public class `i2cObject`
extends `java.lang.Object`

An object representing an I2C device connected to the OOPic microcontroller. Each `i2cObject` object forms part of a linked list, attached to the OOPic object.

### Field Summary

<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>private</td>
<td><code>hostOOPic</code></td>
</tr>
<tr>
<td>private</td>
<td><code>nextObject</code></td>
</tr>
<tr>
<td>private</td>
<td><code>objectMemory</code></td>
</tr>
<tr>
<td>private</td>
<td><code>objectMemoryAddress</code></td>
</tr>
<tr>
<td>private</td>
<td><code>objectMemorySize</code></td>
</tr>
<tr>
<td>private</td>
<td><code>objectName</code></td>
</tr>
<tr>
<td>private</td>
<td><code>objectProperties</code></td>
</tr>
</tbody>
</table>

### Constructor Summary

<table>
<thead>
<tr>
<th>Type</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>public</td>
<td><code>i2cObject()</code></td>
</tr>
</tbody>
</table>

### Method Summary

<table>
<thead>
<tr>
<th>Return Type</th>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>void</td>
<td><code>add(i2cObjectProperty newProperty)</code></td>
<td>Adds a new property to the <code>i2cObject</code> object's property list.</td>
</tr>
<tr>
<td><code>OOPic</code></td>
<td><code>getHostOOPic()</code></td>
<td>Gets the OOPic object that this <code>i2cObject</code> object resides on.</td>
</tr>
<tr>
<td>int</td>
<td><code>getMemoryAddress()</code></td>
<td>Gets the I2C device bus address.</td>
</tr>
<tr>
<td>int</td>
<td><code>getMemorySize()</code></td>
<td>Gets the size of the I2c objects register space.</td>
</tr>
</tbody>
</table>
### i2cObject

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>getNext()</td>
<td>Returns the next i2cObject in the OOPic objects I2C object list.</td>
</tr>
<tr>
<td>getObjectMemory()</td>
<td>Returns the BitSet which represents the I2C devices register space.</td>
</tr>
<tr>
<td>getObjectName()</td>
<td>Returns the name given to this I2C object.</td>
</tr>
<tr>
<td>getObjectProperties()</td>
<td>Returns the first object in a list of the I2C object properties.</td>
</tr>
<tr>
<td>setHostOOPic(OOPic hostOOPic)</td>
<td>Sets the OOPic object which this I2C device/object resides on.</td>
</tr>
<tr>
<td>setMemoryAddress(int address)</td>
<td>Sets the I2C device bus address, which should be in the range of 0-128 for most I2C devices.</td>
</tr>
<tr>
<td>setMemorySize(int nBytes)</td>
<td>Sets the size of the I2C objects register space.</td>
</tr>
<tr>
<td>getNext(i2cObject nextObject)</td>
<td>Sets the next i2cObject in the OOPic objects I2C object list.</td>
</tr>
<tr>
<td>setObjectName(java.lang.String objectName)</td>
<td>Sets the name for this I2C object.</td>
</tr>
</tbody>
</table>

#### Methods inherited from class java.lang.Object

- clone, equals, finalize, getClass, hashCode, notify, notifyAll, registerNatives, toString, wait, wait

## Fields

### objectName

```java
private java.lang.String objectName
```

### objectMemoryAddress

```java
private int objectMemoryAddress
```

### objectMemorySize

```java
private int objectMemorySize
```

### objectMemory

```java
private java.util.BitSet objectMemory
```
nextObject

private ooPic.i2cObject nextObject

hostOOPic

private ooPic.OOPic hostOOPic

objectProperties

private ooPic.i2cObjectProperty objectProperties

Constructors

i2cObject

public i2cObject()

Methods

setMemorySize

protected void setMemorySize(int nBytes)

Sets the size of the I2C object's register space.

Parameters:

nBytes - The size of the register space available on the I2C device.

getMemorySize

protected int getMemorySize()

Gets the size of the I2C object's register space.

Returns:

The size of the I2C object's register space.

setMemoryAddress

public void setMemoryAddress(int address)

Sets the I2C device bus address, which should be in the range of 0-128 for most I2C devices.

