

! " # \$ % & ' ' ( \$ ) \$ & \* ' # 4

Mapper

# <+"#&C01' #

|                                                          |    |
|----------------------------------------------------------|----|
| B)' 5.....                                               | 1  |
| :. * #' . * 48" 10(" 6\$&* 5.....                        | 1  |
| L". #\$/ .....                                           | 3  |
| :. * #' . < .....                                        | 3  |
| B&/' . =' >4.....                                        | 5  |
| ? "- . \$&' &* ' .....                                   | 9  |
| G" 44/\$&" 61' &* ' .....                                | 10 |
| OS2 4"- . \$&5/0 * 6" 44/\$&\$61* 6\$/0 " , 7' 2/< ..... | 11 |
| J; . \$&* H' &* 5.....                                   | 11 |
| :. * #' . < .....                                        | 11 |
| : " ) ) ' . @2\$ record-21\$44" 6.....                   | 12 |
| retainIdentity .....                                     | 13 |
| :. * #' . .....                                          | 13 |
| : " ) ) ' . @* 6\$' #<' /* 8< .....                      | 15 |
| + \$ , " . 8" ) ) ' . @* 6\$' #<- \$&&" /\$9*>.....      | 16 |
| @Exported .....                                          | 16 |
| @PropertyName .....                                      | 17 |
| @Ignored .....                                           | 19 |
| @DateFormat .....                                        | 19 |
| L". #\$/ 4) \$H* .....                                   | 21 |
| :. "' 2/ .....                                           | 21 |
| X. - * 6 .....                                           | 21 |
| P' 4/< .....                                             | 22 |
| J9' &2\$ .....                                           | 23 |
| N\$24* # \$10&<> , \$11 .....                            | 23 |
| I \$48. ' ) ' 1' &* ' , \$11" 6.....                     | 23 |

! "#\$

+ ' ", - ") \* # " . \$(. \$, "/\$/0 , \*, 1\*"/' 23 4"- . \$&'&\*5 \* 6"44/\$&"61'&\*5 Java-", 7' 2/"6 8"  
\$&"/\$9\*5#. : "10("6\$/ ' 1\* , \*, 1\*"/' 2\* 4#";3/ 4"- . \$&5/0 Java-", 7' 2/< 6 =\$>1, **OutputStream**  
\* 1\* **String** \* 6"44/\$&\$61\*6\$/0 ", 7' 2/< \* ( **String**, **InputStream** \* 1\* =\$>1\$.

?8'. 6\$ 8"2\$@' # &' , "10%"> 8. \* #' . , \$ (\$/' # ) \$) \* # = ". # \$10&"' "8\*4\$&\* ' / . ' , "6\$&\*>

%&' ( #&' ) \* +, - . +/01' \$

*ReviewComment!*!~!"#\$%&# ' ( ) #\*+, &%(- ( \$ . ( ' ' / \*+\*. 0\$. \*&%(- ( 10\*' '\*

```
@Exported !
public class ReviewComment {
    Ê private String comment;
    Ê @Ignored "
    Ê private String author;
    Ê private boolean resolved;
    Ê // toString, #$$$&' , ($$$$&' )*+, $- ' . /0 1&2%1)(%3
}
```

! @Exported 21\$44< A~!21\$44<, 4 2"/". < #\* . \$, "/\$' / **Mapper**. **Mapper**A~!A\* &' . =' >4 , \*, 1\*"/' 2\*,  
8" 1&\$5 48' 9\* = \* 2\$9\*5 A~!6 83&2/' ÇB&/' . =' >4È

" @Ignored 8"15 **Mapper** \* ;&" . \* . 3' /

%&' ( #& ) +2&01#1' \$

*WriteExample.java*

```
public class WriteExample {
    Ê public static void main(String[] args) throws IOException {
    Ê     ReviewComment reviewComment = new ReviewComment(); !
    Ê     reviewComment.setComment("4.-3 static'3 5 &26)%$");
    Ê     reviewComment.setResolved(false);
    Ê     reviewComment.setAuthor("7&)5&08,39 #1");

    Ê     Mapper mapper = ...; "
    Ê     String string = mapper.writeToString(reviewComment); :
    Ê     System.out.println(string); ;
    Ê }
}
```

! ?" () \$C# D2(' #815. **ReviewComment**

" ?" () \$C# D2(' #815. 21\$44\$, . ' \$1\* (3EF ' ;" **Mapper**

: ?" -. \$&5' # **reviewComment**

; G<6") \* # 4/. "2"6" ' 8. ' ) 4/\$61' &\* ' ", 7' 2/\$

2#\$%&#. 3. (4\*

```
{"comment": "4. -3 static' 3 5 &26)%$", "resolved": false}
```

