أوقات الدرس

ساعتين أسبوعيًا

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08:00 PM
09:00

OL Academy

مدرس المقرر

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ITCS214

Lesson (1)

Array List

ArrayList :

- In java there is a built-in class called **ArrayList**.

- To import this class: `import java.util.ArrayList;`

- To creat an ArrayList object called **list** that will store **Integer**:

```
ArrayList<Integer> list = new ArrayList <Integer> ();
```

or

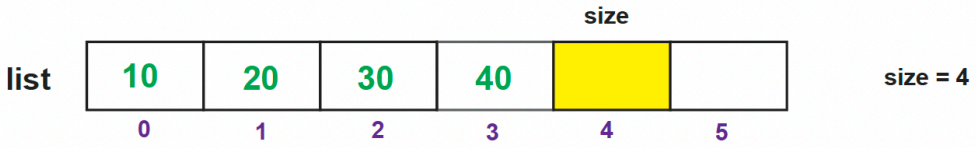
```
ArrayList<Integer> list = new ArrayList <> ();
```

or simply

```
ArrayList<Integer> list = new ArrayList();
```

1. int size ( )

This method return the actual number of elements in the list.

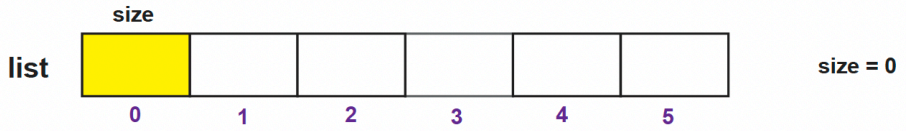



```
int s = list.size();
```

4

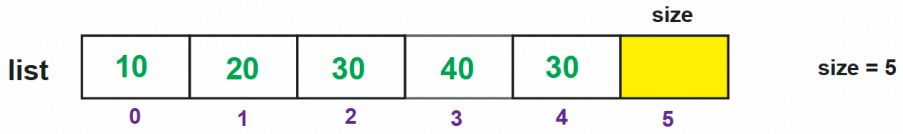
2. boolean isEmpty ( )

This method to check whether the list is empty or not.




```
boolean l1= list.isEmpty();
```

true



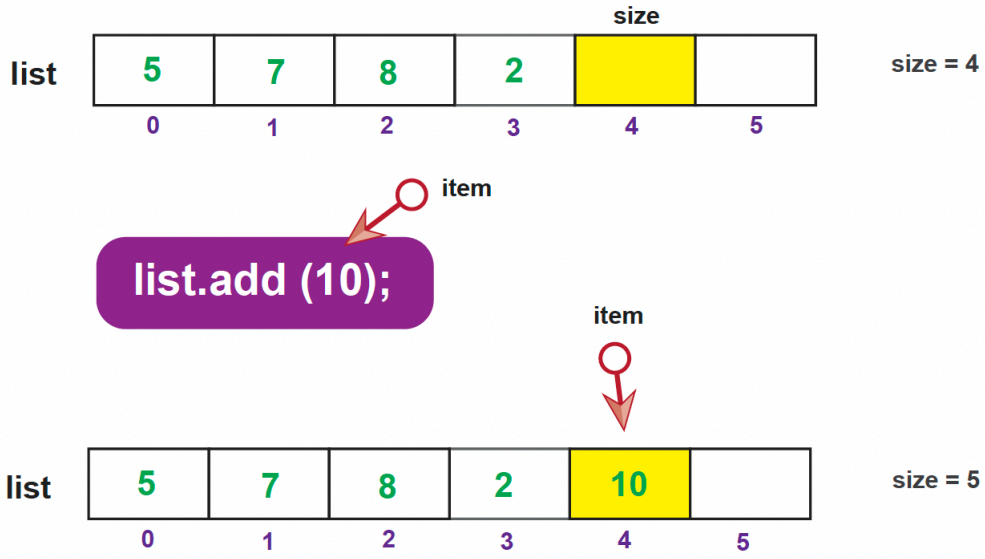

```
boolean l2= list.isEmpty();
```

false

3. boolean add (E item)

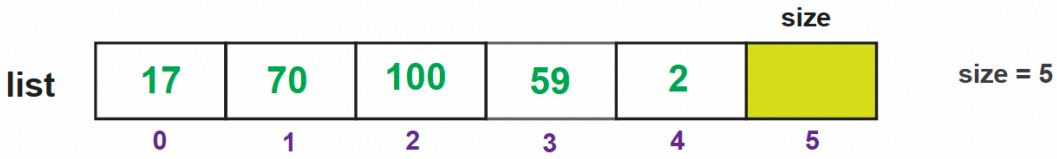
E means generic data type like (int, double,..)