Parameters:

address - Bus address of the I2C device.
getMemoryAddress
protected int getMemoryAddress()

Gets the I2C device bus address.

Returns:
The bus address of the I2C device.

getNext
protected i2cObject getNext()

Returns the next i2cObject in the OOPic objects I2C object list.

Returns:
The next i2cObject object in the list.

setNext
protected void setNext(i2cObject nextObject)

Sets the next i2cObject in the OOPic objects I2C object list.

Parameters:
nextObject - The next i2cObject object in the list.

getObjectMemory
protected java.util.BitSet getObjectMemory()

Returns the BitSet which represents the I2C devices register space. The BitSet is a copy of the I2C devices memory, stored in local memory.

Returns:
The BitSet memory block of the I2C devices register space.

genericProperties
protected i2cObjectProperty genericProperties()

Returns the first object in a list of the I2C object properties.

Returns:
The first object in the i2cObject objects properties list.

add
protected void add(i2cObjectProperty newProperty)

Adds a new property to the i2cObject object's property list.

Parameters:
newProperty - The new i2cObject object property to be added.
**getHostOOPic**

```java
public OOPic getHostOOPic()
```

Gets the OOPic object that this i2cObject object resides on.

**Returns:**
The OOPic object of this i2cObject object.

---

**setHostOOPic**

```java
public void setHostOOPic(OOPic hostOOPic)
```

Sets the OOPic object which this I2C device/object resides on.

**Parameters:**
- **hostOOPic** - The OOPic object for this I2C object.

---

**getObjectName**

```java
public java.lang.String getObjectName()
```

Returns the name given to this I2C object.

**Returns:**
The name of this I2C object.

---

**setObjectName**

```java
public void setObjectName(java.lang.String objectName)
```

Sets the name for this I2C object.

**Parameters:**
- **objectName** - The name for this I2C object.
ooPic

**Class i2cObjectProperty**

```java
public class i2cObjectProperty
extends java.lang.Object
```

Each `i2cObjectProperty` represents a sequential set of bits within an I2C object/devices register space.

**Register Space and property example:**
The following diagram depicts an I2C object's register's (usually 8 bits wide). Each bit is references from 1 to n. A property can occupy any sequential number of bits in an I2C objects register.

<table>
<thead>
<tr>
<th>I2C Object Registers:</th>
<th>Byte:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,3,4,5,6,7,8</td>
<td>0</td>
</tr>
<tr>
<td>9,10,11,12,13,14,15,16</td>
<td>1</td>
</tr>
<tr>
<td>17,18,19,20,21,22,23,24</td>
<td>2</td>
</tr>
<tr>
<td>25,26,27,28,29,30,31,32</td>
<td>3</td>
</tr>
</tbody>
</table>

A property might utilize 10 bits in the register, from bit 4 to 13 in the I2C Objects Register space. More commonly a property will be represented by 8 bits in order (eg. 25 to 32).

**Field Summary**

- `private` `fromIndex`
  - First index in sequential bits that this property represents.
- `private` `name`
  - Name of this property.
- `private` `next`
  - Link to other properties for this I2C object.
- `private` `objectMemory`
  - Reference to the register space to which this property belongs.
- `private` `parentObject`
  - Reference to the I2C object to which this property belongs.
- `private` `toIndex`
  - Last index in sequential bits that this property represents.

**Constructor Summary**

```java
public i2cObjectProperty(i2cObject parent, int fromIndex, int toIndex, java.lang.String propertyName)
```

Creates a new Property for an I2C Object.

**Method Summary**
### Methods

- **clear()**
  - Sets all of the device property bits to '0'.

- **equals(java.util.BitSet bitSetValue)**
  - Returns true if the bitSet's are equal, otherwise false.

- **equals(int integerValue)**
  - Returns true if the BitSet is the binary equivalent of integerValue, otherwise false.

- **getName()**
  - Returns the name of the property.

- **getNext()**
  - Returns the next property in the list.

- **memoryToInt()**
  - Converts the property to an integer.

- **readProperty()**
  - Reads this property from the OOPic.