G 6<6")' &' / \$6/" . \$, 8"/" #3 H/" #< 8" #' /\* 1\* 8" 1' author 6 21\$44' ReviewComment \$&&"/\$9\*' >  
@Ignored

%&' ( #& /+))301+/, #1' \$

*ReadExample.java*

```
public class ReadExample {  
    public static void main(String[] args) {  
        Mapper mapper = new DefaultMapper();  
        ReviewComment reviewComment = mapper.readFromString(ReviewComment.class, ""  
            {"comment": "4. -3 static' 3 5 &26)%$", "resolved": false}""");  
        System.out.println(reviewComment);  
    }  
}
```

2#\$%&#. 3. (4\*

```
ReviewComment(comment=4. -3 static' 3 5 &26)%$, author=null, resolved=false)
```

## 4+&( 03

1. I\$(. \$, "/\$>/' 4", 4/6' &&<> =". #\$/ 8. ')4/\$61' &\*5 ", 7' 2/"6 \*1\* 6"48"10(3>/' 40 43F ' 4/63EF \*#. : . \* #' . <Ñ&\*@'
2. J8\*%\* /' =". #\$/ 6 /' 24/"6" # = \$>1' 6 2". &' 8. "' 2/\$, )\$@' ' 41\* G< . '%\*1\* 6(5/0 43F ' 4/63EF \* > =". #\$/

J, 5(\$/' 10&<' /. ', "6\$&\*5 2 =". #\$/3:

1. K' 1"6' 2"H\*/\$' #"4/0

2. L". #\$/ -. \$&\* / 1056\$:

- a. M41\* 8"1' 8" #'H' &" \$&&"/\$9\*' > @PropertyName, /" 21EHÑAñAvalue \$&&"/\$9\*\* @PropertyName.
- b. M41\* &\$) 8"1' # &' / \$&&"/\$9\*\* @PropertyName, /" 21EHÑAñA\* #5 8"15.
- c. M41\* . '\$1\* (\$9\*5 8"))' . @\*6\$' / record'<, /" ) 15 record-21\$44"6:
  - i. M41\* 2" #8"&' &/\$ record'\$ 8" #'H' &\$ \$&&"/\$9\*' > @PropertyName, /" 21EHÑAñAvalue \$&&"/\$9\*\* @PropertyName
  - ii. B&SH' ÑAñA\* #5 RecordComponent

!

: "4#"/. \*/' Ç: . \* #' . 4"- . \$&' &\*5È. G &C# 4/. "2"6"' 8. ')4/\$61' &\* ' ", 7' 2/\$ 4")' . @\* / 1056\$ÑAñA") 4/. "2\* comment \* resolved

## %&' ( #&5

6#, +/#7+8' 30#( 5# 9+&( 035

### JSON

```
{"comment": "4.-3 static'3 5 &26)%$", "resolved": false}
```

### .properties

```
comment=4.-3 static'3 5 &26)%$
resolved=false
author.name=Josh
```

### YAML

```
comment: 4.-3 static'3 5 &26)%$
resolved: false
author:
  Ê name: Josh
```

: #8' 30#( 5; 8#, +/#7+( 9+&( 03

98080ZNHasduy091283nsfdahj sdfoi oi wqerXX

1. 7(8+( 0\$ \$' "(09:(. \*/9; (#%\*/ , " ) (8 \$< +\* Json?  
! \$, #" @&"

!

+ ' \*48"10(3>/' ;"/"6<' 4. ')4/6\$ (\$8\*4\* \* H/' &\*5 =" . #\$/ "6 Json, XML, properties \* /.8. ?""/6' /4/63EF \*' 4. ')4/6\$ )"1@&< , </0 . ' \$1\* ("6\$&< 4\$#"4/"5/' 10&" . N< 8"4/\$6\* # 0 (\$ . \$, "/3, ' 41\* D/" , 3)' / &' /\$2.

