

WaitFor

```
package jdk8.byte_code;

class WaitFor {
    static void waitFor(Condition condition) throws InterruptedException {
        while (!condition.isSatisfied())
            Thread.sleep(250);
    }

    static <T> void waitFor(T input, Predicate<T> predicate) throws InterruptedException {
        while (!predicate.test(input))
            Thread.sleep(250);
    }
}
```

Example 1

Source

```
package jdk8.byte_code;

import static jdk8.byte_code.WaitFor.waitFor;

@SuppressWarnings("all")
public class Example1 {

    // anonymous class
    void example() throws InterruptedException {
        waitFor(new Condition() {
            @Override
            public Boolean isSatisfied() {
                return true;
            }
        });
    }
}
```

Byte code

```
Classfile Example1.class
  Last modified 08-May-2014; size 603 bytes
  MD5 checksum 7365ca98fe204fc9198043cef5d241be
  Compiled from "Example1.java"
public class jdk8.byte_code.Example1
  SourceFile: "Example1.java"
  InnerClasses:
    #2; //class jdk8/byte_code/Example1$1
  minor version: 0
  major version: 52
  flags: ACC_PUBLIC, ACC_SUPER
Constant pool:
  #1 = Methodref      #6.#20      // java/lang/Object."<init>:()V
  #2 = Class          #21          // jdk8/byte_code/Example1$1
  #3 = Methodref      #2.#22      // jdk8/byte_code/Example1$1."<init>:(Ljdk8/byte_code/Example1;)V
  #4 = Methodref      #23.#24     // jdk8/byte_code/WaitFor.waitFor:(Ljdk8/byte_code/Condition;)V
  #5 = Class          #25          // jdk8/byte_code/Example1
  #6 = Class          #26          // java/lang/Object
  #7 = Utf8           InnerClasses
  #8 = Utf8           <init>
  #9 = Utf8           ()V
  #10 = Utf8          Code
  #11 = Utf8          LineNumberTable
  #12 = Utf8          LocalVariableTable
  #13 = Utf8          this
  #14 = Utf8          Ljdk8/byte_code/Example1;
  #15 = Utf8          example
  #16 = Utf8          Exceptions
  #17 = Class          #27          // java/lang/InterruptedException
  #18 = Utf8          SourceFile
  #19 = Utf8          Example1.java
  #20 = NameAndType    #8:#9      // "<init>:()V
  #21 = Utf8          jdk8/byte_code/Example1$1
  #22 = NameAndType    #8:#28     // "<init>:(Ljdk8/byte_code/Example1;)V
  #23 = Class          #29          // jdk8/byte_code/WaitFor
  #24 = NameAndType    #30:#31    // waitFor:(Ljdk8/byte_code/Condition;)V
  #25 = Utf8          jdk8/byte_code/Example1
  #26 = Utf8          java/lang/Object
  #27 = Utf8          java/lang/InterruptedException
  #28 = Utf8          (Ljdk8/byte_code/Example1;)V
  #29 = Utf8          jdk8/byte_code/WaitFor
  #30 = Utf8          waitFor
  #31 = Utf8          (Ljdk8/byte_code/Condition;)V
{
  public jdk8.byte_code.Example1();
    descriptor: ()V
```

```

flags: ACC_PUBLIC
Code:
  stack=1, locals=1, args_size=1
    0: aload_0
    1: invokespecial #1                  // Method java/lang/Object."<init>":()V
    4: return
LineNumberTable:
  line 6: 0
LocalVariableTable:
  Start  Length  Slot  Name  Signature
    0       5     0   this  Ljdk8/byte_code/Example1;

void example() throws java.lang.InterruptedException;
descriptor: ()V
flags:
Code:
  stack=3, locals=1, args_size=1
    0: new          #2                  // class jdk8/byte_code/Example1$1
    3: dup
    4: aload_0
    5: invokespecial #3                  // Method jdk8/byte_code/Example1$1."<init>":(Ljdk8/byte_code/Example1;)V
    8: invokestatic #4                  // Method jdk8/byte_code/WaitFor.waitFor:(Ljdk8/byte_code/Condition;)V
   11: return
LineNumberTable:
  line 10: 0
  line 16: 11
LocalVariableTable:
  Start  Length  Slot  Name  Signature
    0     12     0   this  Ljdk8/byte_code/Example1;
Exceptions:
  throws java.lang.InterruptedException
}

```

Example 2

Source

```
package jdk8.byte_code;

public interface Server {

    Boolean isRunning();

    public class HttpServer implements Server {
        @Override
        public Boolean isRunning() {
            return false;
        }
    }
}
```

```
package jdk8.byte_code;

import static jdk8.byte_code.Server.*;
import static jdk8.byte_code.WaitFor.waitFor;

public class Example2 {

    // anonymous class (closure)
    void example() throws InterruptedException {
        Server server = new HttpServer();
        waitFor(new Condition() {
            @Override
            public Boolean isSatisfied() {
                return !server.isRunning();
            }
        });
    }
}
```

