

# Los programas ejecutables Java.

## Desensamblado de codebytes y decompilación

HolaMundo.java

```
public class HolaMundo {
    public static void main(String[] args) {
        System.out.println("Hola, mundo");
    }
}
```

- J2SE 8 = 52 (0x34 hex),
- J2SE 7 = 51 (0x33 hex),
- J2SE 6.0 = 50 (0x32 hex),
- J2SE 5.0 = 49 (0x31 hex),
- JDK 1.4 = 48 (0x30 hex),
- JDK 1.3 = 47 (0x2F hex),
- JDK 1.2 = 46 (0x2E hex),
- JDK 1.1 = 45 (0x2D hex).

HolaMundo.class

```
00000000: cafe babe 0000 0034 0022 0a00 0600 1409 .....4..
00000010: 0015 0016 0000 170a 0018 0019 0700 1a07 .....<init>...
00000020: 001b 0100 063c 696e 6974 3e01 0003 2829 .....Code...LineM
00000030: 5601 0004 436f 6465 0100 0f4c 696e 654e U...Code...LineM
00000040: 756d 6265 7254 6162 6c65 0100 124c 6f63 umberTable...Loc
00000050: 616c 5661 7269 6162 6c65 5461 626c 6501 aVariableTable.
00000060: 0004 7468 6973 0100 154c 6170 7054 6573 ..this...LappTes
00000070: 7433 442f 486f 6c61 4d75 6e64 6f3b 0100 t3D/HolaMundo;..
00000080: 046d 6169 6e01 0016 285b 4c6a 6176 612f .main...[Ljava/
00000090: 6c61 6e67 2f53 7472 696e 673b 2956 0100 lang/String;V..
000000a0: 0461 7267 7301 0013 5b4c 6a61 7661 2f6c .args...[Ljava/1
000000b0: 616e 672f 5374 7269 6e67 3b01 000a 536f ang/String;...So
000000c0: 7572 6365 4669 6c65 0100 0e48 6f6c 614d ourceFile...HolaM
000000d0: 756e 646f 2e6a 6176 610c 0007 0008 0700 undo.java.....
000000e0: 1c0c 001d 001e 0100 0b48 6f6c 612c 206d .....Hola, m
000000f0: 756e 646f 0700 1f0c 0020 0021 0100 1361 undo.....!...a
00000100: 7070 5465 7374 3344 2f48 6f6c 614d 756e ppTest3D/HolaMun
00000110: 646f 0100 106a 6176 612f 6c61 6e67 2f4f do...java/lang/O
00000120: 626a 6563 7401 0010 6a61 7661 2f6c 616e bject...java/lan
00000130: 672f 5379 7374 656d 0100 036f 7574 0100 g/System...out..
00000140: 154c 6a61 7661 2f69 6f2f 5072 696e 7453 .Ljava/io/PrintS
00000150: 7472 6561 6d3b 0100 136a 6176 612f 696f tream;...java/io
00000160: 2f50 7269 6e74 5374 7265 616d 0100 0770 /PrintStream...p
00000170: 7269 6e74 6c6e 0100 1528 4c6a 6176 612f rintln... (Ljava/
00000180: 6c61 6e67 2f53 7472 696e 673b 2956 0021 lang/String;)V.!
00000190: 0005 0006 0000 0000 0002 0001 0007 0008 ...../.....
000001a0: 0001 0009 0000 002f 0001 0001 0000 0005 .....*.....
000001b0: 2ab7 0001 b100 0000 0200 0a00 0000 0600 .....
000001c0: 0100 0000 0c00 0b00 0000 0c00 0100 0000 .....
000001d0: 0500 0c00 0d00 0000 0900 0e00 0f00 0100 .....
000001e0: 0900 0000 3700 0200 0100 0000 09b2 0002 .....7.....
000001f0: 1203 b600 04b1 0000 0002 000a 0000 000a .....
00000200: 0002 0000 0011 0008 0012 000b 0000 000c .....
00000210: 0001 0000 0009 0010 0011 0000 0001 0012 .....
00000220: 0000 0002 0013 0a0a 0a0a 0a0a .....