# ! 13#&9#; )

B&/' . =' >4 Mapper, . '\$1\* (3>/' 64' ' ;" #' /") < 6 . '%' &\* \*

Mapper.java

```
public interface Mapper {
    /**
     * <3%2$% ()=&2->--'9 ?1@$A*/0& 1/2((2 {@code clazz} 3@ (%&)13 {@code input}
     * 3 5)@5&2,2$% 5)((%2-)5/$--'9 ?1@$A*/0& 1/2((2 {@code clazz}.
     * <p>
     * 7&3A$& 5'@)52:
     *
     * <pre>
     *      String input = ""
     *      {"comment": "B)&)C20 &26)%2", "resolved": false}"";
     *      ReviewComment reviewComment =
mapper.readFromString(ReviewComment.class, input);
     *      System.out.println(reviewComment);
     * </pre>
     *
     * @param clazz 1/2((, ()=&2->--'9 ?1@$A*/0& 1)%&#) -2=).3%(0 5 {@code input}
     * @param input (%&)1)5)$ *&$.(%25/$-3$ ()=&2->--)#) ?1@$A*/0&2 1/2((2 {@code
clazz}
     * @param <T> 5)@5&2,2$A'9 %3* A$%).2
     * @return 5)((%2-)5/$--'9 ?1@$A*/0& {@code clazz}
     */
    <T> T readFromString(Class<T> clazz, String input);

    /**
     * <3%2$% )6D$1% 1/2((2 {@code clazz} 3@ {@code InputStream}'2
     * 3 5)@5&2,2$% 5)((%2-)5/$--'9 ?1@$A*/0& 1/2((2 {@code clazz}.
     * <p>
     * E2--'9 A$%). @21&'52$% {@code inputStream}.
     * <p>
     * 7&3A$& 5'@)52:
     *
     * <pre>
     *      String input = ""
     *      {"comment": "B)&)C20 &26)%2", "resolved": false}"";
     *      ReviewComment reviewComment = mapper.read(ReviewComment.class,
     *      new
ByteArrayInputStream(input.getBytes(StandardCharsets.UTF_8)));
     *      System.out.println(reviewComment);
     * </pre>
     *
     * @param clazz 1/2((, ()=&2->--'9 ?1@$A*/0& 1)%&#) -2=).3%(0 5 {@code
inputStream}
     * @param inputStream *)%1 55).2, ().$&F2,39 (%&)1+ 5 {@link
java.nio.charset.StandardCharsets#UTF_8} 1).3&)51$
```

```

    * @param <T> 5)@5&2,2$A'9 %3* A$%).2
    * @return 5)((%2-)5/$--'9 ?1@$A*/0& 1/2((2 {@code clazz}
    * @throws IOException 5 (/+G2$ )C3613 55).2-5'5).2
    */
    <T> T read(Class<T> clazz, InputStream inputStream) throws IOException;

    /**
     * <3%2$% ()=&2->--'$ *&$.(%25/$-3$ ?1@$A*/0&2 1/2((2 {@code clazz} 3@ {@code
    File}'2
     * 3 5)@5&2,2$% 5)((%2-)5/$--'9 ?1@$A*/0& 1/2((2 {@code clazz}.
     * <p>
     * 7&3A$& 5'@)52:
     *
     * <pre>
     *         ReviewComment reviewComment = mapper.read(ReviewComment.class, new
    File("/tmp/review"));
     *         System.out.println(reviewComment);
     * </pre>
     *
     * @param clazz 1/2((, ()=&2->--'9 ?1@$A*/0& 1)%&#) -2=).3%(0 5 H29/$
     * @param file H29/, (.$&F3A)$ 1)%&#) - (%&)1)5)$ *&$.(%25/$-3$ ?1@$A*/0&2
    {@code clazz}
     * 5 {@link java.nio.charset.StandardCharsets#UTF_8} 1).3&)51$
     * @param <T> 5)@5&2,2$A'9 %3* A$%).2
     * @return 5)((%2-)5/$--'9 ?1@$A*/0& {@code clazz}
     * @throws IOException 5 (/+G2$ )C3613 55).2-5'5).2
     */
    <T> T read(Class<T> clazz, File file) throws IOException;

    /**
     * 1)=&2-0$% {@code object} 5 (%&)1+
     * <p>
     * 7&3A$& 5'@)52:
     *
     * <pre>
     *         ReviewComment reviewComment = new ReviewComment();
     *         reviewComment.setComment("B)&)C20 &26)%2");
     *         reviewComment.setResolved(false);
     *
     *         String string = mapper.toString(reviewComment);
     *         System.out.println(string);
     * </pre>
     *
     * @param object )6D$1% ./0 ()=&2-$-30
     * @return (%&)1)5)$ *&$.(%25/$-3$ )6D$1%2 5 5'6&2--)A H)&A2%$
     */
    String toString(Object object);

    /**
     * 1)=&2-0$% {@code object} 5 {@link OutputStream}.
     * <p>

