

Customize Java Annotation with Examples

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Java annotations are a mechanism for adding metadata information to our source code (Program). They are a powerful part of Java that was added to JDK5. Annotations provide an alternative to the use of XML descriptors. Also, we are able to attach them to packages, classes, interfaces, methods, and fields, annotations by themselves have no effect on the execution of a source code (Program). In this article, we are going to focus on how to create and process custom annotations. We can read in detail about how to customize the [Java annotations](#) with Example


Create Custom Annotation

We are going to create three custom annotations with the goal of serializing an object into a JSON string. that is –

- **Class Level Annotation**
- **Field Level Annotation**
- **Method Level Annotation**

1. Class Level Annotation

The first step to creating a custom annotation is **to declare it using the @interface keyword** :



```
public @interface GFG {
```

The next step is to **specify the scope and target of our custom annotation** :



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2. Field Level Annotation

Using the same fashion, we create our second annotation to **mark the fields that we are going to include in the generated JSON :**

Java

```
@Retention(RetentionPolicy.RUNTIME)
@Target(ElementType.FIELD)
public @interface GFGElement {
    public String key() default "";
}
```

3. Method Level Annotation

To serialize an object to a JSON string, we want to execute some method to initialize an object. For that reason, we are going to create an annotation to mark this method. First of All, declared a public annotation with runtime visibility that we can apply to our classes methods.

Java

```
@Retention(RetentionPolicy.RUNTIME)
@Target(ElementType.METHOD)
public @interface Init {
}
```

Example

Java



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```
import java.lang.annotation.RetentionPolicy;
import java.lang.annotation.Target;

@Documented
@Target(ElementType.FIELD)
@Inherited
@Retention(RetentionPolicy.RUNTIME)
public @interface DBField {
    String name();

    Class< ?> type();

    boolean isPrimaryKey() default false;
}
```

Usage:

Annotated Class

Java

```
package com.admfactory.annotation;

import java.util.Date;

public class User {

    @DBField(name = "id", isPrimaryKey = true, type = Long.class)
    private long id;

    @DBField(name = "name", type = String.class)
    private String name;

    @DBField(name = "email", type = String.class)
    private String email;

    @DBField(name = "created", type = Date.class)
    private Date created;

    public long getId() {
        return id;
    }
}
```

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```
public String getName() {  
    return name;  
}  
  
public void setName(String name) {  
    this.name = name;  
}  
  
public String getEmail() {  
    return email;  
}
```



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```
        return created;  
    }  
  
    public void setCreated(Date created) {  
        this.created = created;  
    }  
}
```

Runnable Code

Java

```
package com.admfactory.annotation;  
  
import java.lang.reflect.Field;  
import java.util.Date;  
  
public class AnnotationExample {  
  
    public static void main(String[] args) throws Exception {  
        System.out.println("Java Custom Annotation Example");  
        System.out.println();  
  
        User usr = new User();  
        usr.setEmail("john.doe@example.com");  
    }  
}
```

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```
        System.out.println("field name: " + dbField.name());

        // changed the access to public
        field.setAccessible(true);
        Object value = field.get(usr);
        System.out.println("field value: " + value);

        System.out.println("field type: " + dbField.type());
        System.out.println("is primary: " + dbField.isPrimaryKey());
        System.out.println();
    }
}
```

Output:

Java Custom Annotation Example

```
field name: id
field value: 112
field type: class java.lang.Long
is primary: true
```

```
field name: name
field value: John Doe
field type: class java.lang.String
is primary: false
```

```
field name: email
field value: john.doe@example.com
field type: class java.lang.String
is primary: false
```

```
field name: created
field value: Wed Jul 25 17:10:05 PST 2018
```

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