- **set()**
  - Sets all of the device property bits to '1'.

- **set(int integerValue)**
  - Sets the object property in memory to integerValue.

- **setNext(i2cObjectProperty next)**
  - Sets the next i2cObjectProperty in list.

- **toBinaryString()**
  - Returns a String representing the device property in binary.

- **toDecimalString()**
  - Returns a String representing the device property in decimal.

- **toHexString()**
  - Returns a String representing the device property in hexadecimal.

- **toInt()**
  - Returns the state of the properties memory as an integer value.

- **toInt(int from, int to)**
  - Returns a section of memory as an Integer.

- **toString()**
  - Converts the property to a string representation.

- **update(int integerValue)**
  - Sets the object property in memory to integerValue.

- **writeProperty()**
  - Writes this property to the OOPic.

### Methods inherited from class java.lang.Object

- clone, equals, finalize, getClass, hashCode, notify, notifyAll, registerNatives, toString, wait, wait
Fields

fromIndex
private int fromIndex

First index in sequential bits that this property represents.

toIndex
private int toIndex

Last index in sequential bits that this property represents.

name
private java.lang.String name

Name of this property.

objectMemory
private java.util.BitSet objectMemory

Reference to the register space to which this property belongs.

parentObject
private ooPic.i2cObject parentObject

Reference to the I2C object to which this property belongs.

next
private ooPic.i2cObjectProperty next

Link to other properties for this I2C object.

Constructors

i2cObjectProperty

public i2cObjectProperty(i2cObject parent,
int fromIndex,
int toIndex,
java.lang.String propertyName)

Creates a new Property for an I2C Object.

Parameters:
parent - The name of the i2cObject to which this property belongs.
fromIndex - The first bit of the sequential bits that this property represents.
toIndex - The last bit of the sequential bits that this property represents.
propertyName - The name of this property.

Methods
**getNext**

```java
public i2cObjectProperty getNext()
```

**Returns:**
The next `i2cObjectProperty` in list.

---

**setNext**

```java
public void setNext(i2cObjectProperty next)
```

Sets the next `i2cObjectProperty` in list.

**Parameters:**
next - `i2cObjectProperty` to place next in list

---

**getName**

```java
protected java.lang.String getName()
```

**Returns:**
The name of this `i2cObjectProperty`.

---

**toBinaryString**

```java
public java.lang.String toBinaryString()
```

Returns a String representing the device property in binary.

**Returns:**
String containing binary representation of device property.

---

**toDecimalString**

```java
public java.lang.String toDecimalString()
```

Returns a String representing the device property in decimal.

**Returns:**
String containing decimal representation of device property.

---

**toHexString**

```java
public java.lang.String toHexString()
```

Returns a String representing the device property in hexadecimal.

**Returns:**
String containing hexadecimal representation of device property.

---

**toString**

```java
public java.lang.String toString()
```
**toInt**

```java
public int toInt()
```

Returns the state of the properties memory as an integer value.

**Returns:**
the integer value of this device property.

**memoryToInt**

```java
public int memoryToInt()
```

Returns:
The value of an `i2cObjectProperty` from the local memory (no data transfer with OOPic).

**toInt**

```java
private int toInt(int from, int to)
```

Returns a section of memory as an Integer.

**Parameters:**
- `from` - First address in register space
- `to` - Last address in register space

**Returns:**
Integer with value between address range.

**equals**

```java
public boolean equals(int integerValue)
```

Returns `true` if the BitSet is the binary equivalent of `integerValue`, otherwise `false`.

**Parameters:**
- `integerValue` - integer value to be compared.

**Returns:**
boolean result of comparison.

**equals**

```java
public boolean equals(java.util.BitSet bitSetValue)
```

Returns `true` if the bitSet's are equal, otherwise `false`

**Parameters:**
- `bitSetValue` - BitSet to for comparison

**Returns:**
boolean result of comparison
set
public void set()

Sets all of the device property bits to '1'.

set
public void set(int integerValue)

Sets the object property in memory to integerValue.