```



```

    * J) $(%K *)($ 5'@)52 ?%)#) A$%).2 5 {@link OutputStream} .)/F-' )12@2%K(0
629%', ( ))%5$$(%5+8, 3$ (%&)1)5)A+
    * *&$.(%25/$-38 {@code object}' 2 5 1).3&)51$ {@link
java.nio.charset.StandardCharsets#UTF_8}
    * <p>
    * E2--' 9 A$%). @21&' 52$% {@code outputStream}
    * <p>
    * 7&3A$& 5'@)52:
    *
    * <pre>
    *         ReviewComment reviewComment = new ReviewComment();
    *         reviewComment.setComment("B)&C20 &26)%2");
    *         reviewComment.setResolved(false);
    *
    *         mapper.write(reviewComment, new FileOutputStream("/tmp/review"));
    * </pre>
    *
    * @param object )6D$1% ./0 ()=&2-$-30
    * @throws IOException 5 (/+G2$ )C3613 55).2-5'5).2
    */
    void write(Object object, OutputStream outputStream) throws IOException;

    /**
    * l)=&2-0$% {@code object} 5 {@link File}.
    * <p>
    * J) $(%K *)($ 5'@)52 ?%)#) A$%).2 5 {@link File} .)/F-' )12@2%K(0 629%',
    ( ))%5$$(%5+8, 3$ (%&)1)5)A+
    * *&$.(%25/$-38 {@code object}' 2 5 1).3&)51$ {@link
java.nio.charset.StandardCharsets#UTF_8}
    * <p>
    * E2--' 9 A$%). @21&' 52$% {@code outputStream}
    * <p>
    * 7&3A$& 5'@)52:
    *
    * <pre>
    *         ReviewComment reviewComment = new ReviewComment();
    *         reviewComment.setComment("B)&C20 &26)%2");
    *         reviewComment.setResolved(false);
    *
    *         mapper.write(reviewComment, new File("/tmp/review"));
    * </pre>
    *
    * @param object )6D$1% ./0 ()=&2-$-30
    * @throws IOException 5 (/+G2$ )C3613 55).2-5'5).2
    */
    void write(Object object, File file) throws IOException;
}

```

G< #"@' /' 8" #' &5/0 \* &/' . =' >4:

■

1. O\* &3/0 &' 8. "6' . 5' #"' \*421EH' &\*' , &' 32\$(\$&&"' 6 Javadoc

2. ! " , \$6\*/0 &"6<> #' /")

P"102" &' (\$, 3)0/' ) "8"1&\*/0 Javadoc.

<+2&01#1' #

? "-. \$&' &\* ' AÑD/" 2");) \$ #< 8. ' ", . \$(3' # Java-", 7' 2/ 6 4/. "23 6<, . \$&&" ;" =". #\$/\$.

G \*&/' . =' >4' Mapper #' /") <, &\$ (6\$&\* ' 2" /". <- &\$H\* &\$' /45 4" 41"6\$ write, 4"-. \$&5E/  
", 7' 2/<:

1. writeToString(Object) 4"-. \$&\* / ", 7' 2/ 6 4/. "23 \* 6'. &C/ ' C
2. write(Object, OutputStream) 4"-. \$&\* / ", 7' 2/ 6 OutputStream
3. write(Object, File) 4"-. \$&\* / ", 7' 2/ 6 File

: "4#" /. \* /' 8. \* #' . 6< ("6\$ writeToString 6 Ç: . \* #' . ' 4"-. \$&' &\* 5È.

=+)) 301+/, #1' #

G"44/\$&"61'&\*'AÑD/" 2");)\$ #< 8.'",. \$(3' # 4/. "2"6"' 8.')4/\$61'&\*' ",. \$/&" 6 Java-  
", 7' 2/.

G \*&/' . ='>4' Mapper #' /")<, &\$(6\$&\*' 2"/". <- &\$H\*&\$' /45 4" 41"6\$ read, 6"44/\$&\$61\*6\$E/  
", 7' 2/<:

1. readFromString(Class<T>, String) 8. "H\*/\$' / D2(' #815. 21\$44\$ \*( 4/. "2\*
2. read(Class<T>, InputStream) 8. "H\*/\$' / D2(' #815. 21\$44\$ \*( InputStream'\$
3. read(Class<T>, File) 8. "H\*/\$' / D2(' #815. 21\$44\$ \*( =\$>1\$

: "4#" /. \*/' 8. \*#'. < 6< ("6\$ readFromString 6 Ç: .\*#'. ' 6"44/\$&"61'&\*5È \* Javadoc  
\*&/' . ='>4\$.

>07)+2&01\$3- ' /+))3010/, ' /03-  
+?@#735

I '\$1\*(\$9\*5 \*&/' . ='>4\$ Mapper )"1@&\$:

1. =()#\*+, /9\* . (''/\*+\*.0\$.\*/9", 7'2/< 8" 8"15# \*- 21\$44"6.
  - a. ?/\$/\*H'42\*' 8"15 \* 8"15,) 15 2"/". <- #' /") Field#i sSyntheti c 6"(6. \$F \$' / true, Mapper )"1@' & 8. "834/\* /0.
2. J, . \$F \$/045 2 8"15# &\$8. 5#3E, H/", < 6"44/\$&"6\*/0 \*1\* 4"- . \$&\*/0 ", 7'2/.
  - a. : . \* &' ", -") \*#"4/\* "&\$ \*48"10(3' / #' /") Accessi bl eObj ect#trySetAccessi bl e.

