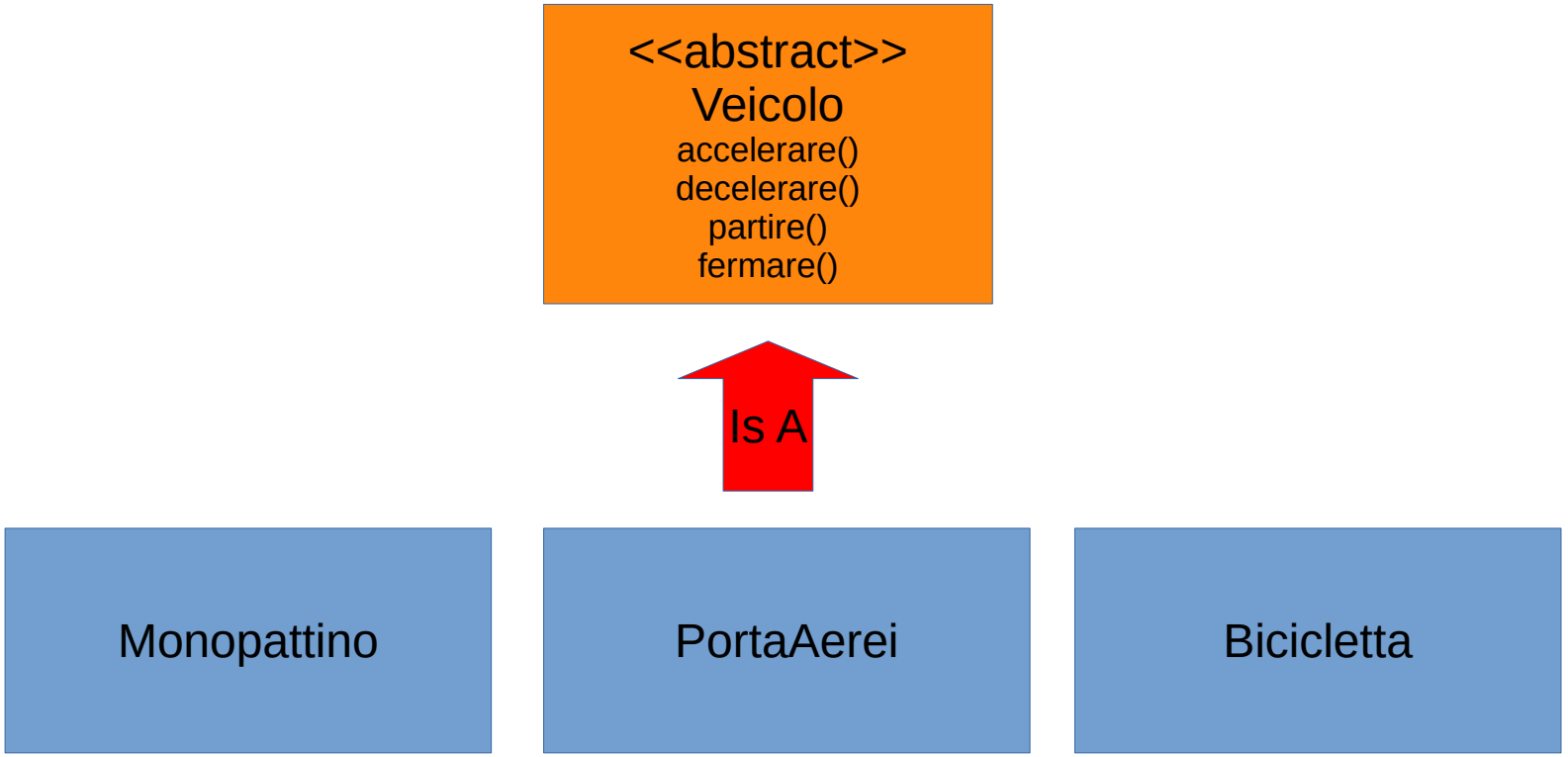
OOP → **Ereditarietà**



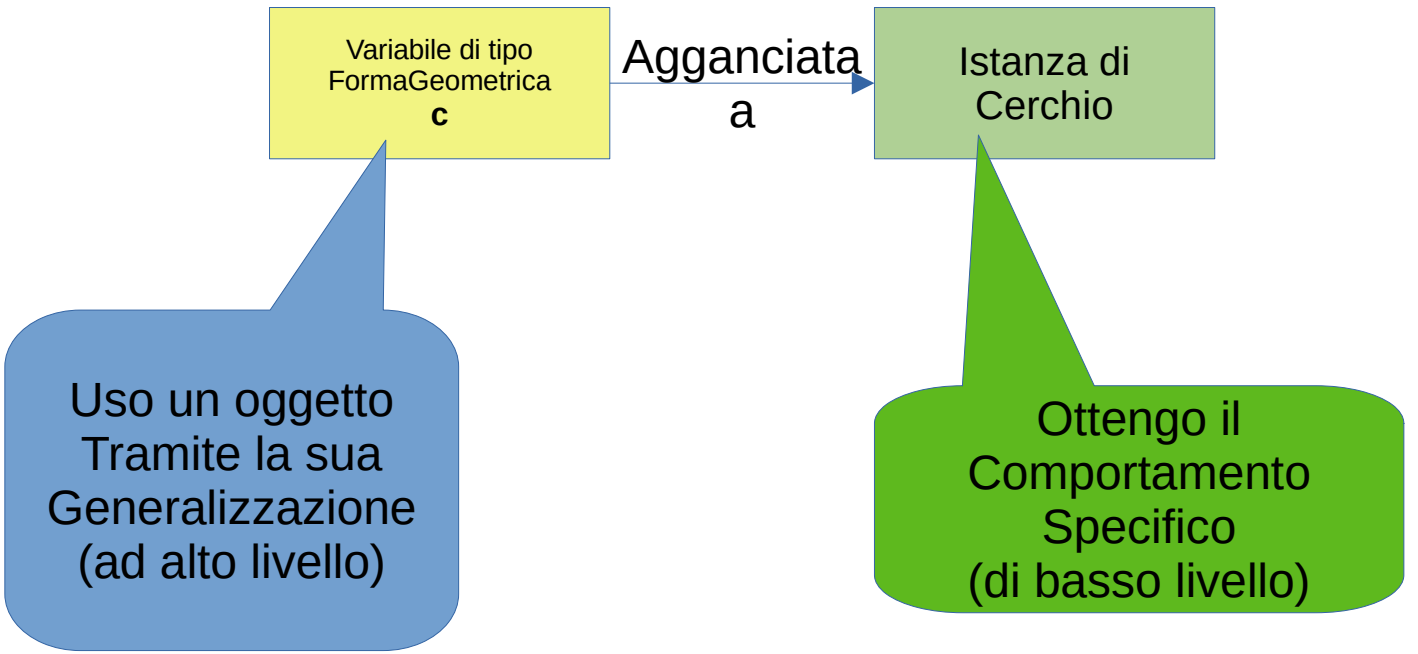
OOP → **Ereditarietà**



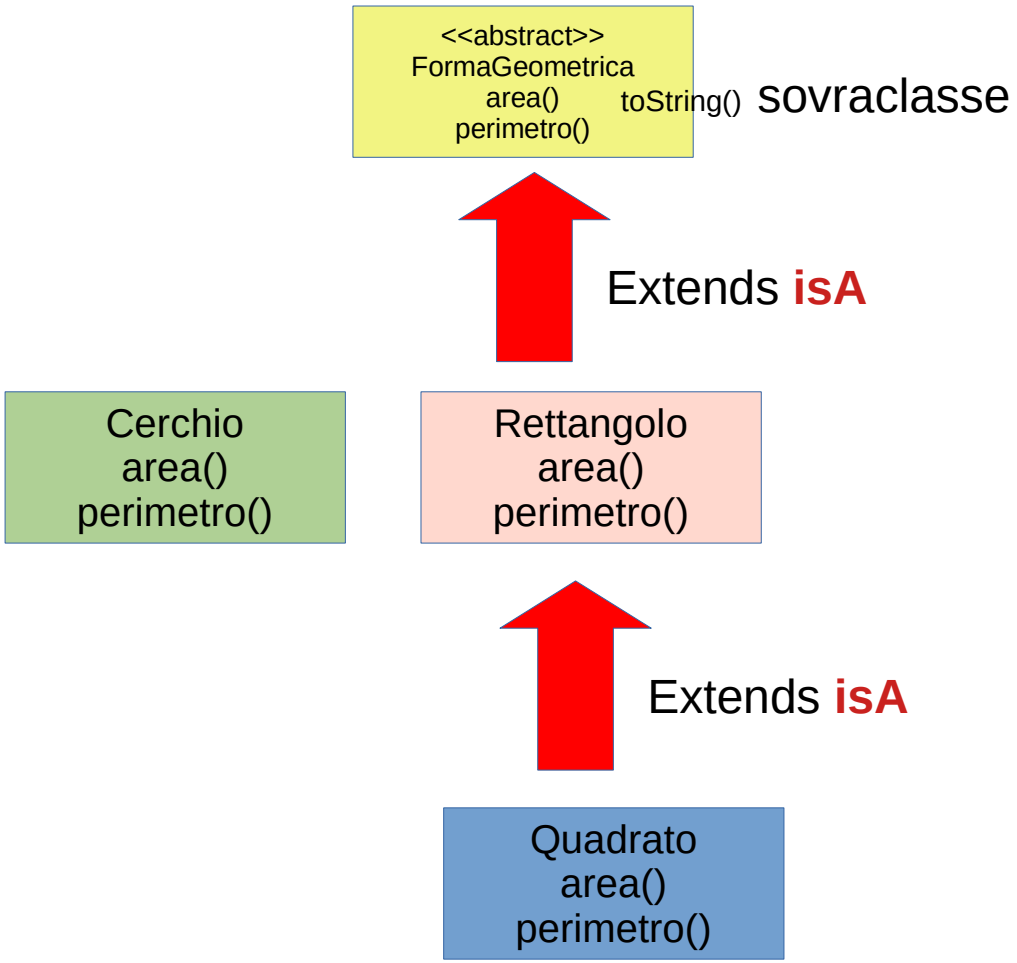
OOP → **Ereditarietà**



OOP - **Polimorfismo**

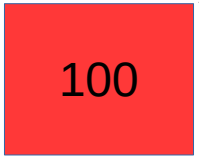


OOP → **Ereditarietà**

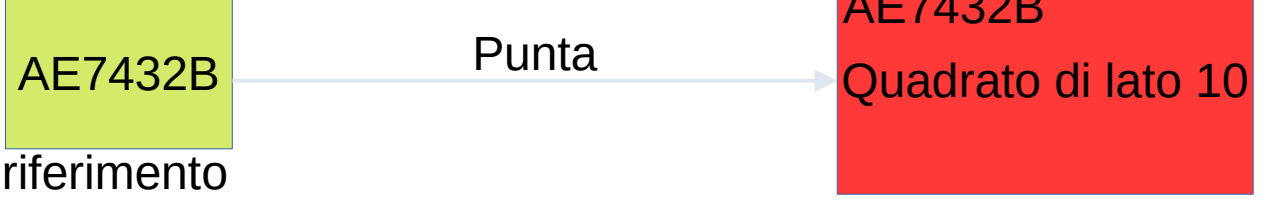


Tipi di Dato
e pass by value

Int **x**=100;



Quadrato q1 = new Quadrato(10);



Tipi di Dato

- Dicotomia
  - Tipi di dato primitivi (int, long, float, double, char, byte, boolean)
    variabile contiene il valore
  - Classi => Oggetti
    variabile contiene il riferimento (puntatore) alla zona della JVM dove sono memorizzati i dati