Parameters:
integerValue - integer value to be placed in memory.

clear
public void clear()

Sets all of the device property bits to '0'.

update
public void update(int integerValue)

Sets the object property in memory to integerValue.

Parameters:
integerValue - integer value to be placed in memory.

readProperty
private void readProperty()

Reads this property from the OOPic

writeProperty
private void writeProperty()

Writes this propert to the OOPic.
The OOPic class represents the physical OOPic microcontroller and its serial connection using javacomm.

### Field Summary

<table>
<thead>
<tr>
<th>Access Modifier</th>
<th>Field</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>public</td>
<td>alarmEnabled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>private</td>
<td>alarmPlaying</td>
<td></td>
<td></td>
</tr>
<tr>
<td>public</td>
<td>alarmURL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>static final</td>
<td>FREQUENCY_IN_HERTZ</td>
<td>Value: 20000000</td>
<td></td>
</tr>
<tr>
<td>static final</td>
<td>MAX_SERIAL_ERROR</td>
<td>Value: 3.5</td>
<td></td>
</tr>
<tr>
<td>public</td>
<td>messagesEnabled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>static final</td>
<td>OBJECT_MEMORY_START</td>
<td>Value: 41</td>
<td></td>
</tr>
<tr>
<td>static final</td>
<td>OOPIC_DEFAULT_BAUD_RATE</td>
<td>Value: 9600</td>
<td></td>
</tr>
<tr>
<td>static final</td>
<td>OOPIC_REBOOT_TIME</td>
<td>Value: 200</td>
<td></td>
</tr>
<tr>
<td>static final</td>
<td>OOPIC_SERIAL_TIMEOUT</td>
<td>Value: 2</td>
<td></td>
</tr>
<tr>
<td>private</td>
<td>oopicObjects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>private</td>
<td>oopicSerialPort</td>
<td></td>
<td></td>
</tr>
<tr>
<td>private</td>
<td>serialBaudRate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>protected</td>
<td>simulated</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Constructor Summary

public **OOPic**<br>
Creates a new OOPic instance and connects to the oopic on the provided SerialPort object.

### Method Summary

<table>
<thead>
<tr>
<th>Type</th>
<th>Method Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>void</td>
<td><code>addObject(OOPicObject newObject)</code></td>
<td>Adds an OOPicObject to the OOPics list.</td>
</tr>
<tr>
<td>java.lang.Boolean</td>
<td><code>clearBufferReconnect()</code></td>
<td>Clears the Serial port and reconnects to the OOPic.</td>
</tr>
<tr>
<td>void</td>
<td><code>connectOrReconnect()</code></td>
<td>Connects or attempts to re-connect to the OOPic.</td>
</tr>
<tr>
<td>void</td>
<td><code>generateOOPicCode()</code></td>
<td>Method which generates the code to be loaded onto the OOPic.</td>
</tr>
<tr>
<td>void</td>
<td><code>playSound(java.lang.String soundURL)</code></td>
<td>Plays the specified sound.</td>
</tr>
<tr>
<td>void</td>
<td><code>printState()</code></td>
<td>Prints the state of all the objects and their properties for this OOPic.</td>
</tr>
<tr>
<td>java.lang.String</td>
<td><code>readSerial(int nBytes)</code></td>
<td>Reads the specified number of bytes from the serial port.</td>
</tr>
<tr>
<td>void</td>
<td><code>reset()</code></td>
<td>Resets the OOPic Controller.</td>
</tr>
<tr>
<td>java.lang.Boolean</td>
<td><code>sendSerial(java.lang.String dataOut)</code></td>
<td>Sends the desired string of serial data.</td>
</tr>
<tr>
<td>java.lang.Boolean</td>
<td><code>setCommPort(java.lang.String oopicPortName)</code></td>
<td>Sets the OOPic objects serial port to the serial port named.</td>
</tr>
<tr>
<td>void</td>
<td><code>setNewBaudRate(int newRate)</code></td>
<td>Sets the OOPic baud rate to the specified rate.</td>
</tr>
<tr>
<td>void</td>
<td><code>setPortBaud(int rate)</code></td>
<td>Sets the Baud rate of the serial port (PC side).</td>
</tr>
<tr>
<td>void</td>
<td><code>soundAlarm(java.lang.String soundURL)</code></td>
<td>Starts playing a warning sound.</td>
</tr>
<tr>
<td>void</td>
<td><code>stopAlarm()</code></td>
<td>Stops playing an alarm.</td>
</tr>
<tr>
<td>void</td>
<td><code>stopSound()</code></td>
<td>Stops playing the current sound.</td>
</tr>
<tr>
<td>void</td>
<td><code>waitRebootTime()</code></td>
<td>Waits for the time taken to re-boot the OOPic controller.</td>
</tr>
</tbody>
</table>