It add item at the end of the list, and always returns true.



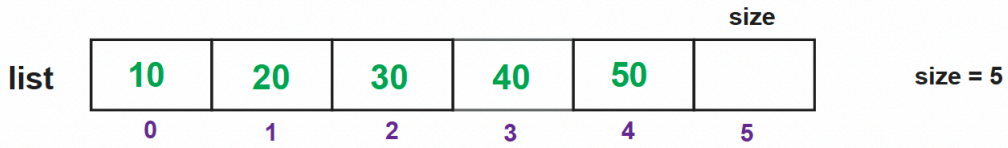
4. void add (int index, E item)

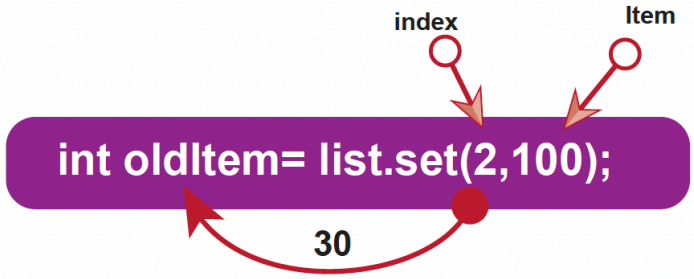
This method adds item at the location index.



5. E set (int index, E item)

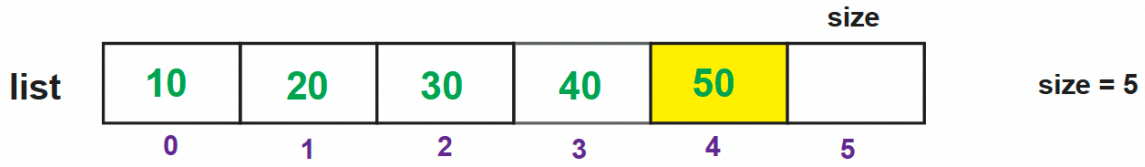
Replace the element at position index with item and return the old value.

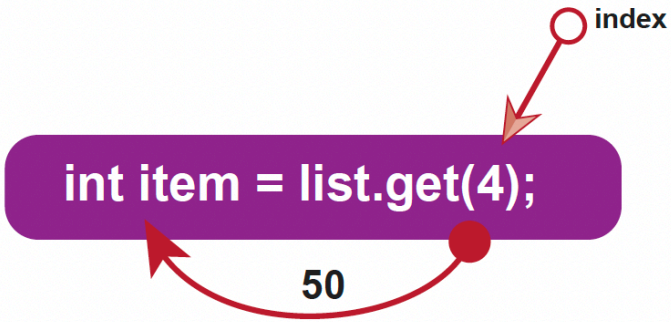




6. E get (int index)

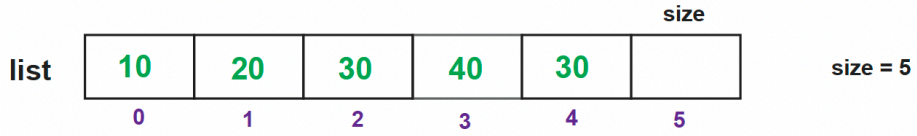
Returns the element at the position index.

