

Photos mostly belong to V-31(7 photos)and
V-33(6 photos) in playlist

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Bounded Class and Interface Example

```
package com.unacademy.Generics;

public class ClassInterfaceBoundedTypeExample
{
    public static <T extends Number & Comparable<T>> double minArr(T... a)
    {
        if (a == null || a.length == 0)
            return 0.0;

        T min = a[0];
        for (int i = 1; i < a.length; i++)
        {
            if (min.compareTo(a[i]) > 0)
                min = a[i];
        }

        return min.doubleValue();
    }

    public static void main(String[] args)
    {
        double m = minArr(15, 8, 3, 9, 45, 12);
        System.out.println(m);

        double m1 = minArr(1.5, 8.3, 9.45, 1.2);
        System.out.println(m1);
    }
}
```

36

Select element in the array. This is provided by java.util.Collections framework.

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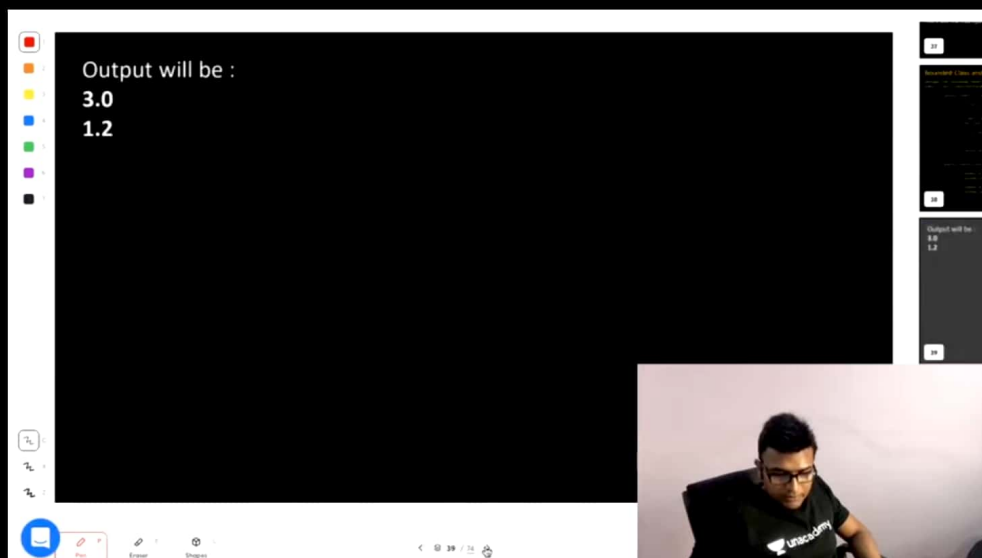
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The Generic Solution

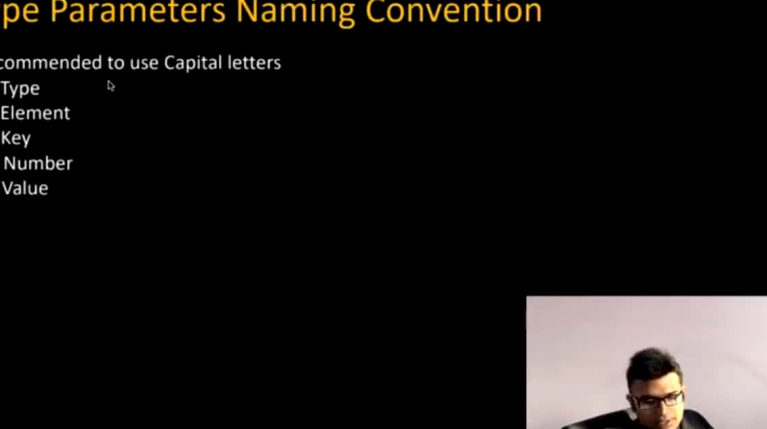
```
package com.unacademy.Generics;
public class GenericMethodSquare
{
    public static < T extends Number > double genericMethodSqr(T a)
    {
        return a.doubleValue() * a.doubleValue();
    }
    public static void main(String[] args)
    {
        System.out.println(GenericMethodSquare.<Integer> genericMethodSqr(3));
        System.out.println(genericMethodSqr(4.3));
    }
}
```



The image shows a presentation slide titled "The Generic Solution" with Java code. The code defines a generic method `genericMethodSqr` that takes a parameter `T` extending `Number` and returns its square. The `main` method demonstrates the usage of this generic method with both an `Integer` (3) and a `Double` (4.3). A small video inset in the bottom right corner shows a man wearing glasses and a black t-shirt with the "unacademy" logo, likely the presenter.