Bytecode

```
Classfile Example2.class
  Last modified 08-May-2014; size 775 bytes
  MD5 checksum 2becf3c32e2b08abc50465aca7398c4b
  Compiled from "Example2.java"
public class jdk8.byte_code.Example2
  SourceFile: "Example2.java"
  InnerClasses:
    #4; //class jdk8/byte_code/Example2$1
      public static #27= #2 of #25; //HttpServer=class jdk8/byte_code/Server$HttpServer of class jdk8/byte_code/Server
  minor version: 0
  major version: 52
  flags: ACC_PUBLIC, ACC_SUPER
Constant pool:
  #1 = Methodref      #8.#24      // java/lang/Object."<init>":()V
  #2 = Class           #26         // jdk8/byte_code/Server$HttpServer
  #3 = Methodref      #2.#24      // jdk8/byte_code/Server$HttpServer."<init>":()V
  #4 = Class           #28         // jdk8/byte_code/Example2$1
  #5 = Methodref      #4.#29      // jdk8/byte_code/Example2$1."<init>":(Ljdk8/byte_code/Example2;Ljdk8/byte_code/Server;)V
  #6 = Methodref      #30.#31     // jdk8/byte_code/WaitFor.waitFor:(Ljdk8/byte_code/Condition;)V
  #7 = Class           #32         // jdk8/byte_code/Example2
  #8 = Class           #33         // java/lang/Object
  #9 = Utf8           InnerClasses
  #10 = Utf8          <init>
  #11 = Utf8          ()V
  #12 = Utf8          Code
  #13 = Utf8          LineNumberTable
  #14 = Utf8          LocalVariableTable
  #15 = Utf8          this
  #16 = Utf8          Ljdk8/byte_code/Example2;
  #17 = Utf8          example
  #18 = Utf8          server
  #19 = Utf8          Ljdk8/byte_code/Server;
  #20 = Utf8          Exceptions
  #21 = Class          #34         // java/lang/InterruptedException
  #22 = Utf8          SourceFile
  #23 = Utf8          Example2.java
  #24 = NameAndType    #10:#11     // "<init>":()V
  #25 = Class          #35         // jdk8/byte_code/Server
  #26 = Utf8          jdk8/byte_code/Server$HttpServer
  #27 = Utf8          HttpServer
  #28 = Utf8          jdk8/byte_code/Example2$1
  #29 = NameAndType    #10:#36     // "<init>":(Ljdk8/byte_code/Example2;Ljdk8/byte_code/Server;)V
  #30 = Class          #37         // jdk8/byte_code/WaitFor
  #31 = NameAndType    #38:#39     // waitFor:(Ljdk8/byte_code/Condition;)V
  #32 = Utf8          jdk8/byte_code/Example2
  #33 = Utf8          java/lang/Object
```

```

#34 = Utf8      java/lang/InterruptedException
#35 = Utf8      jdk8/byte_code/Server
#36 = Utf8      (Ljdk8/byte_code/Example2;Ljdk8/byte_code/Server;)V
#37 = Utf8      jdk8/byte_code/WaitFor
#38 = Utf8      waitFor
#39 = Utf8      (Ljdk8/byte_code/Condition;)V
{
  public jdk8.byte_code.Example2();
    descriptor: ()V
    flags: ACC_PUBLIC
    Code:
      stack=1, locals=1, args_size=1
        0: aload_0
        1: invokespecial #1          // Method java/lang/Object."<init>":()V
        4: return
    LineNumberTable:
      line 6: 0
    LocalVariableTable:
      Start Length Slot Name Signature
        0      5      0 this Ljdk8/byte_code/Example2;

  void example() throws java.lang.InterruptedException;
    descriptor: ()V
    flags:
    Code:
      stack=4, locals=2, args_size=1
        0: new          #2          // class jdk8/byte_code/Server$HttpServer
        3: dup
        4: invokespecial #3          // Method jdk8/byte_code/Server$HttpServer."<init>":()V
        7: astore_1
        8: new          #4          // class jdk8/byte_code/Example2$1
        11: dup
        12: aload_0
        13: aload_1
        14: invokespecial #5          // Method jdk8/byte_code/Example2$1."<init>":(Ljdk8/byte_code/Example2;Ljdk8/byte_code/Server;)V
        17: invokestatic #6          // Method jdk8/byte_code/WaitFor.waitFor:(Ljdk8/byte_code/Condition;)V
        20: return
    LineNumberTable:
      line 10: 0
      line 11: 8
      line 17: 20
    LocalVariableTable:
      Start Length Slot Name Signature
        0      21      0 this Ljdk8/byte_code/Example2;
        8      13      1 server Ljdk8/byte_code/Server;

    Exceptions:
      throws java.lang.InterruptedException
}