Wrapper Classes

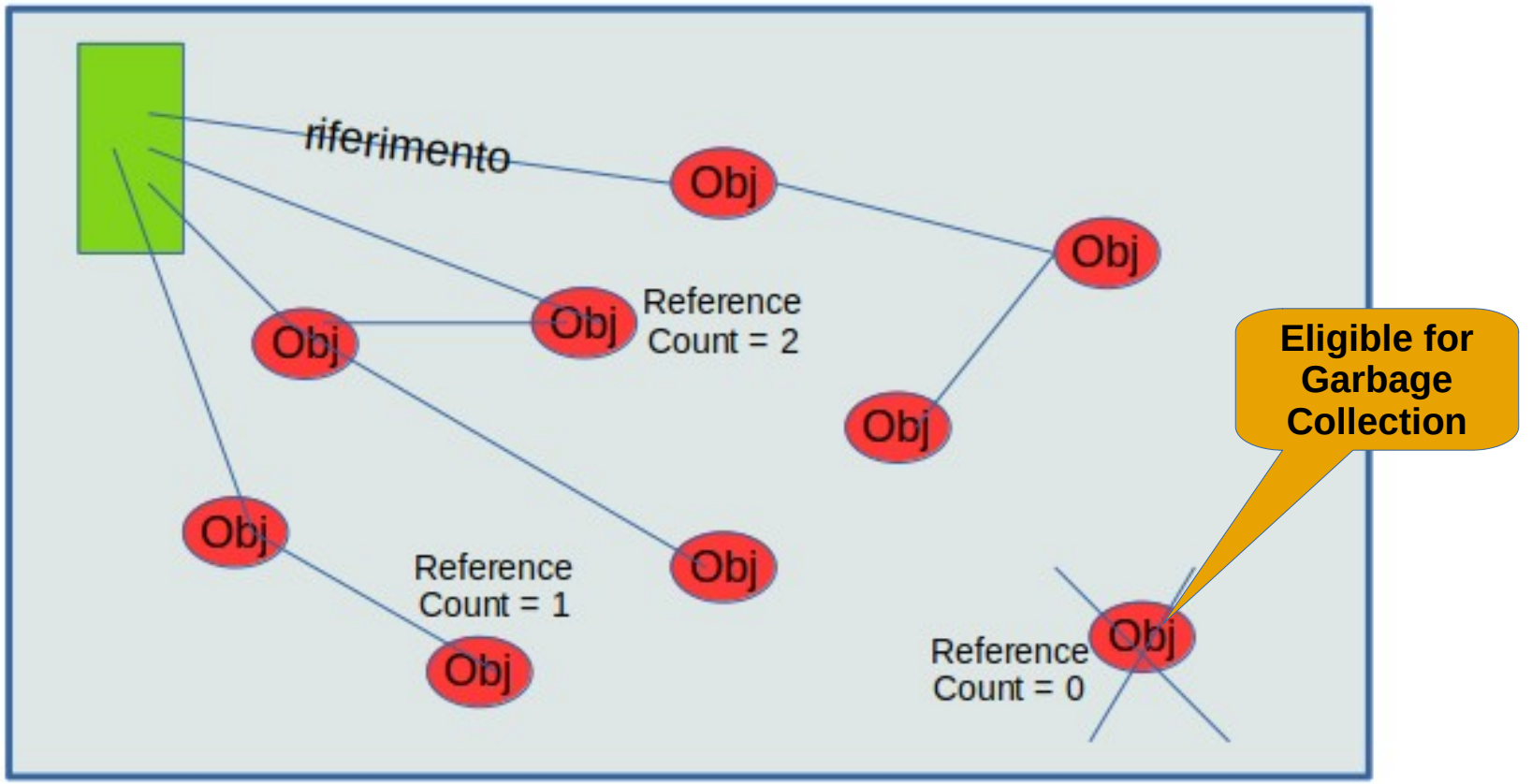
generano **oggetti immutable**

- int ==> Integer
- double ==> Double
- boolean ==> Boolean
- char ==> Character

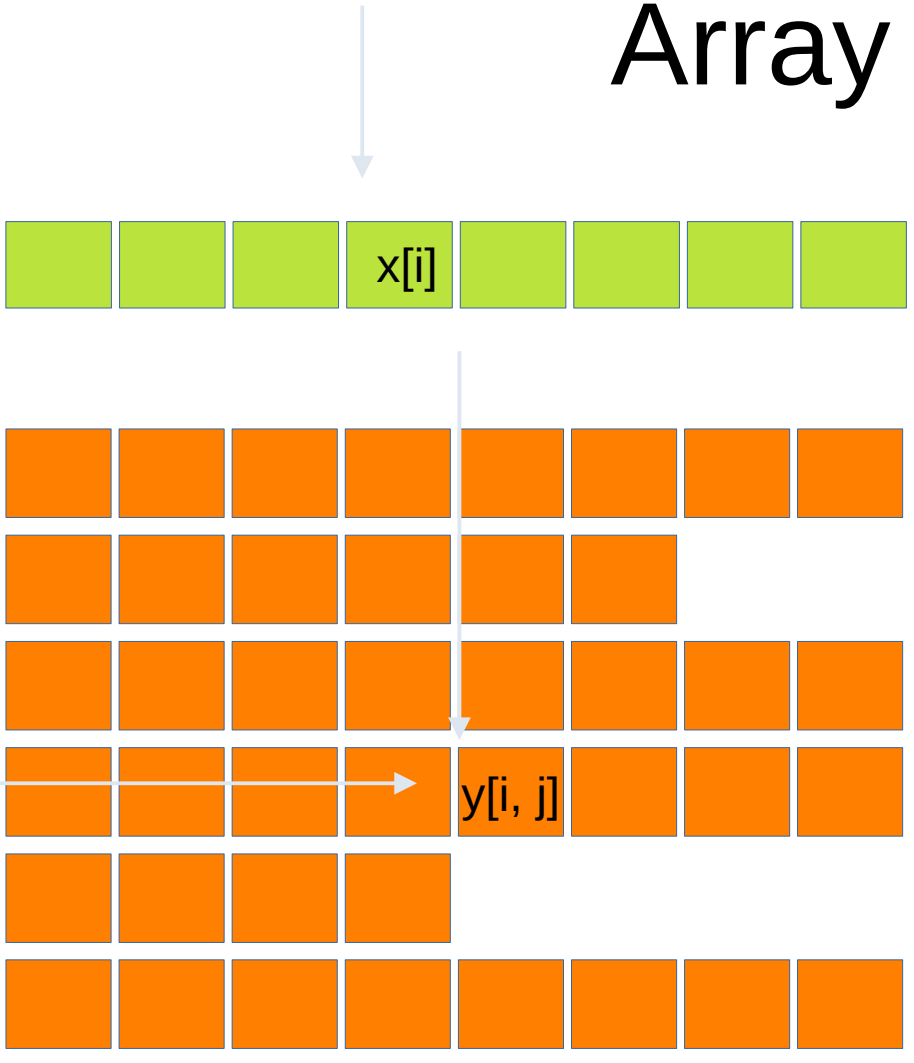
```
Integer x = new Integer(10);
int y = x.intValue();
```

Boxing e Unboxing

JVM – **garbage collection**



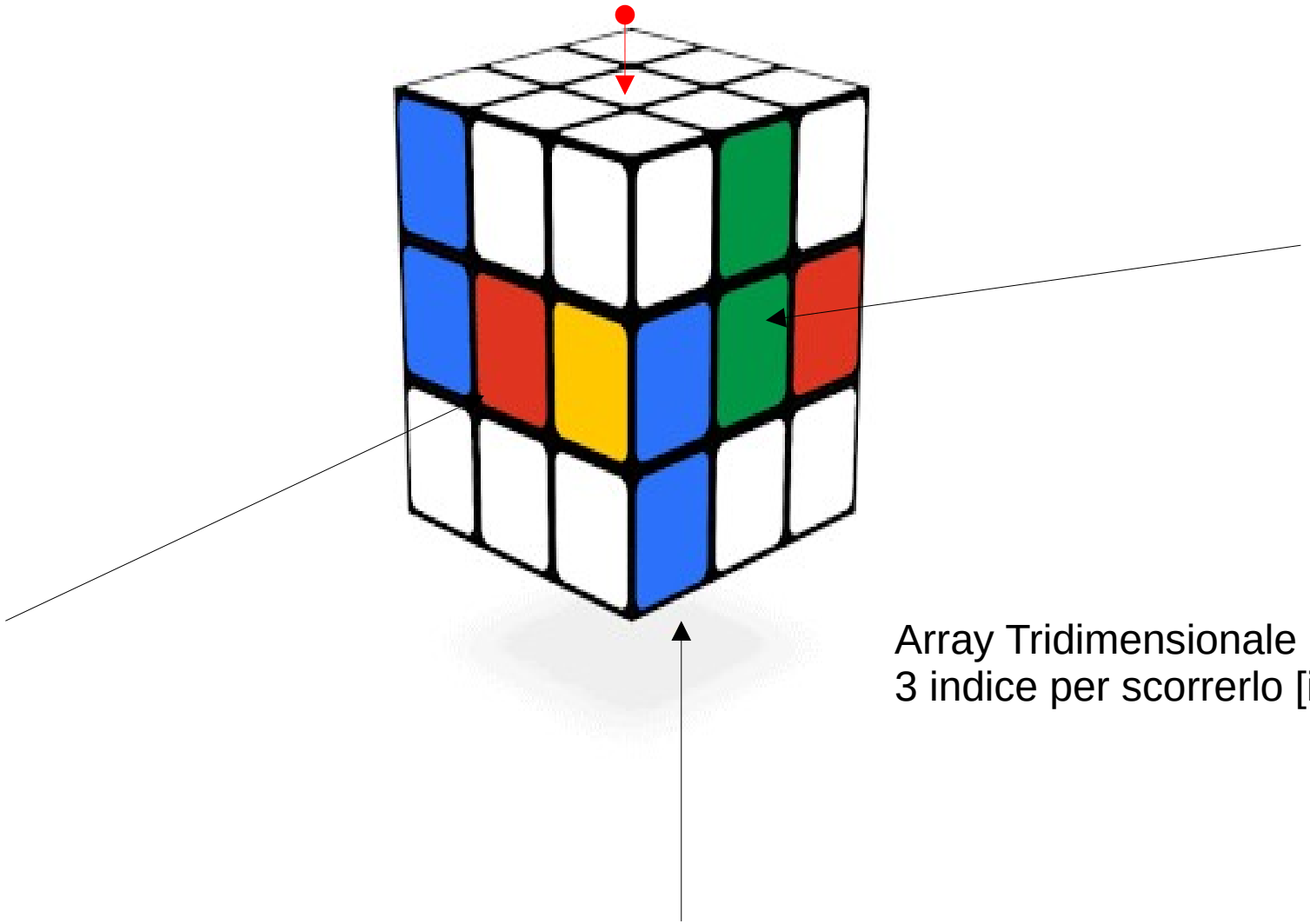
Array



Array Monodimensionale