AB&01' 8#1' \$

01\$44<, 4 2"/". <# . \$, "/\$' / Mapper )"1@&<:

1. B#'/0 publi c 2"&4/. 32/" . , ' ( 8\$. \$#'/ . "6, (\$ \*421EH' &\*' # record-21\$44"6.
2. +\$41') "6\$/045 &' 8"4. ' ) 4/6' &&" \* ( java. lang. Object \*1\* \* ( java. lang. Record, ' 41\* G< . ' \$1\* (3' /' 8"))'. @23 record-21\$44"6.

Q/\* ";. \$&\*H' &\*5 )"1@&< 2"&/. "1\*. "6\$/045 8. ";. \$##&" .

%&' ( #&5

1. : . \* #' . 4"- . \$&' &\*5. G &C# . ' \$1\*(\$9\*5 Mapper:
  1. : . "-") \*/ 8" 64' # 8"15# . '=1' 24\*6&"
  2. R\$8\*4<6\$'/ (&\$H' &\*5 8"1' > 6 4/. "23 6 4""/6' /4/6\*\* 4 =" . #\$/ "#
  3. G" (6. \$F \$' / 4/. "23
2. : . \* #' . 6"44/\$&"61' &\*5. G &C# . ' \$1\*(\$9\*5 Mapper:
  1. K\*/\$' / 8'. ' ) \$&&3E 4/. "23 6 "8. ' ) ' 1C&&"# =" . #\$/ '
  2. G< (<6\$'/ . '=1' 24\*6&" 2"&4/. 32/" . , ' ( 8\$. \$#'/ . "6 21\$44\$ Revi ewComment
  3. ?"8"4/\$615' / (&\$H' &\*5 6 4/. "2' 8"15# 21\$44\$ Revi ewComment \* 34/\$&\$61\*6\$'/ 8"15 4" () \$&&"#3 D2(' #815. 3 Revi ewComment

%+" " #&C 70 record-7, 0)) +/

1, \$11 \* ( 10ÃÑA(\$ 8"))' . @23 record-21\$44"6.

||

M41\* . '\$1\*(\$9\*5 Mapper &' 8"))'. @\*6\$'/ record-21\$44<, /" "&\$ )"1@&\$  
2\*&3/0 UnsupportedOperationException 8. \* 8"8</2' 4"-.\$&'&\*5 \*1\*  
6"44/\$&"61'&\*5 record-21\$44\$.

: . "H\*/\$>/' 4/\$/0E ÇRecord ClassesÊ &\$ 4\$>/' Oracle.

I \$, "/\$ 4 record-21\$44\$#\* 8"- "@\$ &\$ . \$, "/3 4 ", <H&< #\* 21\$44\$#\*. B48"10(3>/' :

1. RecordComponent

2. N' /") Class#getRecordComponents. J & 6' . &C/ #\$44\*6 2" #8"&' &/ record'\$

Song.java!Ñ!"#\$%&# record'\*

```
@Exported
public record Song(
    Ê String artist,
    Ê @PropertyName("myTitle") String title
) {
}
```

||

G< ("6\*/' 2\$&"&\*H' 42\*> 2"&4/. 32/" . , 8' . ') \$6 64' (&\$H' &\*5 2" #8"&' &/  
record'\$, H/" , < 6"44/\$&"6\*/0 D2(' #815. record-21\$44\$.

# retainIdentity

"

```
3, $11$ * ( 10$ 8"))' . @23 retainIdentity = true
```

```
retainIdentity$boolean &$4/. ">2$ Mapper'$ . J&$ "8.' )' 15' / , )" 1@' & 1* Mapper 4"- . $&5/0  
)' & /*H&" 4/0 @Exported ", 7' 2/" 6.
```

```
I' $1* ($9*5 * &/' . =' >4$ Mapper )" 1@&$ 8. * &* #$/0 8$. $#' /. boolean retainIdentity 6  
2"&4/. 32/" . '.
```