```

Example 3

Source

```
package jdk8.byte_code;

import static jdk8.byte_code.WaitFor.waitFor;

public class Example3 {

    // simple lambda
    void example() throws InterruptedException {
        waitFor(() -> true);
    }
}
```

Bytecode

```
Classfile Example3.class
  Last modified 08-May-2014; size 1155 bytes
  MD5 checksum 22e120de85528efc921bb158588bbaa1
  Compiled from "Example3.java"
public class jdk8.byte_code.Example3
  SourceFile: "Example3.java"
  InnerClasses:
    public static final #50= #49 of #53; //Lookup=class java/lang/invoke/MethodHandles$Lookup of class java/lang/invoke/MethodHandles
  BootstrapMethods:
    0: #23 invokestatic
      java/lang/invoke/LambdaMetafactory.metafactory:(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodHandle;Ljava/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
    Method arguments:
      #24 ()Ljava/lang/Boolean;
      #25 invokestatic jdk8/byte_code/Example3.lambda$example$25:()Ljava/lang/Boolean;
      #24 ()Ljava/lang/Boolean;
  minor version: 0
  major version: 52
  flags: ACC_PUBLIC, ACC_SUPER
Constant pool:
  #1 = Methodref          #6.#21      // java/lang/Object."<init>":()V
  #2 = InvokeDynamic       #0:#26      // #0:isSatisfied:()Ljdk8/byte_code/Condition;
  #3 = Methodref          #27.#28      // jdk8/byte_code/WaitFor.waitFor:(Ljdk8/byte_code/Condition;)V
  #4 = Methodref          #29.#30      // java/lang/Boolean.valueOf:(Z)Ljava/lang/Boolean;
  #5 = Class               #31         // jdk8/byte_code/Example3
  #6 = Class               #32         // java/lang/Object
```

```

#7 = Utf8      <init>
#8 = Utf8      ()V
#9 = Utf8      Code
#10 = Utf8     LineNumberTable
#11 = Utf8     LocalVariableTable
#12 = Utf8     this
#13 = Utf8     Ljdk8/byte_code/Example3;
#14 = Utf8     example
#15 = Utf8     Exceptions
#16 = Class     #33          // java/lang/InterruptedException
#17 = Utf8     lambda$example$25
#18 = Utf8     ()Ljava/lang/Boolean;
#19 = Utf8     SourceFile
#20 = Utf8     Example3.java
#21 = NameAndType #7:#8      // "<init>":()V
#22 = Utf8     BootstrapMethods
#23 = MethodHandle #6:#34     // invokestatic
java/lang/invoke/LambdaMetafactory.metafactory:(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/
MethodType;Ljava/lang/invoke/MethodHandle;Ljava/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
#24 = MethodType #18          // ()Ljava/lang/Boolean;
#25 = MethodHandle #6:#35     // invokestatic jdk8/byte_code/Example3.lambda$example$25:()Ljava/lang/Boolean;
#26 = NameAndType #36:#37     // isSatisfied:()Ljdk8/byte_code/Condition;
#27 = Class     #38          // jdk8/byte_code/WaitFor
#28 = NameAndType #39:#40     // waitfor:(Ljdk8/byte_code/Condition;)V
#29 = Class     #41          // java/lang/Boolean
#30 = NameAndType #42:#43     // valueOf:(Z)Ljava/lang/Boolean;
#31 = Utf8     jdk8/byte_code/Example3
#32 = Utf8     java/lang/Object
#33 = Utf8     java/lang/InterruptedException
#34 = Methodref  #44.#45     //
java/lang/invoke/LambdaMetafactory.metafactory:(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/
MethodType;Ljava/lang/invoke/MethodHandle;Ljava/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
#35 = Methodref  #5.#46     // jdk8/byte_code/Example3.lambda$example$25:()Ljava/lang/Boolean;
#36 = Utf8     isSatisfied
#37 = Utf8     ()Ljdk8/byte_code/Condition;
#38 = Utf8     jdk8/byte_code/WaitFor
#39 = Utf8     waitfor
#40 = Utf8     (Ljdk8/byte_code/Condition;)V
#41 = Utf8     java/lang/Boolean
#42 = Utf8     valueOf
#43 = Utf8     (Z)Ljava/lang/Boolean;
#44 = Class     #47          // java/lang/invoke/LambdaMetafactory
#45 = NameAndType #48:#52     //
metafactory:(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/Method
Handle;Ljava/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
#46 = NameAndType #17:#18     // lambda$example$25:()Ljava/lang/Boolean;
#47 = Utf8     java/lang/invoke/LambdaMetafactory
#48 = Utf8     metafactory
#49 = Class     #54          // java/lang/invoke/MethodHandles$Lookup
#50 = Utf8     Lookup