1 indice per scorrerlo (i)

Array Bidimensionale
2 indice per scorrerlo (i,j)

t[i, j, k]



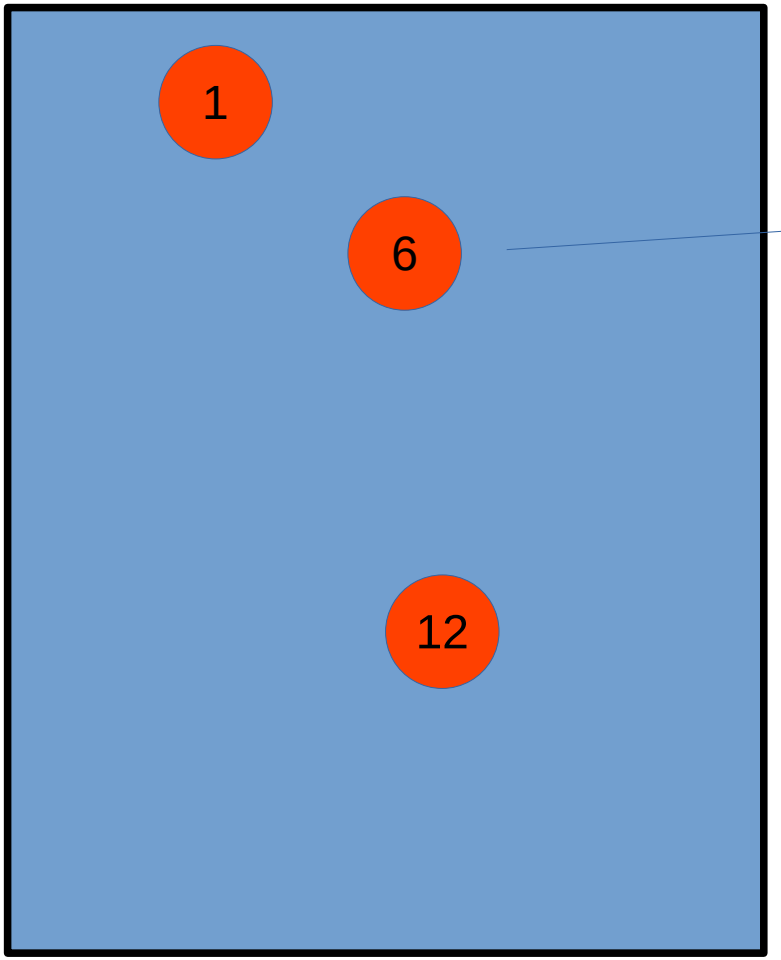
Array Tridimensionale
3 indice per scorrerlo [i,j, k]

Array

- Un array è un oggetto e deve essere creato con new.
- Qual’é lo scopo di un array?
  - Raggruppare data objects dello stesso tipo.
  - Raggruppare valori primitivi or class types.

