

# JVM优化工具

## 1. 打印对象内存

```
Integer i = new Integer(23);
System.out.println(ClassLayout.parseInstance(i)
    .toPrintable());
```

需要引入jar包:

```
<dependency>
  <groupId>org.openjdk.jol</groupId>
  <artifactId>jol-core</artifactId>
  <version>0.10</version>
</dependency>
```

打印结果:

```
Running 64-bit HotSpot VM.
Objects are 8 bytes aligned.

java.lang.Integer object internals:
OFFSET  SIZE  TYPE DESCRIPTION                               VALUE
  0      4      (object header)                   01 00 00 00 (00000001 00000000 00000000 00000000) (1)
  4      4      (object header)                   00 00 00 00 (00000000 00000000 00000000 00000000) (0)
  8      4      (object header)                   48 33 36 97 (01001000 00110011 00110110 10010111) (-1758055608)
 12      4      (object header)                   01 00 00 00 (00000001 00000000 00000000 00000000) (1)
 16      4      int Integer.value                      23
 20      4      (loss due to the next object alignment)

Instance size: 24 bytes (reported by Instrumentation API)
Space losses: 0 bytes internal + 4 bytes external = 4 bytes total
```

## 2. Jconsole

## 3. JOL

[Code Tools: jol](#)

## 更多

[JVM 监控以及内存分析](#) | [jcmd](#) | [GC时间](#)