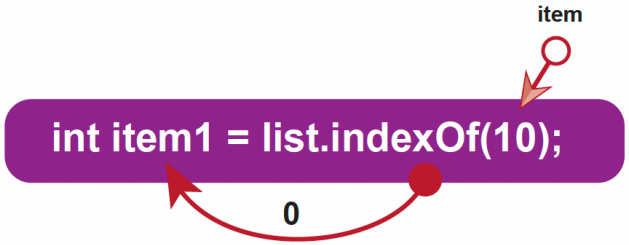




7. int indexOf (E item)

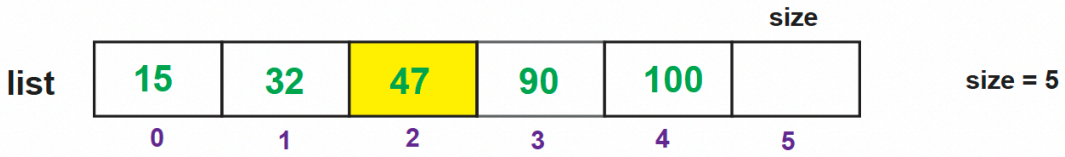
Searches for item in the list and returns the position of the first occurrence, or -1 if it is not found in the list.

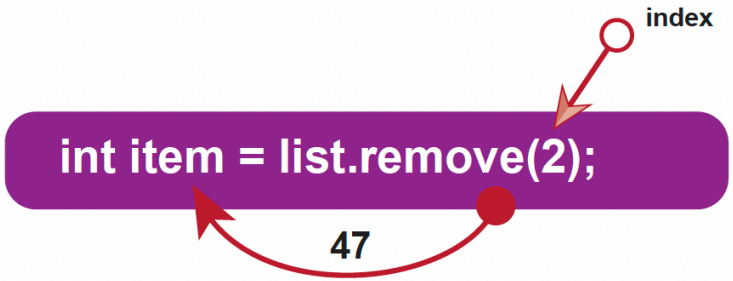




8. E remove (int index)

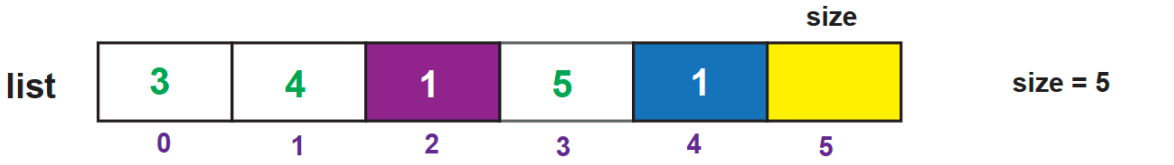
Removes the element at the given index and return it.





9. boolean remove (E item)

This method remove the first occurrence of the item from the list and return true.



Remove with the argument (Integer), which is Integer object. This is necessary because the remove method takes an object as an argument, not a primitive int.

first occurrence of the item

```
boolean i1 = list.remove((Integer)1);
```

true

(1) What is the output of the following code?

```
import java.util.ArrayList;
public class Test {
    public static void main(String[] args) {

        ArrayList<Integer> list = new ArrayList<>();
        System.out.println(list.isEmpty());
        list.add(7);
        list.add(3);
        list.add(4);
        list.add(6);
        list.add(0,7);
        list.set(2,list.indexOf(7));
        list.remove(1);
        for (int i=0; i<list.size(); i++)
            System.out.println(list.get(i));

    }
}
```

(2) What is the output of the following code?

```
ArrayList<Integer> list = new ArrayList<>();
for (int i=0; i<4; i++)
   list.add(i,i+1);

System.out.println(list.get(1));
System.out.println(list.size());
list.set(1,100);
list.add(1,100);
list.remove((Integer)1);
for(int i=0; i<list.size(); i++)
    System.out.print(list.get(i) + "\t");
```

What would be the output of the following code?

```
ArrayList<Integer> list = new ArrayList<Integer>();
list.add(1);
list.add(7);
list.add(22);
list.add(1,100);
for (int i=0; i<list.size();i++)
    System.out.print(list.get(i) + " ");
list.set(2,50);
list.remove(1);
System.out.println();
for (int i=list.size()-1; i>=0;i--)
     System.out.print(list.get(i) + " ");
```

(a)
22 7 100 1
22 50 1

(b)
22 50 1
1 100 7 22

(c)
1 100 7 22
22 50 1

(d)
1 100 7 22
50 22

Assume that list1 is an object of class type ArrayList<String> of java (similar to KWArrayList class) and it has the following values:

"H" "E" "L" "L" "O"

the instruction:

list1.set(2,list1.remove(0));

will change the list to:

(a) "E" "H" "L" "O"

(b) "E" "L" "H" "O"

(c) "H" "E" "L" "O"

(d) "E" "L" "L" "O"