    Es: int s[ ]; Point [ ] pts;

Tombola

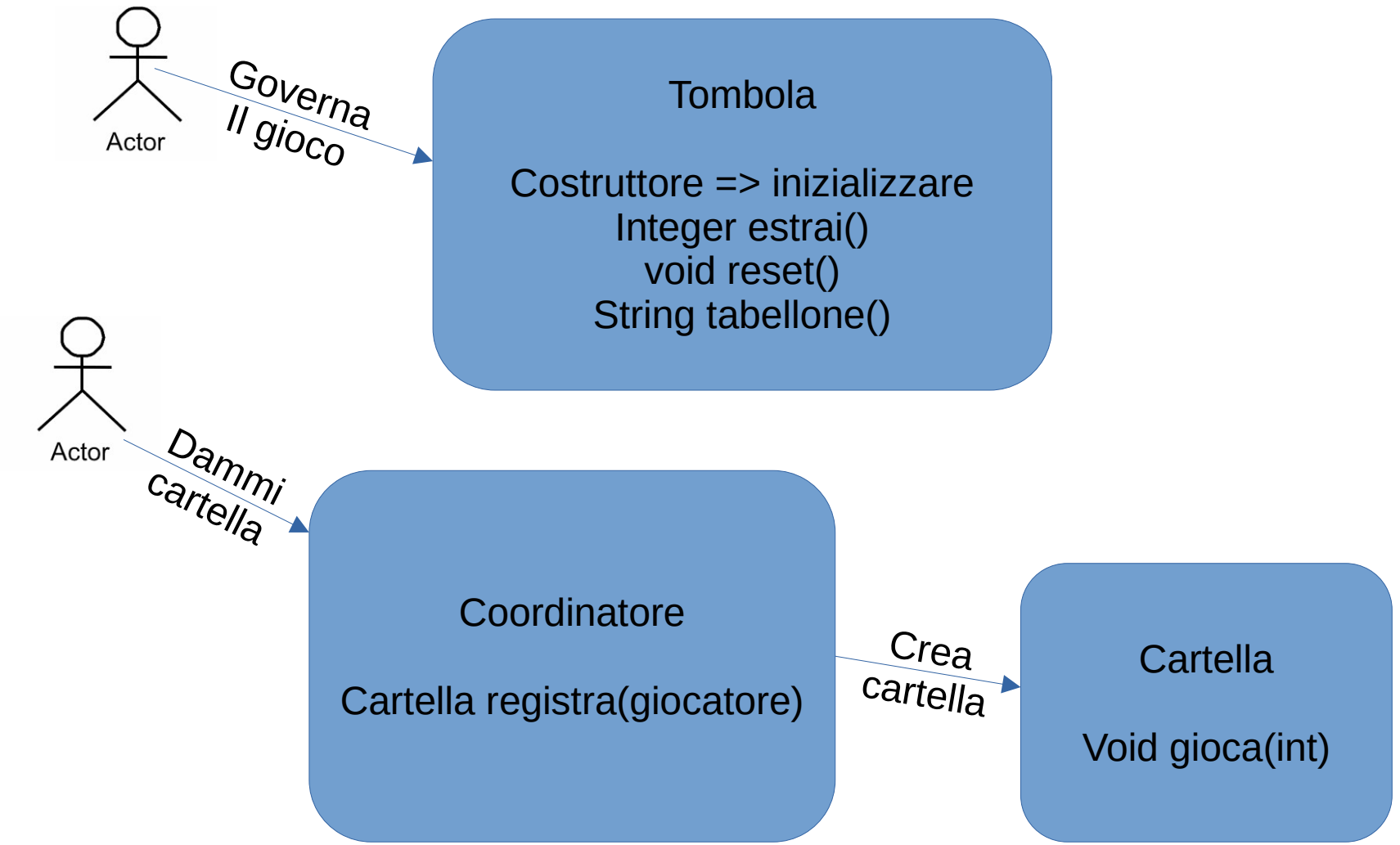


1) riempire il sacchetto.

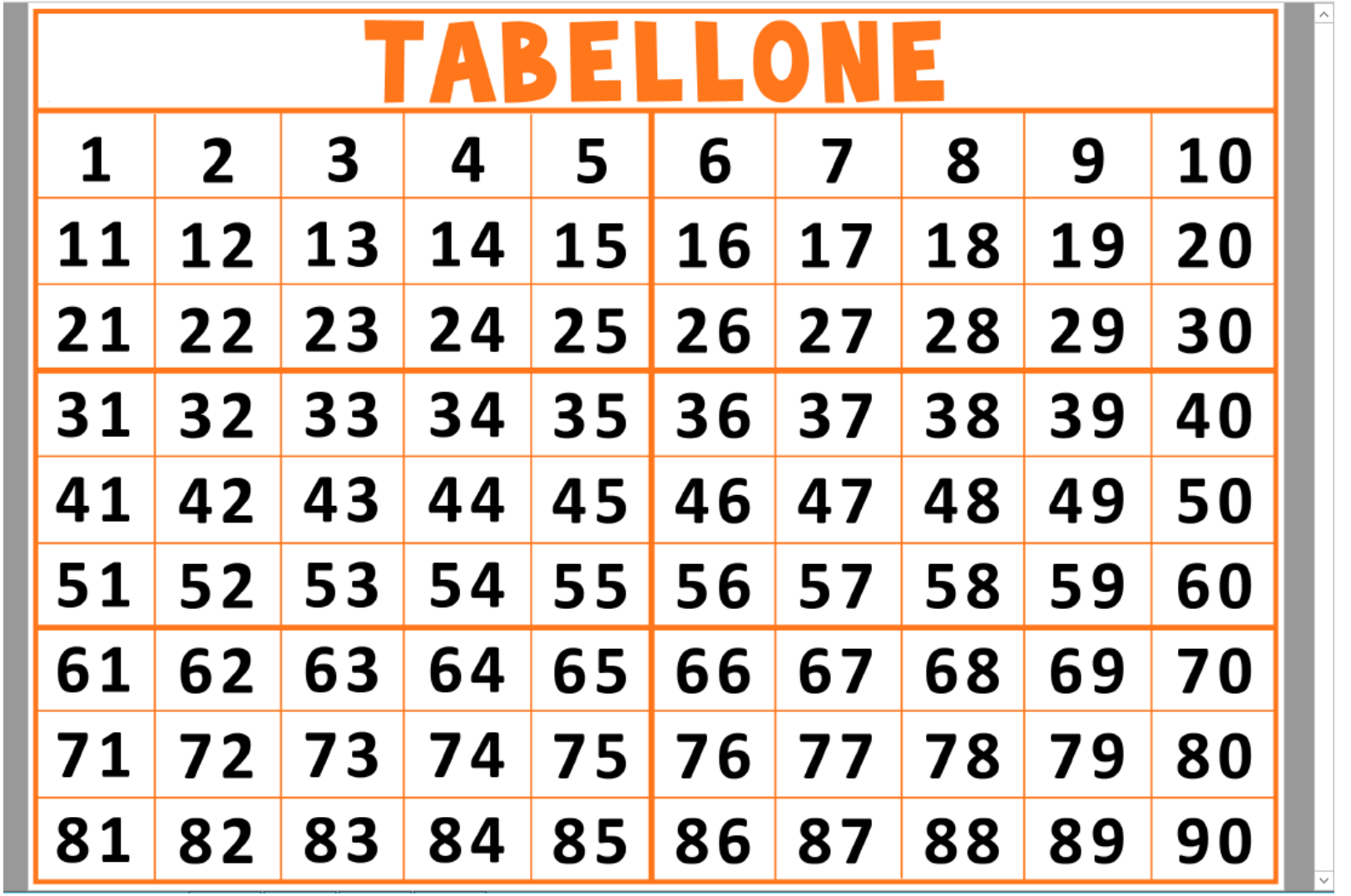
2) Estrarli uno per volta e una volta sola