%&' ( #&

IdentityRetainingExample.java

```
public class IdentityRetainingExample {  
    public static void main(String[] args) throws IOException {  
        Foo foo = new Foo();  
        Bar bar = new Bar(); !  
        foo.setBar0(bar); "  
        foo.setBar1(bar); :  
  
        boolean retainIdentity = true;  
        Mapper mapper = new DefaultMapper(retainIdentity);  
        Foo restored = mapper.readFromString(Foo.class, mapper.writeToString(foo)); ;  
  
        System.out.println(restored.getBar0() == restored.getBar1()); L  
    }  
}
```

```
! ?" () $1* " ) * & D2(' #815. Bar
```

```
" S4/$&" 6* 1* bar (&$H' &* ' # 8" 15 bar0 H' . ' ( 4' //' . setBar0
```

```
: S4/$&" 6* 1* bar (&$H' &* ' # 8" 15 bar1 H' . ' ( 4' //' . setBar1
```

```
; ?"- . $&5' # * 6" 44/$&$61* 6$' # D2(' #815. foo
```

```
L ?8. $%* 6$' # , . $6&< 1* 8" 15 foo.bar0 * foo.bar1
```

```
1. M41* Mapper &$4/. "' & 4 retainIdentity = true, /" 4. $6&' &* ' )" 1@&" 6<) $/0 true,  
* &$H' $false.
```

```
2. M41* 6 ;. $=' " , 7' 2/" 6' 4/0 ) 6' . $(&<' 44< 12* &$ " ) * &* /" / '@' " , 7' 2/ @Exported 21$44$  
8" ==, /" 6" 44/$&" 61' &&<> ;. $= ) " 1@' & /" '@' ) $6$/0 true 8. * 4. $6&' &* * D/*- '@' 44< 1" 2,  
' 41* retainIdentity = true.
```

```
3. M41* '@' retainIdentity = false, /" 4. $6&' &* ' ) $C/ false &' ($6* 4* #" " / /";", 2$2">  
. ' (310/$/ == , < 1 ) " 6< (" 6$ #' /" ) $ write*
```

!

```
: "4#"/. */' &$ 21$44 IdentityHashMap
```

63+ "#, 03- ) D' 7, 0( ' ?

: ") ) '. @\*6\$/0 9\*21< &' &3@&". I '\$1\*(\$9\*5 Mapper )"1@&\$ 2\*&3/0 \*421EH' &\*', '41\*  
", &\$ . 3@\*6\$' / 9\*21



%+" "#&C' /0#( 5# 3' \* 5

: ")))'. @\*/' 4"- . \$&' &\* ' \* 6"44/\$&"61' &\* ' D2(' #815. "6 @Exported 21\$44"6 4 8"15#\* /\* 8\$ T,  
;) ' TÃÃ') &" \* (:

1. : . \* #\*/ \* 6 \* 1\* 4""/6' /4/63EF \* > wrapper-21\$44

2. String

3. @Exported 21\$44ÃÃ21\$44, 4"- . \$&5' #< > \* 6"44/\$&\$61\*6\$' #< > Mapper'"#

4. List<T>

5. Set<T>

6. enum

7. Local Date

8. Local Time

9. Local DateTime

P" ' 4/0, D2(' #815. 21\$44\$ Booki ngForm , \*, 1\*"/' 2\$ )" 1@&\$ 43#'/0 4"- . \$&\*/0 \* 6"44/\$&"6\*/0:

```
// #$$$&' 3 ($%%$&' )*+, $-' ./0 1&2%1)(%3
@Exported
public class BookingForm {
    Ê private List<Guest> guests;
}

@Exported
public class Guest {
    Ê private String name;
    Ê private Set<Preference> preferences;
}

@Exported
public class Preference {
    Ê private String description;
}
```

: 0?+& \* + " " #&C' /0#( 52 01 1+30D' ;

## @Exported

N' /") < Mapper 2\*) \$E/ \*421EH' &\*' 8. \* 8"8</2' 4"- . \$&\*/0 \*1\* 6"44/\$&"6\*/0 D2(' #815.  
21\$44\$, ' ( \$&&"/\$9\*\* @Exported.

Exported.java

```
@Retention(RetentionPolicy.RUNTIME)
@Target(ElementType.TYPE)
public @interface Exported {
    Enum<NullHandling> nullHandling() default NullHandling.EXCLUDE;

    Enum<UnknownPropertiesPolicy> unknownPropertiesPolicy()
        default UnknownPropertiesPolicy.FAIL;
}
```

## NullHandling

nullHandling &\$4/. \$\*6\$' / " , . \$, "/23 (&\$H' &\* > null ) 15 reference /\*8"6.