```



```

#51 = Utf8           InnerClasses
#52 = Utf8
(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodHandle;Ljava
/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
#53 = Class          #55           // java/lang/invoke/MethodHandles
#54 = Utf8           java/lang/invoke/MethodHandles$Lookup
#55 = Utf8           java/lang/invoke/MethodHandles
{
  public jdk8.byte_code.Example3();
    descriptor: ()V
    flags: ACC_PUBLIC
    Code:
      stack=1, locals=1, args_size=1
        0: aload_0
        1: invokespecial #1           // Method java/lang/Object."<init>":()V
        4: return
    LineNumberTable:
      line 6: 0
    LocalVariableTable:
      Start  Length  Slot  Name   Signature
        0      5      0   this   Ljdk8/byte_code/Example3;

  void example() throws java.lang.InterruptedException;
    descriptor: ()V
    flags:
    Code:
      stack=1, locals=1, args_size=1
        0: invokedynamic #2, 0           // InvokeDynamic #0:isSatisfied:()Ljdk8/byte_code/Condition;
        5: invokestatic #3           // Method jdk8/byte_code/WaitFor.waitFor:(Ljdk8/byte_code/Condition;)V
        8: return
    LineNumberTable:
      line 10: 0
      line 11: 8
    LocalVariableTable:
      Start  Length  Slot  Name   Signature
        0      9      0   this   Ljdk8/byte_code/Example3;
    Exceptions:
      throws java.lang.InterruptedException
}

```

Example 4

Source

```
package jdk8.byte_code;

import static jdk8.byte_code.Server.HttpServer;
import static jdk8.byte_code.WaitFor.waitFor;

public class Example4 {

    // lambda with arguments
    void example() throws InterruptedException {
        waitFor(new HttpServer(), (server) -> server.isRunning());
    }
}
```

Bytecode

```
Classfile Example4.class
  Last modified 08-May-2014; size 1414 bytes
  MD5 checksum 7177f97fdf30b0648a09ab98109a479c
  Compiled from "Example4.java"
public class jdk8.byte_code.Example4
  SourceFile: "Example4.java"
  InnerClasses:
    public static #21= #2 of #29; //HttpServer=class jdk8/byte_code/Server$HttpServer of class jdk8/byte_code/Server
    public static final #65= #64 of #67; //Lookup=class java/lang/invoke/MethodHandles$Lookup of class java/lang/invoke/MethodHandles
  BootstrapMethods:
    0: #32 invokestatic
java/lang/invoke/LambdaMetafactory.metafactory:(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodHandle;Ljava/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
  Method arguments:
    #33 (Ljava/lang/Object;)Z
    #34 invokestatic jdk8/byte_code/Example4.lambda$example$33:(Ljdk8/byte_code/Server$HttpServer;)Z
    #35 (Ljdk8/byte_code/Server$HttpServer;)Z
  minor version: 0
  major version: 52
  flags: ACC_PUBLIC, ACC_SUPER
Constant pool:
  #1 = Methodref          #9.#28         // java/lang/Object."<init>":()V
  #2 = Class               #30           // jdk8/byte_code/Server$HttpServer
  #3 = Methodref          #2.#28         // jdk8/byte_code/Server$HttpServer."<init>":()V
  #4 = InvokeDynamic       #0:#36         // #0:test:()Ljava/util/function/Predicate;
```

```

#5 = Methodref      #37.#38      //  jdk8/byte_code/WaitFor.waitFor:(Ljava/lang/Object;Ljava/util/function/Predicate;)V
#6 = Methodref      #2.#39       //  jdk8/byte_code/Server$HttpServer.isRunning:()Ljava/lang/Boolean;
#7 = Methodref      #40.#41      //  java/lang/Boolean.booleanValue:()Z
#8 = Class           #42          //  jdk8/byte_code/Example4
#9 = Class           #43          //  java/lang/Object
#10 = Utf8           <init>
#11 = Utf8           ()V
#12 = Utf8           Code
#13 = Utf8           LineNumberTable
#14 = Utf8           LocalVariableTable
#15 = Utf8           this
#16 = Utf8           Ljdk8/byte_code/Example4;
#17 = Utf8           example
#18 = Utf8           Exceptions
#19 = Class          #44          //  java/lang/InterruptedException
#20 = Utf8           lambda$example$33
#21 = Utf8           HttpServer
#22 = Utf8           InnerClasses
#23 = Utf8           (Ljdk8/byte_code/Server$HttpServer;)Z
#24 = Utf8           server
#25 = Utf8           Ljdk8/byte_code/Server$HttpServer;
#26 = Utf8           SourceFile
#27 = Utf8           Example4.java
#28 = NameAndType    #10:#11      //  "<init>":()V
#29 = Class          #45          //  jdk8/byte_code/Server
#30 = Utf8           jdk8/byte_code/Server$HttpServer
#31 = Utf8           BootstrapMethods
#32 = MethodHandle    #6:#46      //  invokestatic
java/lang/invoke/LambdaMetafactory.metafactory:(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/
MethodType;Ljava/lang/invoke/MethodHandle;Ljava/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
#33 = MethodType     #47          //  (Ljava/lang/Object;)Z
#34 = MethodHandle    #6:#48      //  invokestatic  jdk8/byte_code/Example4.lambda$example$33:(Ljdk8/byte_code/Server$HttpServer;)Z
#35 = MethodType     #23          //  (Ljdk8/byte_code/Server$HttpServer;)Z
#36 = NameAndType     #49:#50     //  test:()Ljava/util/function/Predicate;
#37 = Class           #51          //  jdk8/byte_code/WaitFor
#38 = NameAndType     #52:#53     //  waitFor:(Ljava/lang/Object;Ljava/util/function/Predicate;)V
#39 = NameAndType     #54:#55     //  isRunning:()Ljava/lang/Boolean;
#40 = Class           #56          //  java/lang/Boolean
#41 = NameAndType     #57:#58     //  booleanValue:()Z
#42 = Utf8           jdk8/byte_code/Example4
#43 = Utf8           java/lang/Object
#44 = Utf8           java/lang/InterruptedException
#45 = Utf8           jdk8/byte_code/Server
#46 = Methodref      #59.#60      //
java/lang/invoke/LambdaMetafactory.metafactory:(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/
MethodType;Ljava/lang/invoke/MethodHandle;Ljava/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
#47 = Utf8           (Ljava/lang/Object;)Z
#48 = Methodref      #8.#61       //  jdk8/byte_code/Example4.lambda$example$33:(Ljdk8/byte_code/Server$HttpServer;)Z
#49 = Utf8           test
#50 = Utf8           ()Ljava/util/function/Predicate;