=> estraggo un numero lo rimuovo dal sacchetto

Tombola

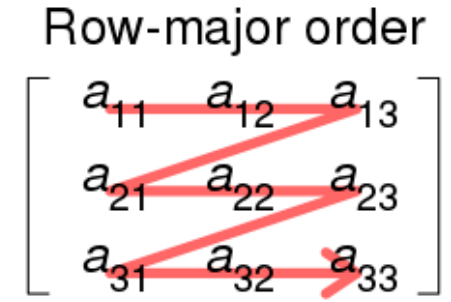

Actor
Governa
Il gioco
Tombola
Costruttore => inizializzare
Integer estrai()
void reset()
String tabellone()
Actor
Dammi
cartella
Coordinatore
Cartella registra(giocatore)
Crea
cartella
Cartella
Void gioca(int)

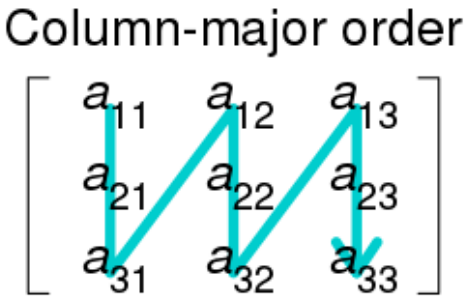
Tombola



TABELLONE									
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90

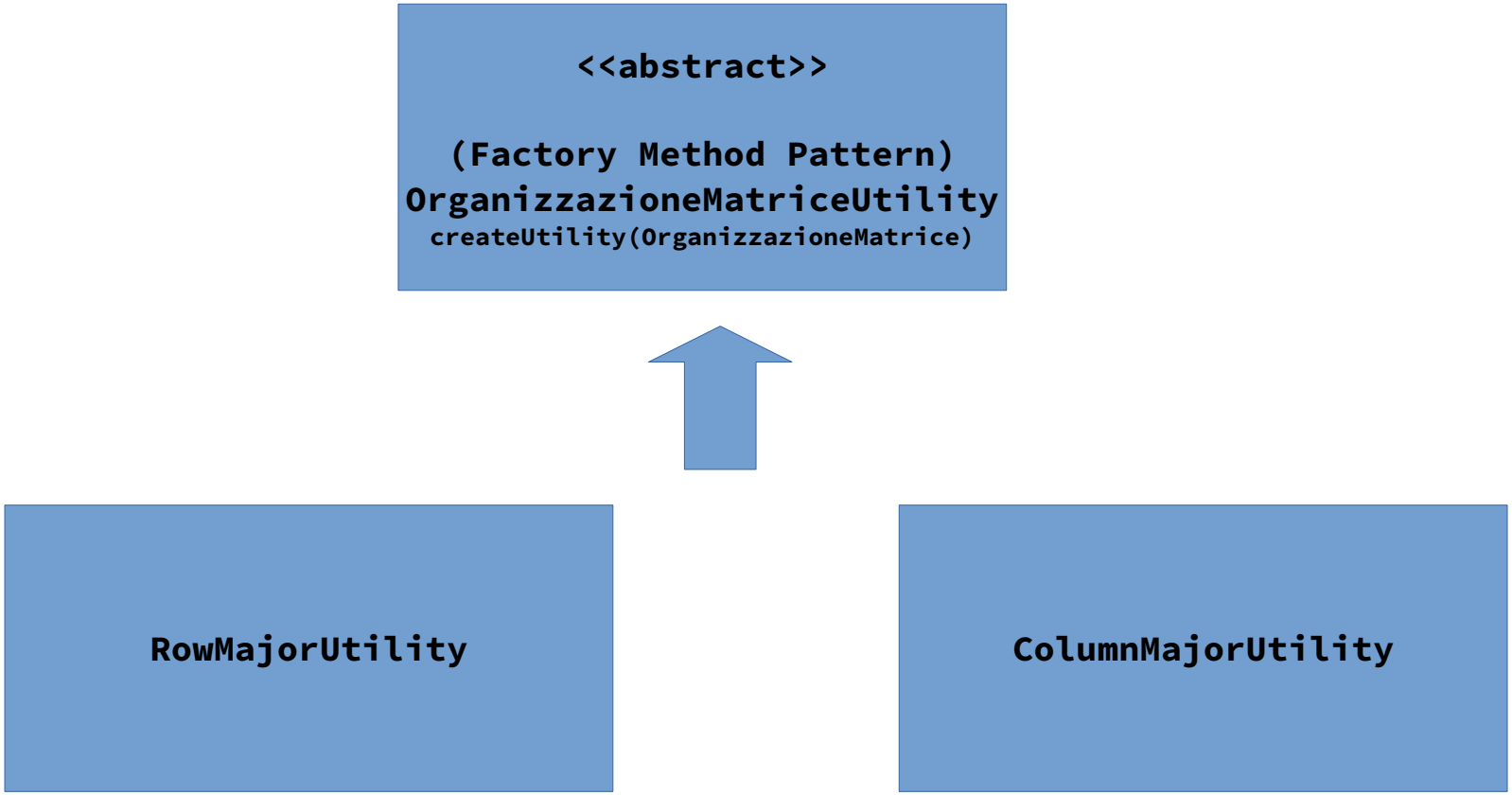
Tombola



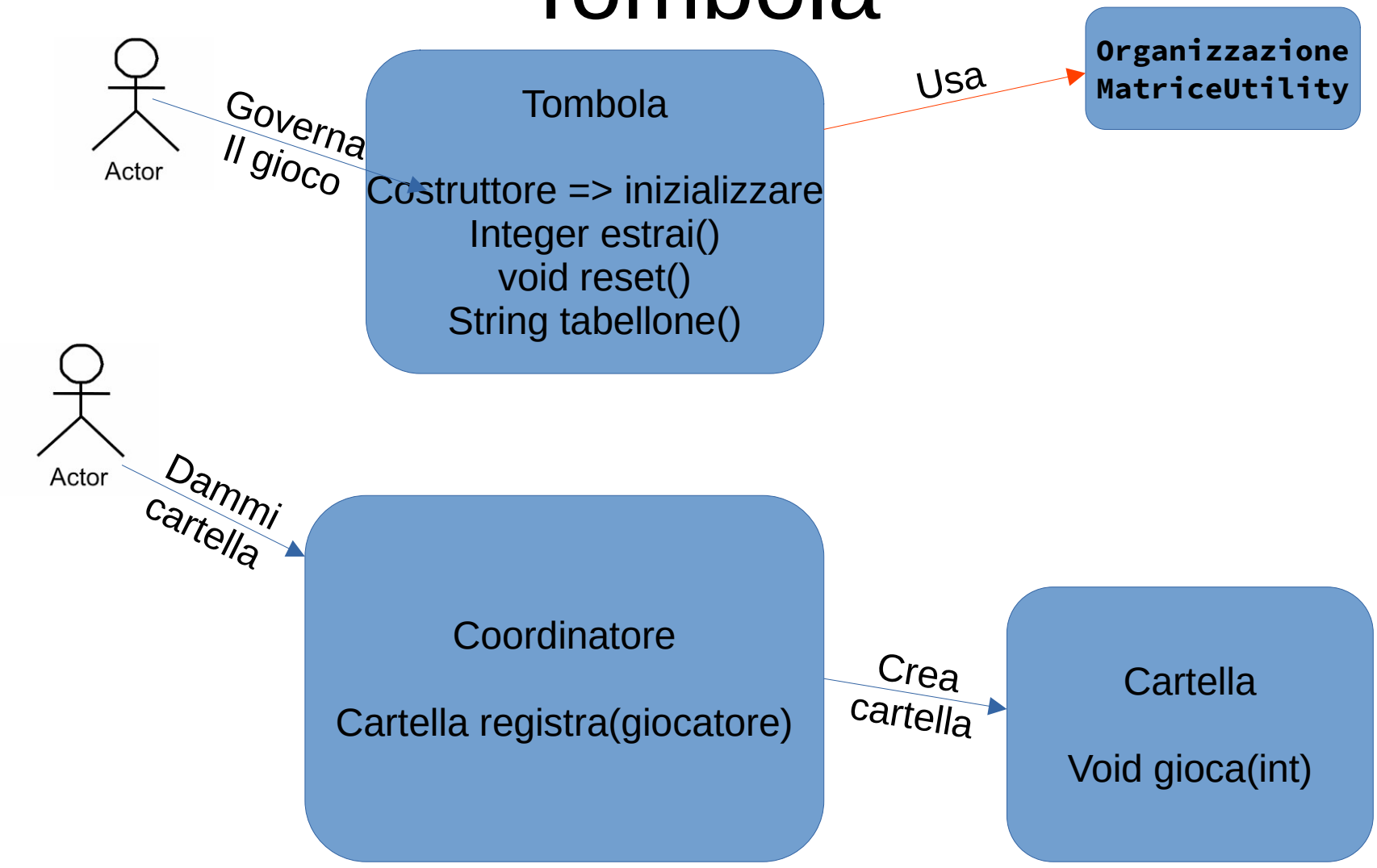


- Il tabellone ha ordine **row-major**

Tombola


<<abstract>>
(Factory Method Pattern)
OrganizzazioneMatriceUtility
createUtility(OrganizzazioneMatrice)
RowMajorUtility
ColumnMajorUtility

Tombola


Actor
Governa
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Tombola
Costruttore => inizializzare
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String tabellone()
Usa
Organizzazione
MatriceUtility
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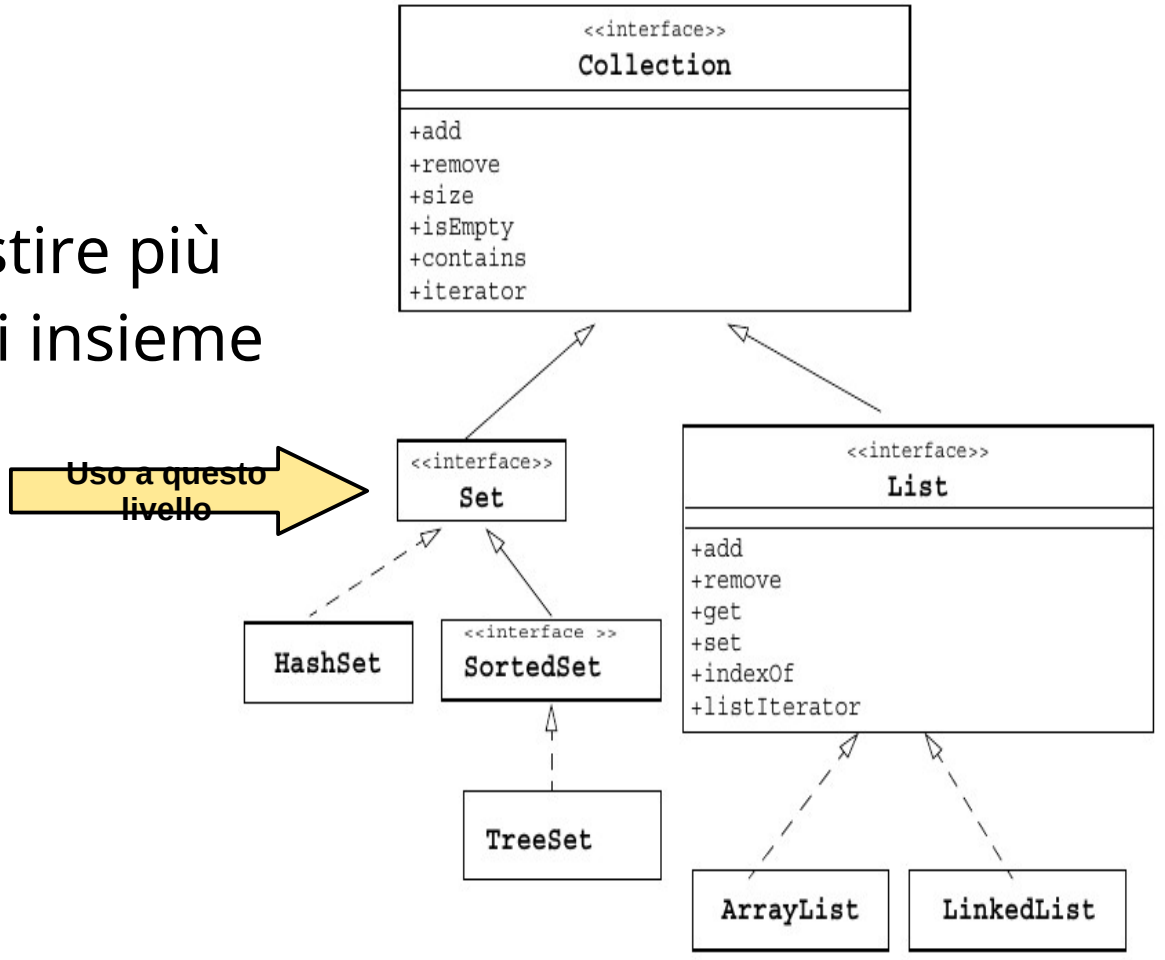
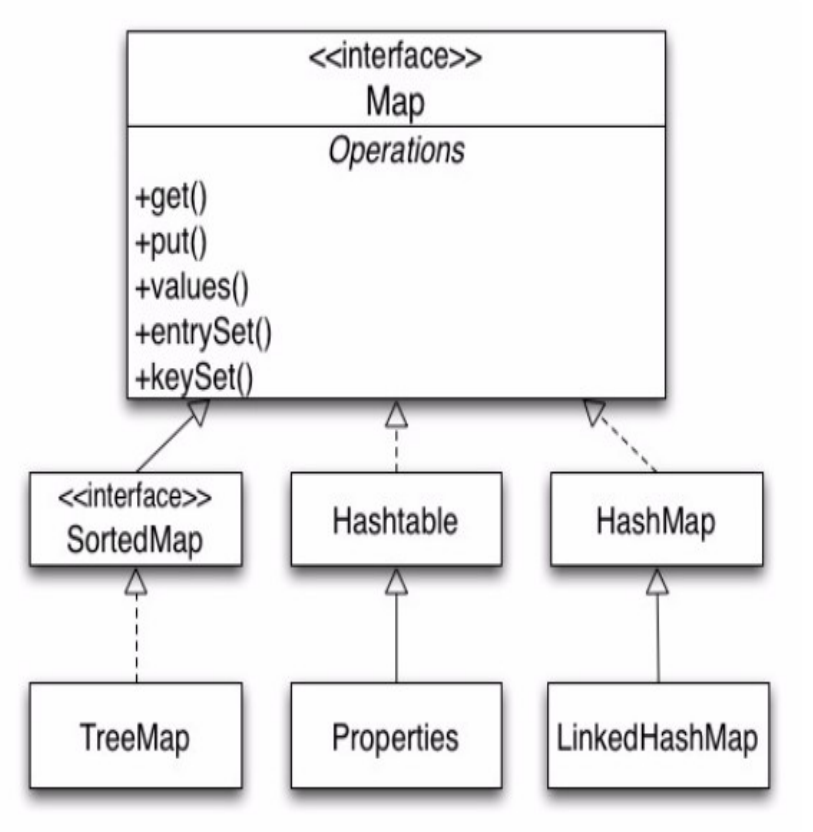
Dammi
cartella
Coordinatore
Cartella registra(giocatore)
Crea
cartella
Cartella
Void gioca(int)

The Collections API

Per gestire più
Oggetti insieme



The Collections API



List

```
List lista = new ArrayList(); // creare la lista

Oggetto o = new Oggetto("Inserire in lista posizione "+i);
lista.add(o); // aggiungere oggetti

for(Object o: lista) {
        System.out.println(o); // usare la lista
}


lista.remove(3); // rimuovere un elemento

lista.clear(); // svuotare la lista

lista.contains(o); // la lista contiene un elemento?

Object [] objects = lista.toArray(); // convertiamo la lista in un array
```

List - Generics

```
List<Oggetto> lista = new ArrayList<Oggetto>(); // creare la lista

Oggetto o = new Oggetto("Inserire in lista posizione "+i);
lista.add(o); // aggiungere oggetti

for(Object o: lista) {
        System.out.println(o); // usare la lista
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lista.clear(); // svuotare la lista

lista.contains(o); // la lista contiene un elemento?

Object [] objects = lista.toArray(); // convertiamo la lista in un
array
```