Type Parameters Naming Convention

- Recommended to use Capital letters
- T - Type
- E - Element
- K - Key
- N - Number
- V - Value



- Recommended to use Capital letters
- T - Type
- E - Element
- K - Key
- N - Number
- V - Value

Generic Method Example : Middle Element

```
package com.unacademy.Generics;
class ArrayMiddleElement
{
    public <T> T getMiddle(T... arr)
    {
        return arr[arr.length/2];
    }
}

public class GenericMethodArrayMiddleElement
{
    public static void main(String[] args)
    {
        ArrayMiddleElement obj=new ArrayMiddleElement();
        String s=obj.getMiddle("A","B","C","D","E");
        System.out.println(s);
        int a=obj.getMiddle(34,56,78,12);
        System.out.println(a);
    }
}
```

Let's see

Type Parameter

Recommended to use:

- Integer
- String
- Boolean
- Double
- Float

Generic Method

Generic Method Example

```
public class GenericMethodExample
{
    public static void main(String[] args)
    {
        ArrayMiddleElement obj=new ArrayMiddleElement();
        String s=obj.getMiddle("A","B","C","D","E");
        System.out.println(s);
        int a=obj.getMiddle(34,56,78,12);
        System.out.println(a);
    }
}
```




Generic Interface Example : Searching Element in Array

```
package com.unacademy.Generics;

interface MemberInterface<V>
{
    boolean isMember(V item, V[] arr);
}

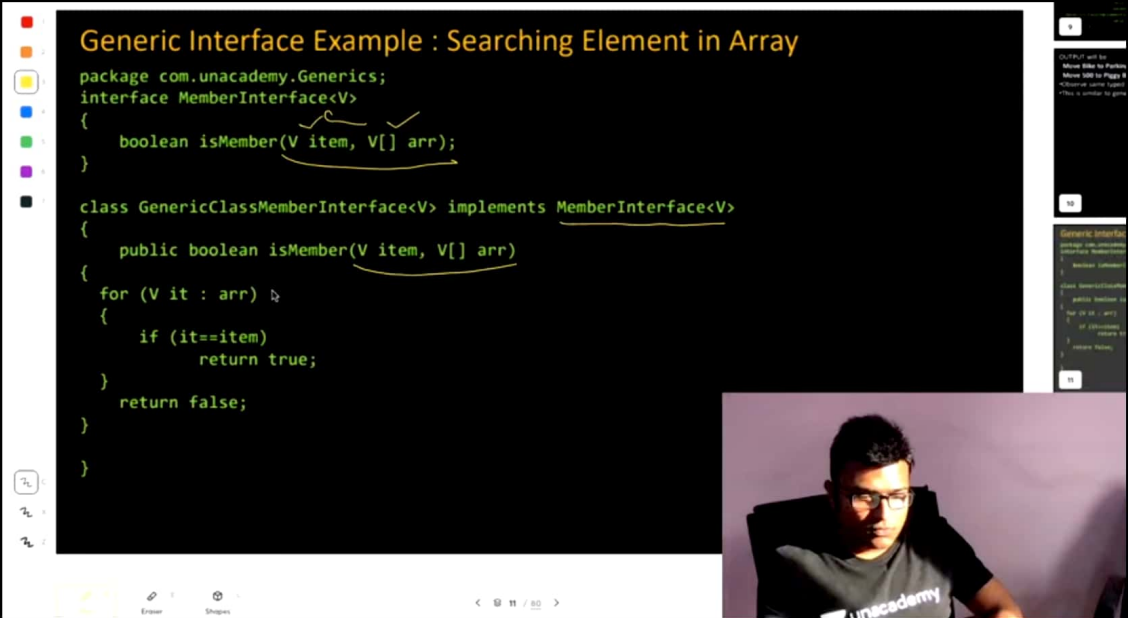
class GenericClassMemberInterface<V> implements MemberInterface<V>
{
    public boolean isMember(V item, V[] arr)
    {
        for (V it : arr)
        {
            if (it==item)
                return true;
        }
        return false;
    }
}
```

Generic Interface Example : Searching Element in Array

```
package com.unacademy.Generics;
interface MemberInterface<V>
{
    boolean isMember(V item, V[] arr);
}

class GenericClassMemberInterface<V> implements MemberInterface<V>
{
    public boolean isMember(V item, V[] arr)
    {
        for (V it : arr)
        {
            if (it==item)
                return true;
        }
        return false;
    }
}
```

< 11 / 80 >



The screenshot shows a Java IDE with a dark theme. The main editor displays the following code:

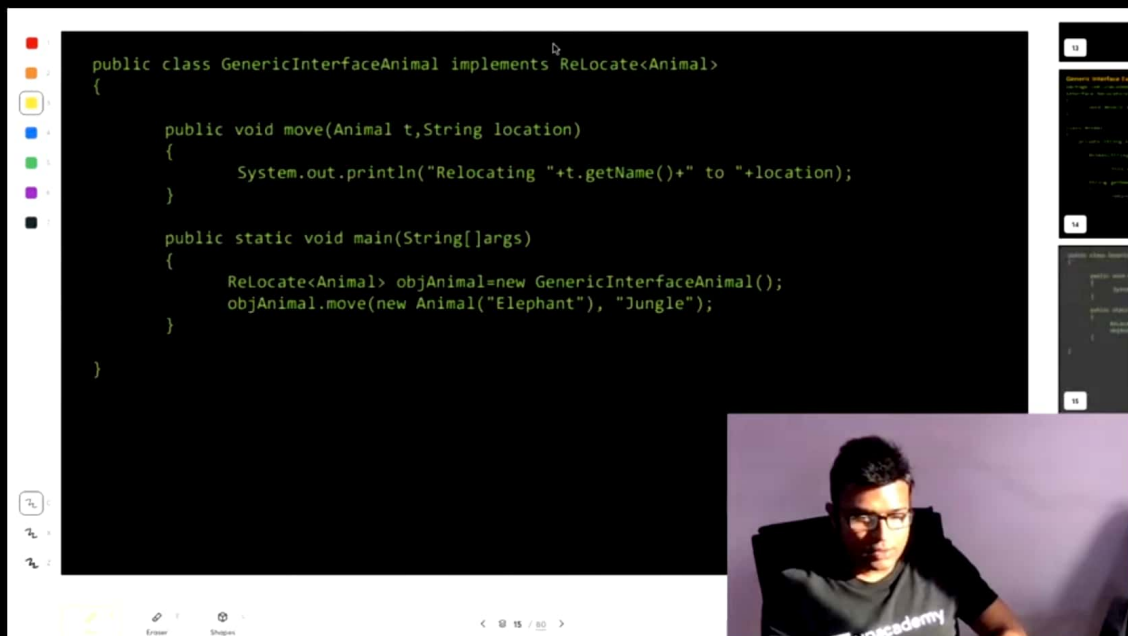
```
public class GenericInterfaceExample
{
    public static void main(String[] args)
    {
        GenericClassMemberInterface<String> obj1=new GenericClassMemberInterface<>();
        String [] strArr= {"A","B","C","G"};
        System.out.println(obj1.isMember("G",strArr));

        GenericClassMemberInterface<Integer> obj2=new GenericClassMemberInterface<>();
        Integer []intArr= {3,6,8,1,0};
        System.out.println(obj2.isMember(8,intArr));
    }
}
```

On the right side, there is a preview window titled "Generic Interface" showing the same code. At the bottom right, there is a video feed of a man with glasses and a black t-shirt with "unacademy" written on it. The IDE interface includes a sidebar on the left with icons for Explorer, Search, and Run and Debug. The bottom status bar shows "Error" and "Step Through" buttons, and a page indicator "< 12 / 80 >".







The screenshot displays a Java IDE with a dark theme. The main editor window contains the following code:

```
public class GenericInterfaceAnimal implements Relocate<Animal>
{
    public void move(Animal t,String location)
    {
        System.out.println("Relocating "+t.getName()+" to "+location);
    }

    public static void main(String[]args)
    {
        Relocate<Animal> objAnimal=new GenericInterfaceAnimal();
        objAnimal.move(new Animal("Elephant"), "Jungle");
    }
}
```

On the right side, there is a vertical panel with tabs. The top tab is titled "GenericInterfaceAnimal.java" and shows the same code as the main editor. Below it, another tab is partially visible. At the bottom right, there is a video feed of a man with glasses and a black t-shirt, sitting in a chair.

The IDE interface includes a toolbar on the left with icons for file operations (new, open, save, etc.) and a status bar at the bottom showing "Error" and "Warning" icons, along with a progress indicator "< 15 / 80 >".

Output will be :

Relocating Elephant to Jungle

- Here, we have used a custom object as the typed parameter.

The interface includes a vertical toolbar on the left with a red square, an orange square, a yellow square, a blue square, a green square, a purple square, and a black square. Below these are icons for a search, a list, and a refresh. The bottom of the slide features a navigation bar with a yellow square, a search icon, a refresh icon, and a page indicator showing '< 16 / 80 >'. The sidebar on the right contains a code editor with syntax-highlighted text and a preview window showing the output. A small video of the presenter, a man with glasses wearing a black t-shirt, is located in the bottom right corner.