```

```

#51 = Utf8          jdk8/byte_code/WaitFor
#52 = Utf8          waitFor
#53 = Utf8          (Ljava/lang/Object;Ljava/util/function/Predicate;)V
#54 = Utf8          isRunning
#55 = Utf8          ()Ljava/lang/Boolean;
#56 = Utf8          java/lang/Boolean
#57 = Utf8          booleanValue
#58 = Utf8          ()Z
#59 = Class         #62          // java/lang/invoke/LambdaMetafactory
#60 = NameAndType   #63:#66      //
metafactory:(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/Method
Handle;Ljava/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
#61 = NameAndType   #20:#23      // lambda$example$33:(Ljdk8/byte_code/Server$HttpServer;)Z
#62 = Utf8          java/lang/invoke/LambdaMetafactory
#63 = Utf8          metafactory
#64 = Class         #68          // java/lang/invoke/MethodHandles$Lookup
#65 = Utf8          Lookup
#66 = Utf8          (Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodHandle;Ljava
/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
#67 = Class         #69          // java/lang/invoke/MethodHandles
#68 = Utf8          java/lang/invoke/MethodHandles$Lookup
#69 = Utf8          java/lang/invoke/MethodHandles
{
public jdk8.byte_code.Example4();
  descriptor: ()V
  flags: ACC_PUBLIC
  Code:
    stack=1, locals=1, args_size=1
      0: aload_0
      1: invokespecial #1          // Method java/lang/Object."<init>":()V
      4: return
  LineNumberTable:
    line 9: 0
  LocalVariableTable:
    Start  Length  Slot  Name   Signature
      0       5      0   this   Ljdk8/byte_code/Example4;

void example() throws java.lang.InterruptedException;
  descriptor: ()V
  flags:
  Code:
    stack=2, locals=1, args_size=1
      0: new          #2          // class jdk8/byte_code/Server$HttpServer
      3: dup
      4: invokespecial #3          // Method jdk8/byte_code/Server$HttpServer."<init>":()V
      7: invokedynamic #4,  0      // InvokeDynamic #0:test:()Ljava/util/function/Predicate;
     12: invokestatic #5          // Method jdk8/byte_code/WaitFor.waitFor:(Ljava/lang/Object;Ljava/util/function/Predicate;)V
     15: return
  LineNumberTable:

```

```
    line 13: 0
    line 15: 15
  LocalVariableTable:
    Start  Length  Slot  Name  Signature
      0      16      0  this  Ljdk8/byte_code/Example4;
  Exceptions:
    throws java.lang.InterruptedException
}
```

Example 4 (with Method Reference)

Source

```
package jdk8.byte_code;

import static jdk8.byte_code.Server.HttpServer;
import static jdk8.byte_code.WaitFor.waitFor;

@SuppressWarnings("all")
public class Example4_method_reference {

    // lambda with method reference
    void example() throws InterruptedException {
        waitFor(new HttpServer(), HttpServer::isRunning);
    }
}
```