Generics

Generics

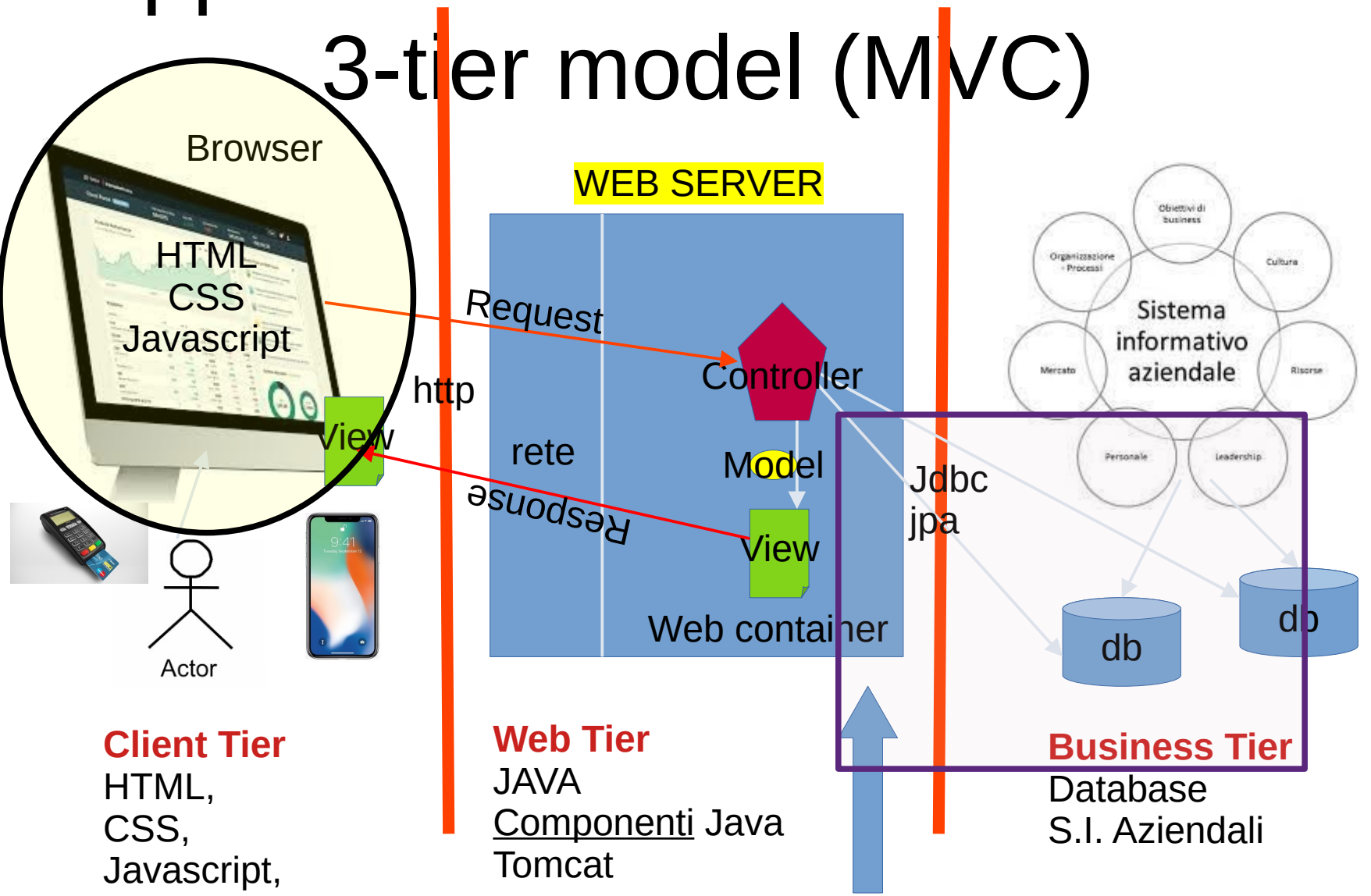
Using non-generic collections:

```
ArrayList list = new ArrayList();
list.add(0, new Integer(42));
int total = ((Integer)list.get(0)).intValue();
```

Using generic collections:

```
ArrayList<Integer> list = new ArrayList<Integer>();
list.add(0, new Integer(42));
int total = list.get(0).intValue();
```

Applicazioni aziendali via WEB
3-tier model (MVC)