NullHandling.java

```
public enum NullHandling {
    EXCLUDE,
    INCLUDE,
}
```

¥ R&\$H' &\*' EXCLUDE \*421EHS' / (\$8\*40 null (&\$H' &\*564/. "2"6"" 8. ')4/\$61' &\*'
¥ INCLUDE ' ; " 621EHS' /

%&' ( #& ) NullHandling.EXCLUDE

ExcludeNullsExample.java

```
@Exported(nullHandling = NullHandling.EXCLUDE) !
public class ExcludeNullsExample {
    Enum<Integer> integer = null; "

    public static void main(String[] args) throws IOException {
        Mapper mapper = new DefaultMapper();
        String string = mapper.writeToString(new ExcludeNullsExample());
        System.out.println(string);
    }
}
```

! T6&" 32\$( \$1\* EXCLUDE 6 @Exported

" R&\$H' &\*' 8" 15 integer~~AN~~ null

: . \* #' . 6<6") \$:

```
{}
```

%&' ( #&) NullHandling.INCLUDE

*IncludeNullsExample.java*

```
@Exported(nullHandling = NullHandling.INCLUDE)
public class IncludeNullsExample {
    private final Integer integer = null;

    public static void main(String[] args) throws IOException {
        Mapper mapper = new DefaultMapper();
        String string = mapper.toString(new ExcludeNullsExample());
        System.out.println(string);
    }
}
```

: . \* #' . 6<6") \$:

```
{"integer": null}
```

## UnknownPropertiesPolicy

UnknownPropertiesPolicy "8. ' ) ' 15' /, H/" ) ' 1\$' / Mapper, ' 41\* 8. \* 6"44/\$&"61' &\* \* "& 64/. ' H\$' /  
&' \* (6' 4/&"' 8" 1'.

*UnknownPropertiesPolicy.java*

```
public enum UnknownPropertiesPolicy {
    IGNORE,
    FAIL,
}
```

¥ IGNORE \*;&" . \*. 3' / &' \* (6' 4/&"' 8" 1'

¥ FAIL 2\*) \$' / \* 421EH' &\*'

## @PropertyName

## PropertyName.java

```
@Target({
    ElementType.RECORD_COMPONENT,
    ElementType.FIELD,
})
@Retention(RetentionPolicy.RUNTIME)
public @interface PropertyName {
    String value();
}
```

@PropertyName #'&5' / 21EH, 8" 2"/". "#3 Mapper 6"44/\$&\$61\*6\$' / \*1\* 4"- . \$&5' / (&\$H' &\*' 8" 15.

%&' ( #&

## ReviewComment.java

```
@Exported
public class ReviewComment {
    @PropertyName("opinion") !
    private String comment;
    // toString )*+, $-
}
```

! RS) \$1\* @PropertyName, "@\*) \$' # 6 6<6")' ÇopinionÈ, \$ &' ÇcommentÈ

## WriteExample.java

```
public class WriteExample {
    public static void main(String[] args) throws IOException {
        ReviewComment reviewComment = new ReviewComment();
        reviewComment.setComment("M)/). $N, -) *+('% $ catch 6/)13");

        Mapper mapper = ...;
        String string = mapper.writeToString(reviewComment);
        System.out.println(string);

        ReviewComment restored = mapper.readFromString(ReviewComment.class, string);
        System.out.println(restored);
    }
}
```

: . \* #' . 6<6") \$:

```
{"opinion": "M)/). $N, -) *+('% $ catch 6/)13"} !
ReviewComment(comment=M)/). $N, -) *+('% $ catch 6/)13) "
```

! ?"- . \$&\*1\* reviewComment, 6 6<6")' AÑAopini on 6# ' 4/" comment

" G"44/\$&"6\*1\* reviewComment, 34/\$&"6\*1\* comment, 8. "H\*/\$6 opi ni on \*( 4/. "2\*, 8"/"#3 H/" 8"1' comment 8"#' H' &" \$&&"/\$9\*' > @PropertyName("opi ni on")

## @Ignored

Ignored.java

```
@Target({
    ElementType.RECORD_COMPONENT,
    ElementType.FIELD,
})
@Retention(RetentionPolicy.RUNTIME)
public @interface Ignored {
}
```

1. R&\$H' &\* ' 8"15 \* 21EH &' 8"8\$) \$E/ 6 4/. "2"6"' 8. ')4/\$61' &\* ' ", 7' 2/\$
2. Mapper 8. "8342\$' / (&\$H' &\* ' 8"15 8. \* 6"44/\$&"61' &\* \* ", 7' 2/\$

## @DateFormat

@DateFormat 34/\$&\$61\*6\$' /, 8" 2\$2"#3 %\$, 1"&3 Mapper 4"- . \$&5' / \* 6"44/\$&\$61\*6\$' / 8"15 /\*8"6 Local Date, Local Time \* Local DateTime.