Bytecode

```
Classfile Example4_method_reference.class
  Last modified 08-May-2014; size 1271 bytes
  MD5 checksum f8aef942361f29ef599adfec7a594948
  Compiled from "Example4_method_reference.java"
public class jdk8.byte_code.Example4_method_reference
  SourceFile: "Example4_method_reference.java"
  InnerClasses:
    public static #23= #2 of #21; //HttpServer=class jdk8/byte_code/Server$HttpServer of class jdk8/byte_code/Server
    public static final #52= #51 of #56; //Lookup=class java/lang/invoke/MethodHandles$Lookup of class java/lang/invoke/MethodHandles
  BootstrapMethods:
    0: #26 invokestatic
java/lang/invoke/LambdaMetafactory.metafactory:(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodHandle;Ljava/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
  Method arguments:
    #27 (Ljava/lang/Object;)Z
    #28 invokevirtual jdk8/byte_code/Server$HttpServer.isRunning:()Ljava/lang/Boolean;
    #29 (Ljdk8/byte_code/Server$HttpServer;)Z
  minor version: 0
  major version: 52
  flags: ACC_PUBLIC, ACC_SUPER
Constant pool:
  #1 = Methodref          #7.#20          // java/lang/Object."<init>":()V
  #2 = Class               #22             // jdk8/byte_code/Server$HttpServer
```

```

#3 = Methodref      #2.#20      //  jdk8/byte_code/Server$HttpServer."<init>":()V
#4 = InvokeDynamic  #0:#30      //  #0:test:()Ljava/util/function/Predicate;
#5 = Methodref      #31.#32     //  jdk8/byte_code/WaitFor.waitFor:(Ljava/lang/Object;Ljava/util/function/Predicate;)V
#6 = Class          #33          //  jdk8/byte_code/Example4_method_reference
#7 = Class          #34          //  java/lang/Object
#8 = Utf8           <init>
#9 = Utf8           ()V
#10 = Utf8          Code
#11 = Utf8          LineNumberTable
#12 = Utf8          LocalVariableTable
#13 = Utf8          this
#14 = Utf8          Ljdk8/byte_code/Example4_method_reference;
#15 = Utf8          example
#16 = Utf8          Exceptions
#17 = Class          #35          //  java/lang/InterruptedException
#18 = Utf8          SourceFile
#19 = Utf8          Example4_method_reference.java
#20 = NameAndType   #8:#9        //  "<init>":()V
#21 = Class          #36          //  jdk8/byte_code/Server
#22 = Utf8          jdk8/byte_code/Server$HttpServer
#23 = Utf8          HttpServer
#24 = Utf8          InnerClasses
#25 = Utf8          BootstrapMethods
#26 = MethodHandle  #6:#37      //  invokestatic
java/lang/invoke/LambdaMetafactory.metafactory:(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/
MethodType;Ljava/lang/invoke/MethodHandle;Ljava/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
#27 = MethodType    #38          //  (Ljava/lang/Object;)Z
#28 = MethodHandle  #5:#39      //  invokevirtual jdk8/byte_code/Server$HttpServer.isRunning:()Ljava/lang/Boolean;
#29 = MethodType    #40          //  (Ljdk8/byte_code/Server$HttpServer;)Z
#30 = NameAndType   #41:#42     //  test:()Ljava/util/function/Predicate;
#31 = Class          #43          //  jdk8/byte_code/WaitFor
#32 = NameAndType   #44:#45     //  waitFor:(Ljava/lang/Object;Ljava/util/function/Predicate;)V
#33 = Utf8          jdk8/byte_code/Example4_method_reference
#34 = Utf8          java/lang/Object
#35 = Utf8          java/lang/InterruptedException
#36 = Utf8          jdk8/byte_code/Server
#37 = Methodref      #46.#47     //
java/lang/invoke/LambdaMetafactory.metafactory:(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/
MethodType;Ljava/lang/invoke/MethodHandle;Ljava/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
#38 = Utf8          (Ljava/lang/Object;)Z
#39 = Methodref      #2.#48      //  jdk8/byte_code/Server$HttpServer.isRunning:()Ljava/lang/Boolean;
#40 = Utf8          (Ljdk8/byte_code/Server$HttpServer;)Z
#41 = Utf8          test
#42 = Utf8          ()Ljava/util/function/Predicate;
#43 = Utf8          jdk8/byte_code/WaitFor
#44 = Utf8          waitFor
#45 = Utf8          (Ljava/lang/Object;Ljava/util/function/Predicate;)V
#46 = Class          #49          //  java/lang/invoke/LambdaMetafactory