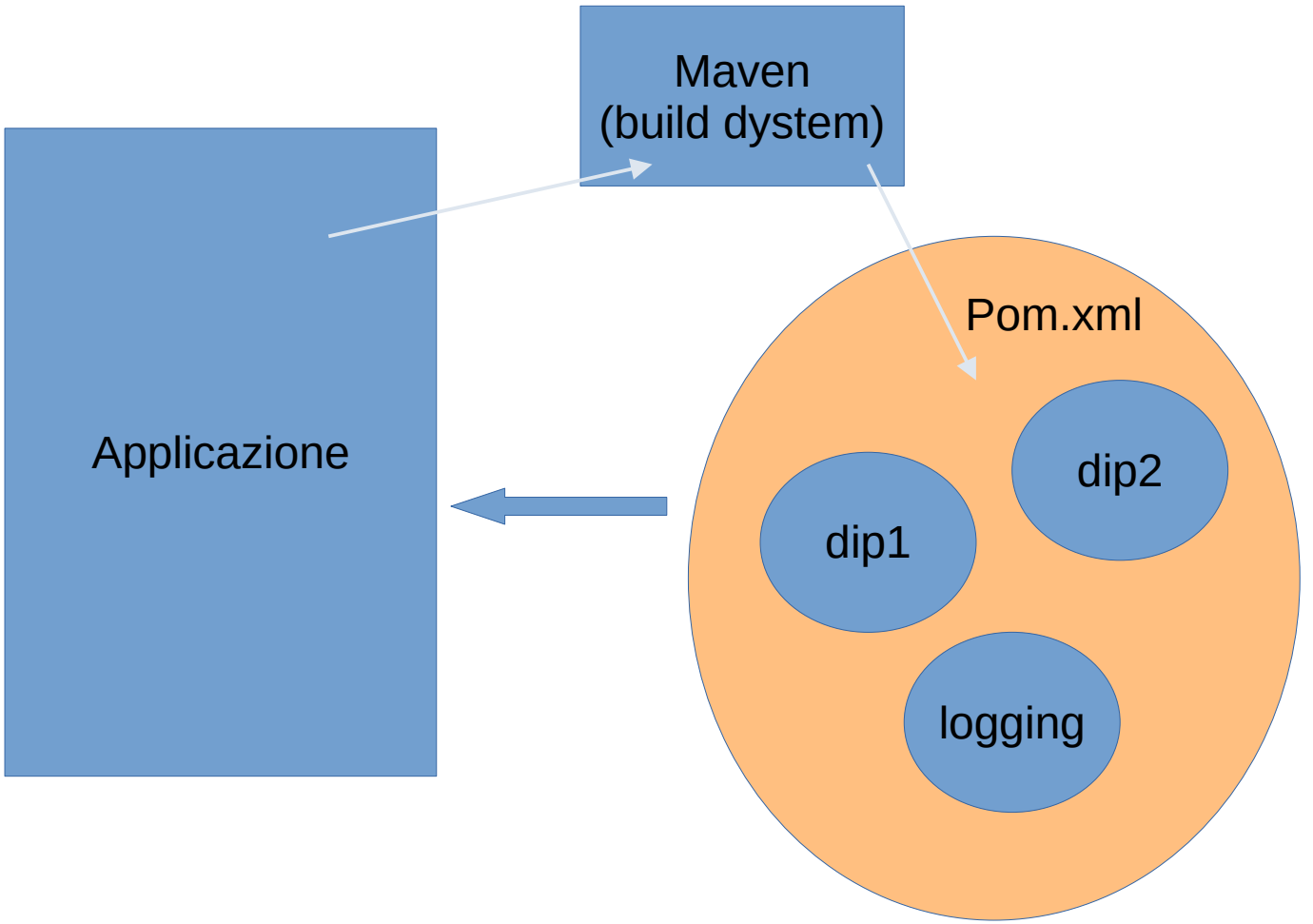


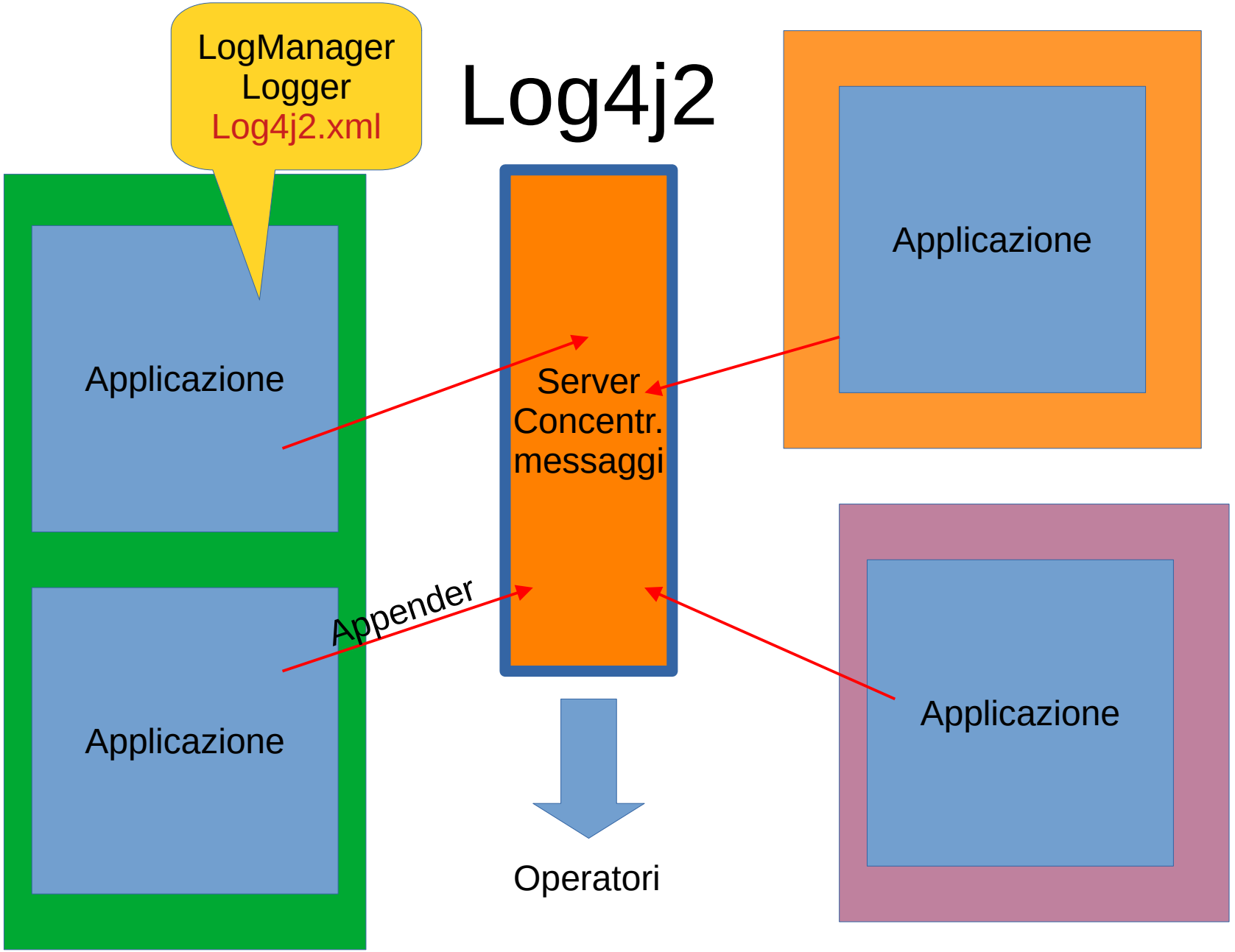
Datacenter

@Test

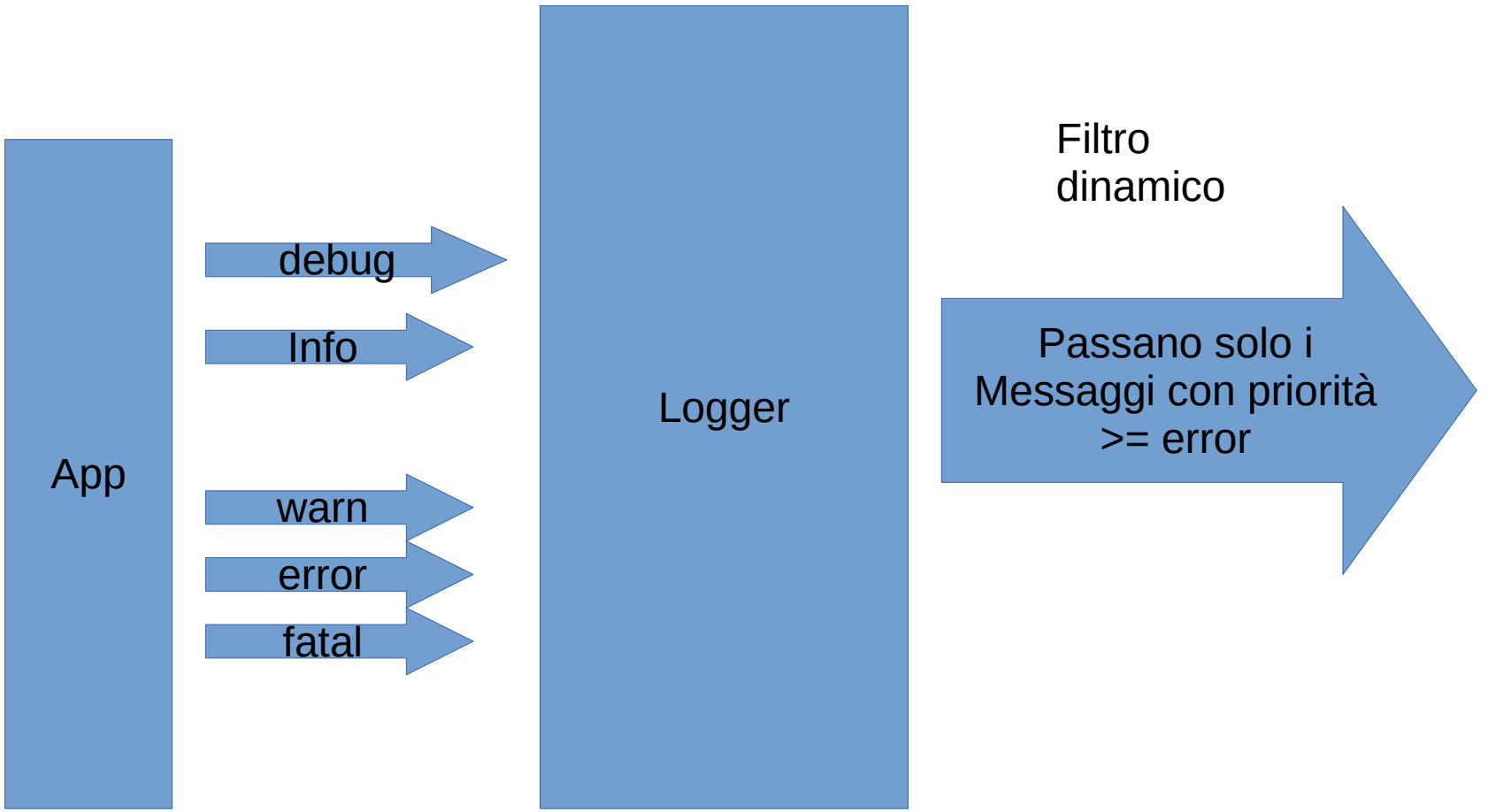
- Test come strumento di validazione
- Test → **formali e ben definiti**
- Test → **ripetibili** (anche automaticamente) da ogni persona
- => **Junit** (v.4 e v.5 jupiter) per fare i test

Maven / Gradle




LogManager
Logger
Log4j2.xml
Log4j2
Applicazione
Applicazione
Server
Concentr.
messaggi
Applicazione
Appender
Applicazione
Operatori

Logger (applicazione)



Esercizio

- Creare il progetto maven di nome “db-access”
  - Predisposto per il logging
  - Predisposto per il testing con Junit Jupiter 5
  - Creare Prova.java per verificare il log
  - Creare ProvaTest.java per verificare Junit