← JAVA - 3-06-2021

LAST VISITED 45 MIN AGO

SAVE TO CLOUD

Slides


59

Which data structure prefer: HashMap or Tr

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- We can choose according to our requirements.
- TreeMap is sorted whereas HashMap is faster.
- Thus, if we want our elements to be ordered, we use a TreeMap.

61



- If we use any custom object in Map as a key, we need to override equals() and hashCode() method. hashCode() method used to find hash according to the object and equals method to compare if two keys are equal or not.
- On the other hand, if we are storing a custom object in a sorted Collection, we also need to make sure that our equals() method is consistent with compareTo() method.

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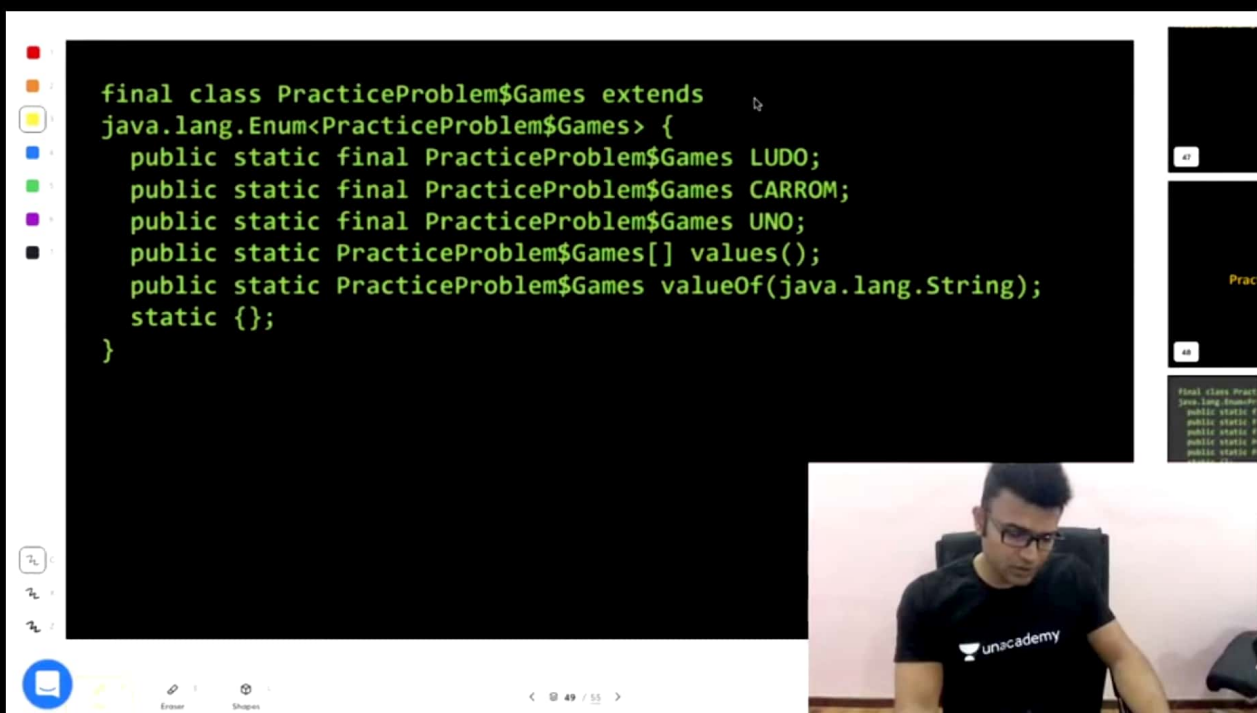
• We can choose according to our requirements.
• TreeMap is sorted whereas HashMap is faster.
• Thus, if we want our elements to be ordered, we can use a TreeMap.

61

What do you need to do to
object as a key in Collect
(ex : Map)?

62





The screenshot shows a video lecture interface. The main part of the screen displays a code editor with the following Java code:

```
final class PracticeProblem$Games extends  
java.lang.Enum<PracticeProblem$Games> {  
    public static final PracticeProblem$Games LUDO;  
    public static final PracticeProblem$Games CARROM;  
    public static final PracticeProblem$Games UNO;  
    public static PracticeProblem$Games[] values();  
    public static PracticeProblem$Games valueOf(java.lang.String);  
    static {};  
}
```

On the left side of the code editor, there is a vertical toolbar with icons for various editing tools. On the right side, there is a sidebar with a search bar and a list of video thumbnails. The bottom of the screen shows a video feed of the presenter, a man wearing glasses and a black t-shirt with the 'unacademy' logo. The bottom status bar of the video player shows the current time as 49 / 55.