DateFormat.java

```
@Target({
    ElementType.RECORD_COMPONENT,
    ElementType.FIELD,
})
@Retention(RetentionPolicy.RUNTIME)
public @interface DateFormat {
    /**
     * 026/)- ./0 ()=&2-$-30 3 5)((%2-)5/$-30 .2%
     */
    String value();
}
```

B48"10(3>/' :

1. DateTimeFormatter#ofPattern
2. N' /")< parse \* format 21\$44"6 Local Date, Local Time \* Local DateTime

%&' ( #&

```
@Exported
public class LocalDateTimeWrapper {
    @DateFormat("uuuu-MMMM-dd HH:mm:ss")
    private final LocalDateTime myLocalDateTime = LocalDateTime.now();

    public static void main(String[] args) throws IOException {
        LocalDateTimeWrapper wrapper = new LocalDateTimeWrapper();
        Mapper mapper = new DefaultMapper();
        String string = mapper.writeToString(wrapper);
        System.out.println(string);
    }
}
```

! U\$, 1"&) 15 4"- . \$&' &\*5 \* 6"44/\$&"61' &\*5 LocalDateTime

: . \* #' . 6<6") \$:

```
{"myLocalDateTime": "2022-February-05 11: 18: 47"}
```

4+&( 03 )" 08'

%&+#73

¥ B&/' . =' >4 Mapper \* \$&&"/\$9\* \* Ñ Æ 8\$2' /' ru.hse.homework4

¥ I '\$1\* (\$9\*5 \* &/' . =' >4\$ Ñ Æ ) . 3; " # 8\$2' /' , \* #5 8\$2' /\$ &' ) " 1@&" &\$H\* &\$ /045 4  
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¥ ?/. 32/3. \$ 8. "' 2/\$ 4"" /6' /4/63' / 4/\$&) \$. /&" > 4/. 32/3. ' maven-8. "' 2/\$:

V B4- ") &< > 2") , \* , 1\* " /' 2\* Ñ Æ src/main/java

V I ' 43. 4< , \* , 1\* " /' 2\* , ' 41\* " &\* ' 4/0, Ñ Æ src/main/resources

V P' 4/< , \* , 1\* " /' 2\* Ñ Æ src/test/java

V I ' 43. 4< ) 15 /' 4/" 6, ' 41\* " &\* ' 4/0, Ñ Æ src/test/resources

E&2' /

zip \$ . - \* 6, ' ; " \* #5 Ñ Æ lastName\_firstName\_group\_HW4.zip, ;) ' :

¥ lastName Ñ Æ \$ % \$ = \$ # \* 1 \* 5 1\$ / \* & \* 9' >

¥ firstName Ñ Æ \$ % ' \* # 5 1\$ / \* & \* 9' >

¥ group Ñ Æ " # ' . ; . 388<

: . \* # ' . : Ivanov\_Ivan\_201\_HW4.zip

# F#) 35

B48" 10(3>/' JUnit5 ) 15 /' 4/\* . "6\$&\* 5.

P' 4/< ) " 1@&<:

1. : "2. <6\$/0 #' /") < Mapper'\$

2. P' 4/\* . "6\$/0 6\$. \*\$&/< (&\$H' &\* > D1' #' &/" 6 \*48" 10(3' #< - \$&&"/\$9\*>

3. : "2. <6\$/0 70% 4/. "2 2") \$ , \*, 1\*"/' 2\*



AD#170

G07)' ( 0, - 15; ?0, ,

!

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| I ' \$1* ("6\$&\$          | + ' . ' \$1* ("6\$&\$            | 7                      |
| + ' . ' \$1* ("6\$&\$      | I ' \$1* ("6\$&\$                | 9                      |
| I ' \$1* ("6\$&\$          | I ' \$1* ("6\$&\$                | 10                     |

#

N\$24\*#\$10&<> , \$11ÑĤ/" # \$24\*#\$10&<> , \$11, 2"/". <> #< 4#"@' # 8"4/\$6\*/0.

M41\* G< 6<8"1&\*/' /. ', "6\$&\*5 2 /' 4/\$#, 8"))'. @\*/' record'< \* retainIdentity = true, /" D/" 1# "(&\$H\$' /, H/" #< 8"4/\$6\*# 10. G< ) "1@&< &' 8. "4/" . ' \$1\* ("6\$/0 /. ', "6\$&\*5 1\*1-/ (, \$ 4)' 1\$/0 D/" 8. \$6\*10&" 4 4""/6' /4/63EF\*## JUnit5 /' 4/\$#\*

H0)\*&#" #, #1' # ?0, , +/

>\*?0\$@\* 1. A\*' "#&4&0&+\$&?\*00(.. B&: +\*6\$/&09+3& (/ 10(+&+\$, 4("C' / \$%3

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                 |
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