Methods inherited from class **java.lang.Object**
clone, equals, finalize, getClass, hashCode, notify, notifyAll, registerNatives, toString, wait, wait, wait

### Fields

**OOPIC_DEFAULT_BAUD_RATE**

```java
static final int OOPIC_DEFAULT_BAUD_RATE
```

Constant value: **9600**

**OOPIC_REBOOT_TIME**

```java
static final int OOPIC_REBOOT_TIME
```

Constant value: **200**

**OOPIC_SERIAL_TIMEOUT**

```java
static final int OOPIC_SERIAL_TIMEOUT
```

Constant value: **2**

**oopicSerialPort**

```java
private SerialPort oopicSerialPort
```

**serialBaudRate**

```java
private int serialBaudRate
```

**FREQUENCY_IN_HERTZ**

```java
static final int FREQUENCY_IN_HERTZ
```

Constant value: **20000000**

**MAX SERIAL ERROR**

```java
static final double MAX_SERIAL_ERROR
```

Constant value: **3.5**

**OBJECT_MEMORY_START**

```java
static final int OBJECT_MEMORY_START
```
ooPic.OOPic

Constant value: 41

**ooPicObjects**

private ooPic.OOPicObject **ooPicObjects**

**simulated**

protected java.lang.Boolean **simulated**

**sound**

private java.applet.AudioClip **sound**

**alarmURL**

public java.lang.String **alarmURL**

**alarmEnabled**

public java.lang.Boolean **alarmEnabled**

**alarmPlaying**

private java.lang.Boolean **alarmPlaying**

**messagesEnabled**

public java.lang.Boolean **messagesEnabled**

### Constructors

**OOPic**

public **OOPic**(SerialPort oopicSerialPort)

Creates a new OOPic instance and connects to the oopic on the provided SerialPort object.

**Parameters:**

- oopicSerialPort - object (see commapi).

### Methods
setCommPort

private java.lang.Boolean setCommPort(java.lang.String oopicPortName)

Sets the OOPic objects serial port to the serial port named.

Parameters:
   oopicPortName - Name of the serial port to connect to.

Returns:
   True or false depending on the methods success.

setNewBaudRate

public void setNewBaudRate(int newRate)

Sets the OOPic baud rate to the specified rate

Parameters:
   newRate - The desired baud rate.

reset

public void reset()

Resets the OOPic Controller.

addObject

public void addObject(OOPicObject newObject)

Adds an OOPicObject to the OOPics list.

Parameters:
   newObject - OOPicObject to be added to this OOPic.

generateOOPicCode

public void generateOOPicCode()

Method which generates the code to be loaded onto the OOPic.

printState

public void printState()

Prints the state of all the objects and their properties for this OOPic.

sendSerial

protected java.lang.Boolean sendSerial(java.lang.String dataOut)

Sends the desired string of serial data.

Parameters:
   dataOut - Serial data to send over serial port.

Returns:
readSerial

protected java.lang.String readSerial(int nBytes)

Reads the specified number of bytes from the serial port

Parameters:
  nBytes - Number of bytes to be read.

Returns:
  String containing bytes read.

connectOrReconnect

protected void connectOrReconnect()

Connects or attempts to re-connect to the OOPic.

setPortBaud

private void setPortBaud(int rate)

Sets the Baud rate of the serial port (PC side).

