

Generics in Java

Module - II

Syntax, Declaration and Instantiation



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Generics Syntax

Classes and Interfaces

```
class Glass<T>{  
    private T liquid;  
}
```

Type Parameter

- Single character
- Capital
- In the angle brackets

Common Characters used in Java API

K - Key

E - Element

N - Number


T - Type

V - value

S, U, V – Multiple Types

Instantiating Generic Type

Generic Module

Type Parameter 

```
class Glass<T>{  
    private T liquid;  
}
```

Code using Generic Module

```
class Juice{ }
```

```
class Water { }
```

```
Glass<Juice> juiceGlass = new Glass<Juice>();
```

```
Glass<Water> waterGlass= new Glass<Water>();
```

Type Argument 

```
Glass<Water> waterGlass= new Glass< >();
```



Multiple Type Parameters

```
public class Colour<R,G,B> {  
    public Colour(){ }  
    public Colour(R red, G green, B blue){  
    }  
}
```

```
Red red = new Red();  
Green green = new Green();  
Blue blue = new Blue();
```

```
class Red { }  
class Green{ }  
class Blue{ }
```

```
Colour<Red, Green, Blue> colour = new Colour< >(red, green, blue);
```

```
Colour<Red, Green, Blue> colour = new Colour< >( );
```

Generic Methods

```
public class Bartender{  
    //Method with return type  
    public <J,W> Cocktail mix(J juice, W water){  
        //Cocktail mixing code ;-)  
        return new Cocktail( );  
    }  
  
    public <J,W> void mix2(J juice, W water){  
    }  
  
    public static <J,W> void mix3(J juice, W water){  
    }  
  
}
```

Generics Method - Invocation

```
public class Bartender{  
    //Method with return type  
    public <J,W> Cocktail mix(J j, W w){  
        //Cocktail mixing code ;-)  
        return new Cocktail( );  
    }  
  
    public <J,W> void mix2(J j, W w){  
    }  
  
    public static <J,W> void mix3(J j, W w){  
    }  
}
```

- No need to declare at class level to use at method level
- For variables – Declare at class level

```
Bartender bartender = new Bartender();
```

```
Juice juice = new Juice();
```

```
Water water = new Water();
```

```
Glass<Cocktail> cocktail = bartender.<Juice, Water>mix(juice, water);
```

```
bartender.mix(juice, water); // Works – Type Inference
```

```
Bartender.<Juice, Water>mix3(juice, water); //Static method
```

THANK YOU

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