Classfile Format

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Java Classfile

Does not contain bytecode only!
Bytecode is only a small part of
classfile

Magic Number

4 bytes
0xCAFEBABE

Version

2x2 bytes
jdk 5 -> 0, 49
jdk 6 -> 0, 50
jdk 7 -> 0, 51

Constant Pool

2 bytes for cp_size
cp_info * (cp_size - 1) bytes of constant pool

Access Flags

2 bytes
public, final, interface, abstract, super

this class

2 bytes index into CP (ClassInfo)

super class

2 bytes index into CP (ClassInfo)

Interfaces

2 bytes ifaces_count
2 x ifaces_count bytes of indices into
CP (ClassInfos)

Fields

2 bytes fields_count
field_info * fields_count bytes

Methods

2 bytes methods_count
method_info * methods_count bytes

Attributes

2 bytes attributes_count
attribute_info * attributes_count
bytes

Constant Pool Content

Literal values (integers, utf8 strings ...)
References

Example: ClassRef

Struct containting an index into CP where utf8 string describing FQDN of class is stored

Example: MethodRef

Struct containting 2 indices:

    one for ClassRef

    one for NameAndTypeInfo

Example: FieldRef

Struct containting 2 indices:

    one for ClassRef

    one for NameAndTypeInfo

Class Info

just index into CP where FQDN
name is stored

Method Info

2 bytes access flags
2 bytes name index
2 bytes descriptor index
2 bytes atributes_count
attributes_count * attribute_info
bytes of attribute_info

Attribute Info

describing various attributes, e.g.

      Constant Value

      Exceptions

      Inner Classes

      Code ...

Code Attribute

max stack
max locals
bytecode
exceptions table

Questions and Discussion