```

```

#47 = NameAndType      #50:#53      //
metafactory:(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/Method
Handle;Ljava/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
#48 = NameAndType      #54:#55      //  isRunning:()Ljava/lang/Boolean;
#49 = Utf8             java/lang/invoke/LambdaMetafactory
#50 = Utf8             metafactory
#51 = Class            #57          //  java/lang/invoke/MethodHandles$Lookup
#52 = Utf8             Lookup
#53 = Utf8
(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodHandle;Ljava
/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
#54 = Utf8             isRunning
#55 = Utf8             ()Ljava/lang/Boolean;
#56 = Class            #58          //  java/lang/invoke/MethodHandles
#57 = Utf8             java/lang/invoke/MethodHandles$Lookup
#58 = Utf8             java/lang/invoke/MethodHandles
{
public jdk8.byte_code.Example4_method_reference();
  descriptor: ()V
  flags: ACC_PUBLIC
  Code:
    stack=1, locals=1, args_size=1
      0: aload_0
      1: invokespecial #1          // Method java/lang/Object."<init>":()V
      4: return
  LineNumberTable:
    line 7: 0
  LocalVariableTable:
    Start Length Slot Name Signature
      0      5      0 this Ljdk8/byte_code/Example4_method_reference;

void example() throws java.lang.InterruptedException;
  descriptor: ()V
  flags:
  Code:
    stack=2, locals=1, args_size=1
      0: new          #2          // class jdk8/byte_code/Server$HttpServer
      3: dup
      4: invokespecial #3          // Method jdk8/byte_code/Server$HttpServer."<init>":()V
      7: invokedynamic #4, 0        // InvokeDynamic #0:test:()Ljava/util/function/Predicate;
     12: invokestatic #5          // Method jdk8/byte_code/WaitFor.waitFor:(Ljava/lang/Object;Ljava/util/function/Predicate;)V
     15: return
  LineNumberTable:
    line 11: 0
    line 12: 15
  LocalVariableTable:
    Start Length Slot Name Signature
      0      16      0 this Ljdk8/byte_code/Example4_method_reference;
  Exceptions:
    throws java.lang.InterruptedException }

```


Example 5

Source

```
package jdk8.byte_code;

import static jdk8.byte_code.Server.*;
import static jdk8.byte_code.WaitFor.waitFor;

public class Example5 {

    // closure
    void example() throws InterruptedException {
        Server server = new HttpServer();
        waitFor(() -> !server.isRunning());
    }
}
```

Byte code

```
Classfile Example5.class
  Last modified 08-May-2014; size 1470 bytes
  MD5 checksum 7dd0f577d4b4b903500264acf9649c30
  Compiled from "Example5.java"
public class jdk8.byte_code.Example5
  SourceFile: "Example5.java"
  InnerClasses:
    public static #31= #2 of #29; //HttpServer=class jdk8/byte_code/Server$HttpServer of class jdk8/byte_code/Server
    public static final #68= #67 of #70; //Lookup=class java/lang/invoke/MethodHandles$Lookup of class java/lang/invoke/MethodHandles
  BootstrapMethods:
    0: #34 invokestatic
java/lang/invoke/LambdaMetafactory.metafactory:(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodHandle;Ljava/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
  Method arguments:
    #35 ()Ljava/lang/Boolean; // <-- signature and return type of the SAM method to be implemented by the lambda
    #36 invokestatic jdk8/byte_code/Example5.lambda$example$35:(Ljdk8/byte_code/Server;)Ljava/lang/Boolean;
    #35 ()Ljava/lang/Boolean; // <-- signature and return type to be enforced at invocation time
  minor version: 0
  major version: 52
  flags: ACC_PUBLIC, ACC_SUPER
Constant pool:
  #1 = Methodref      #10.#28          // java/lang/Object."<init>":()V
  #2 = Class           #30              // jdk8/byte_code/Server$HttpServer
  #3 = Methodref      #2.#28           // jdk8/byte_code/Server$HttpServer."<init>":()V
  #4 = InvokeDynamic   #0:#37           // #0:isSatisfied:(Ljdk8/byte_code/Server;)Ljdk8/byte_code/Condition;
  #5 = Methodref      #38.#39          // jdk8/byte_code/WaitFor.waitFor:(Ljdk8/byte_code/Condition;)V
```

```

#6 = InterfaceMethodref #29.#40      // jdk8/byte_code/Server.isRunning:()Ljava/lang/Boolean;
#7 = Methodref          #41.#42      // java/lang/Boolean.booleanValue:()Z
#8 = Methodref          #41.#43      // java/lang/Boolean.valueOf:(Z)Ljava/lang/Boolean;
#9 = Class              #44          // jdk8/byte_code/Example5
#10 = Class             #45          // java/lang/Object
#11 = Utf8              <init>
#12 = Utf8              ()V
#13 = Utf8              Code
#14 = Utf8              LineNumberTable
#15 = Utf8              LocalVariableTable
#16 = Utf8              this
#17 = Utf8              Ljdk8/byte_code/Example5;
#18 = Utf8              example
#19 = Utf8              server
#20 = Utf8              Ljdk8/byte_code/Server;
#21 = Utf8              Exceptions
#22 = Class             #46          // java/lang/InterruptedException
#23 = Utf8              lambda$example$35
#24 = Utf8              (Ljdk8/byte_code/Server;)Ljava/lang/Boolean;
#25 = Utf8              StackMapTable
#26 = Utf8              SourceFile
#27 = Utf8              Example5.java
#28 = NameAndType       #11:#12      // "<init>":()V
#29 = Class             #47          // jdk8/byte_code/Server
#30 = Utf8              jdk8/byte_code/Server$HttpServer
#31 = Utf8              HttpServer
#32 = Utf8              InnerClasses
#33 = Utf8              BootstrapMethods
#34 = MethodHandle      #6:#48        // invokestatic
java/lang/invoke/LambdaMetafactory.metafactory:(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/
MethodType;Ljava/lang/invoke/MethodHandle;Ljava/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
#35 = MethodType        #49          // ()Ljava/lang/Boolean;
#36 = MethodHandle      #6:#50        // invokestatic jdk8/byte_code/Example5.lambda$example$35:(Ljdk8/byte_code/Server;)Ljava/lang/Boolean;
#37 = NameAndType       #51:#52      // isSatisfied:(Ljdk8/byte_code/Server;)Ljdk8/byte_code/Condition;
#38 = Class             #53          // jdk8/byte_code/WaitFor
#39 = NameAndType       #54:#55      // waitFor:(Ljdk8/byte_code/Condition;)V
#40 = NameAndType       #56:#49      // isRunning:()Ljava/lang/Boolean;
#41 = Class             #57          // java/lang/Boolean
#42 = NameAndType       #58:#59      // booleanValue:()Z
#43 = NameAndType       #60:#61      // valueOf:(Z)Ljava/lang/Boolean;
#44 = Utf8              jdk8/byte_code/Example5
#45 = Utf8              java/lang/Object
#46 = Utf8              java/lang/InterruptedException
#47 = Utf8              jdk8/byte_code/Server
#48 = Methodref         #62.#63      //
java/lang/invoke/LambdaMetafactory.metafactory:(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/
MethodType;Ljava/lang/invoke/MethodHandle;Ljava/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
#49 = Utf8              ()Ljava/lang/Boolean;
#50 = Methodref         #9.#64        // jdk8/byte_code/Example5.lambda$example$35:(Ljdk8/byte_code/Server;)Ljava/lang/Boolean;
#51 = Utf8              isSatisfied