```

=

Magic number    Minor version    Mayor version

```
00000000: cafe babe 0000 0034 0022 0a00 0600 1409 .....4..
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000000e0: 1c0c 001d 001e 0100 0b48 6f6c 612c 206d .....Hola, m
000000f0: 756e 646f 0700 1f0c 0020 0021 0100 1361 undo.....!...a
00000100: 7070 5465 7374 3344 2f48 6f6c 614d 756e ppTest3D/HolaMun
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00000150: 7472 6561 6d3b 0100 136a 6176 612f 696f tream;...java/io
00000160: 2f50 7269 6e74 5374 7265 616d 0100 0770 /PrintStream...p
00000170: 7269 6e74 6c6e 0100 1528 4c6a 6176 612f rintln... (Ljava/
00000180: 6c61 6e67 2f53 7472 696e 673b 2956 0021 lang/String;)V.!
00000190: 0005 0006 0000 0000 0002 0001 0007 0008 ...../.....
000001a0: 0001 0009 0000 002f 0001 0001 0000 0005 .....*.....
000001b0: 2ab7 0001 b100 0000 0200 0a00 0000 0600 .....
000001c0: 0100 0000 0c00 0b00 0000 0c00 0100 0000 .....
000001d0: 0500 0c00 0d00 0000 0900 0e00 0f00 0100 .....
000001e0: 0900 0000 3700 0200 0100 0000 09b2 0002 .....7.....
000001f0: 1203 b600 04b1 0000 0002 000a 0000 000a .....
00000200: 0002 0000 0011 0008 0012 000b 0000 000c .....
00000210: 0001 0000 0009 0010 0011 0000 0001 0012 .....
00000220: 0000 0002 0013 0a0a 0a0a 0a0a .....

```

```
C:>javap -c HolaMundo
Compiled from "HolaMundo.java"
public class HolaMundo extends java.lang.Object{
public HolaMundo();
    Code:
    0:   aload_0
    1:   invokespecial   #1; //Method java/lang/Object.<init>:()V
    4:   return

public static void main(java.lang.String[]);
    Code:
    0:   getstatic      #2; //Field java/lang/System.out:Ljava/io/PrintStream;
    3:   ldc           #3; //String Hola, mundo
    5:   invokevirtual #4; //Method java/io/PrintStream.println:(Ljava/lang/String;)V
    8:   return
}
```

Sobre el "Magic Number"

We used to go to lunch at a place called St Michael's Alley. According to local legend, in the deep dark past, the Grateful Dead used to perform there before they made it big. It was a pretty funky place that was definitely a Grateful Dead Kinda Place. When Jerry died, they even put up a little Buddhist-esque shrine. When we used to go there, we referred to the place as Cafe Dead. Somewhere along the line, it was noticed that this was a HEX number. I was re-vamping some file format code and needed a couple of magic numbers: one for the persistent object file, and one for classes. I used CAFEDEAD for the object file format, and in grepping for 4 character hex words that fit after "CAFE" (it seemed to be a good theme) I hit on BAFE and decided to use it. At that time, it didn't seem terribly important or destined to go anywhere but the trash can of history. So CAFEBAFE became the class file format, and CAFEDEAD was the persistent object format. But the persistent object facility went away, and along with it went the use of CAFEDEAD - it was eventually replaced by RMI.

James Gosling



Grateful Dead

Decompilación: p.ej. [Java Optimize and Decompile Environment \(JODE\)](#)  
 → Qué es la "Ofuscacion"

Comprobar el funcionamiento:

Escritura de `GeneradorDeHolaMundo.java`

En shell del SO: compilar, ejecutar, desensamblar, documentar.

Idem con package

Decompilar

Idem en Netbeans.