Module jdk.incubator.foreign
Package jdk.incubator.foreign

Class FunctionDescriptor

java.lang.Object
    jdk.incubator.foreign.FunctionDescriptor

All Implemented Interfaces:

`Constable`

```
public final class FunctionDescriptor
extends Object
implements Constable
```

A function descriptor is made up of zero or more argument layouts and zero or one return layout. A function descriptor is used to model the signature of foreign functions.

Unless otherwise specified, passing a `null` argument, or an array argument containing one or more `null` elements to a method in this class causes a `NullPointerException` to be thrown.

Field Summary

Fields

Modifier and Type	Field	Description
`static final String`	`TRIVIAL_ATTRIBUTE_NAME`	The name of the function descriptor attribute (see `attributes()` used to mark trivial functions.

Method Summary

All Methods | **Static Methods** | **Instance Methods** | **Concrete Methods**

Modifier and Type	Method	Description
`List<MemoryLayout>`	`argumentLayouts()`	Returns the argument layouts associated with this function.
`Optional<Constable>`	`attribute(String name)`	Returns the attribute with the given name (if it exists).
`Stream<String>`	`attributes()`	Returns a stream of the attribute names associated with this function descriptor.
`Optional<DynamicConstantDesc<Fu`	`describeConstable()`	Returns an `Optional` containing the nominal descriptor for this instance, if one can be constructed, or an empty `Optional` if one cannot be constructed.
`boolean`	`equals(Object other)`	Compares the specified object with this function descriptor for equality.
`int`	`hashCode()`	Returns the hash code value for this function descriptor.
`static FunctionDescriptor`	`of(MemoryLayout resLayout, MemoryLayout... argLayouts)`	Create a function descriptor with given return and argument layouts.
`static FunctionDescriptor`	`ofVoid(MemoryLayout... argLayouts)`	Create a function descriptor with given argument layouts and no return layout.
`Optional<MemoryLayout>`	`returnLayout()`	Returns the return layout associated with this function.
`String`	`toString()`	Returns a string representation of this function descriptor.
`FunctionDescriptor`	`withAppendedArgumentLayouts (MemoryLayout... addedLayouts)`	Create a new function descriptor with the given argument layouts appended to the argument layout array of this function descriptor.
`FunctionDescriptor`	`withAttribute(String name, Constable value)`	Returns a new function descriptor which features the same attributes as this descriptor, plus the newly specified attribute.

`FunctionDescriptor`	`withReturnLayout(MemoryLayout newReturn)`	Create a new function descriptor with the given memory layout as the new return layout.
`FunctionDescriptor`	`withVoidReturnLayout()`	Create a new function descriptor with the return layout dropped.

Methods declared in class java.lang.Object

`clone`, `finalize`, `getClass`, `notify`, `notifyAll`, `wait`, `wait`, `wait`

Field Details

TRIVIAL_ATTRIBUTE_NAME

```
public static final String TRIVIAL_ATTRIBUTE_NAME
```

The name of the function descriptor attribute (see `attributes()` used to mark trivial functions. The attribute value must be a boolean.

See Also:

Constant Field Values

Method Details

attribute

```
public Optional<Constable> attribute(String name)
```

Returns the attribute with the given name (if it exists).

Parameters:

`name` - the attribute name.

Returns:

the attribute with the given name (if it exists).

attributes

```
public Stream<String> attributes()
```

Returns a stream of the attribute names associated with this function descriptor.

Returns:

a stream of the attribute names associated with this function descriptor.

withAttribute

```
public FunctionDescriptor withAttribute(String name,
                                        Constable value)
```

Returns a new function descriptor which features the same attributes as this descriptor, plus the newly specified attribute. If this descriptor already contains an attribute with the same name, the existing attribute value is overwritten in the returned descriptor.

Parameters:

`name` - the attribute name.

`value` - the attribute value.

Returns:

a new function descriptor which features the same attributes as this descriptor, plus the newly specified attribute.

returnLayout

```
public Optional<MemoryLayout> returnLayout()
```

Returns the return layout associated with this function.

Returns:

the return layout.

argumentLayouts

```
public List<MemoryLayout> argumentLayouts()
```

Returns the argument layouts associated with this function.

Returns:

the argument layouts.

of

```
public static FunctionDescriptor of(MemoryLayout resLayout,
                                    MemoryLayout... argLayouts)
```

Create a function descriptor with given return and argument layouts.

Parameters:

`resLayout` - the return layout.

`argLayouts` - the argument layouts.

Returns:

the new function descriptor.

ofVoid

```
public static FunctionDescriptor ofVoid(MemoryLayout... argLayouts)
```

Create a function descriptor with given argument layouts and no return layout.

Parameters:

`argLayouts` - the argument layouts.

Returns:

the new function descriptor.

withAppendedArgumentLayouts

```
public FunctionDescriptor withAppendedArgumentLayouts(MemoryLayout... addedLayouts)
```

Create a new function descriptor with the given argument layouts appended to the argument layout array of this function descriptor.

Parameters:

`addedLayouts` - the argument layouts to append.

Returns:

the new function descriptor.

withReturnLayout

```
public FunctionDescriptor withReturnLayout(MemoryLayout newReturn)
```

Create a new function descriptor with the given memory layout as the new return layout.

Parameters:

`newReturn` - the new return layout.

Returns:

the new function descriptor.

withVoidReturnLayout

```
public FunctionDescriptor withVoidReturnLayout()
```

Create a new function descriptor with the return layout dropped.

Returns:

the new function descriptor.

toString

```
public String toString()
```

Returns a string representation of this function descriptor.

Overrides:

`toString` in class `Object`

Returns:

a string representation of this function descriptor.

equals

```
public boolean equals(Object other)
```

Compares the specified object with this function descriptor for equality. Returns `true` if and only if the specified object is also a function descriptor, and all of the following conditions are met:

- the two function descriptors have equals return layouts (see `MemoryLayout.equals(Object)`), or both have no return layout
- the two function descriptors have argument layouts that are pair-wise equal (see `MemoryLayout.equals(Object)`)

Overrides:

`equals` in class `Object`

Parameters:

`other` - the object to be compared for equality with this function descriptor.

Returns:

`true` if the specified object is equal to this function descriptor.

See Also:

`Object.hashCode()`, `HashMap`

hashCode

```
public int hashCode()
```

Returns the hash code value for this function descriptor.

Overrides:

`hashCode` in class `Object`

Returns:

the hash code value for this function descriptor.

See Also:

`Object.equals(java.lang.Object)`,
`System.identityHashCode(java.lang.Object)`

describeConstable

```
public Optional<DynamicConstantDesc<FunctionDescriptor>> describeConstable()
```

Description copied from interface: `Constable`

Returns an `Optional` containing the nominal descriptor for this instance, if one can be constructed, or an empty `Optional` if one cannot be constructed.

Specified by:

`describeConstable` in interface `Constable`

Returns:

An `Optional` containing the resulting nominal descriptor, or an empty `Optional` if one cannot be constructed.