```

```

#52 = Utf8      (Ljdk8/byte_code/Server;)Ljdk8/byte_code/Condition;
#53 = Utf8      jdk8/byte_code/WaitFor
#54 = Utf8      waitFor
#55 = Utf8      (Ljdk8/byte_code/Condition;)V
#56 = Utf8      isRunning
#57 = Utf8      java/lang/Boolean
#58 = Utf8      booleanValue
#59 = Utf8      ()Z
#60 = Utf8      valueOf
#61 = Utf8      (Z)Ljava/lang/Boolean;
#62 = Class      #65          // java/lang/invoke/LambdaMetafactory
#63 = NameAndType #66:#69      //
metafactory:(Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/Method
Handle;Ljava/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
#64 = NameAndType #23:#24      // lambda$example$35:(Ljdk8/byte_code/Server;)Ljava/lang/Boolean;
#65 = Utf8      java/lang/invoke/LambdaMetafactory
#66 = Utf8      metafactory
#67 = Class      #71          // java/lang/invoke/MethodHandles$Lookup
#68 = Utf8      Lookup
#69 = Utf8      (Ljava/lang/invoke/MethodHandles$Lookup;Ljava/lang/String;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodType;Ljava/lang/invoke/MethodHandle;Ljava
/lang/invoke/MethodType;)Ljava/lang/invoke/CallSite;
#70 = Class      #72          // java/lang/invoke/MethodHandles
#71 = Utf8      java/lang/invoke/MethodHandles$Lookup
#72 = Utf8      java/lang/invoke/MethodHandles
{
    public jdk8.byte_code.Example5();
        descriptor: ()V
        flags: ACC_PUBLIC
        Code:
            stack=1, locals=1, args_size=1
                0: aload_0
                1: invokespecial #1          // Method java/lang/Object."<init>":()V
                4: return
        LineNumberTable:
            line 6: 0
        LocalVariableTable:
            Start Length Slot Name Signature
                0      5      0  this  Ljdk8/byte_code/Example5;

    void example() throws java.lang.InterruptedException;
        descriptor: ()V
        flags:
        Code:
            stack=2, locals=2, args_size=1
                0: new          #2          // class jdk8/byte_code/Server$HttpServer
                3: dup
                4: invokespecial #3          // Method jdk8/byte_code/Server$HttpServer."<init>":()V
                7: astore_1
                8: aload_1

```

```

    9: invokedynamic #4, 0          // InvokeDynamic #0:isSatisfied:(Ljdk8/byte_code/Server;)Ljdk8/byte_code/Condition;
   14: invokestatic #5              // Method jdk8/byte_code/WaitFor.waitFor:(Ljdk8/byte_code/Condition;)V
   17: return
LineNumberTable:
  line 10: 0
  line 11: 8
  line 12: 17
LocalVariableTable:
  Start  Length  Slot  Name  Signature
    0      18     0  this  Ljdk8/byte_code/Example5;
    8      10     1 server  Ljdk8/byte_code/Server;
Exceptions:
  throws java.lang.InterruptedException
}

```