Parameters:
  rate - New desired baud rate.

clearBufferReconnect

private java.lang.Boolean clearBufferReconnect()

Clears the Serial port and reconnects to the OOPic

Returns:
  True if re-connect successful, otherwise false.

waitRebootTime

private void waitRebootTime()

Waits for the time taken to re-boot the OOPic controller.

playSound

public void playSound(java.lang.String soundURL)

Plays the specified sound.

Parameters:
  soundURL - URL to a .wav audio file.

stopSound

public void stopSound()

Stops playing the current sound.
soundAlarm
private void soundAlarm(java.lang.String soundURL)

    Starts playing a warning sound

    Parameters:
    soundURL - Warning sound to be played.

stopAlarm
private void stopAlarm()

    Stops playing an alarm.
ooPic
Class OOPicObject

java.lang.Object
   +--ooPic.OOPicObject

Direct Known Subclasses:
oIRRange, oQEncode, oServo, oSonarDV, Pic

public class OOPicObject
extends java.lang.Object

<table>
<thead>
<tr>
<th>Field Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>hostOOPic</td>
</tr>
<tr>
<td>nextObject</td>
</tr>
<tr>
<td>objectMemory</td>
</tr>
<tr>
<td>objectMemoryAddress</td>
</tr>
<tr>
<td>objectMemorySize</td>
</tr>
<tr>
<td>objectName</td>
</tr>
<tr>
<td>objectProperties</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Constructor Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
</tr>
<tr>
<td>OOPicObject()</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Method Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Void</td>
</tr>
<tr>
<td>add(OOPicObjectProperty newProperty)</td>
</tr>
<tr>
<td>Adds a new property to this object.</td>
</tr>
<tr>
<td>Java.lang.String</td>
</tr>
<tr>
<td>getCodeDefinition()</td>
</tr>
<tr>
<td>Returns the code to instanciate this object on the OOPic.</td>
</tr>
<tr>
<td>OOPic</td>
</tr>
<tr>
<td>getHostOOPic()</td>
</tr>
<tr>
<td>Returns the OOPic which this object resides on.</td>
</tr>
<tr>
<td>Int</td>
</tr>
<tr>
<td>getMemoryAddress()</td>
</tr>
<tr>
<td>Returns the memory address of the device.</td>
</tr>
<tr>
<td>Int</td>
</tr>
<tr>
<td>getMemorySize()</td>
</tr>
<tr>
<td>Returns the size of the memory.</td>
</tr>
</tbody>
</table>
OOPicObject | getNext()  
-------------------  
Returns the next OOPicObject in the list.

java.util.BitSet | getObjectMemory()  
-------------------  
Returns the BitSet of this objects memory.

java.lang.String | getObjectName()  
-------------------  
Returns the name of this object.

OOPicObjectProperty | getObjectProperties()  
-------------------  
Returns the first element of the objects properties.

void | setHostOOPic(OOPic hostOOPic)  
-------------------  
Sets the host OOPic for this object.

void | setMemoryAddress(int address)  
-------------------  
Sets the memory address of this device.

void | setMemorySize(int nBytes)  
-------------------  
Sets the size of the object in memory.

void | setNext(OOPicObject nextObject)  
-------------------  
Sets the next OOPicObject in the list.

void | setObjectName(java.lang.String objectName)  
-------------------  
Sets the name of this object.

Methods inherited from class java.lang.Object

clone, equals, finalize, getClass, hashCode, notify, notifyAll, registerNatives, toString, wait, wait, wait

Fields

**objectName**

private java.lang.String objectName

**objectMemoryAddress**

private int objectMemoryAddress

**objectMemorySize**

private int objectMemorySize

**objectMemory**

private java.util.BitSet objectMemory
nextObject
private ooPic.OOPicObject nextObject

hostOOPic
private ooPic.OOPic hostOOPic

objectProperties
private ooPic.OOPicObjectProperty objectProperties

Constructors

OOPicObject
public OOPicObject ()

Methods

setMemorySize
protected void setMemorySize(int nBytes)

Sets the size of the object in memory.

Parameters:
  nBytes - Size of memory in bytes.

getMemorySize
protected int getMemorySize ()

Returns the size of the memory.

Returns:
  The size of memory in bytes.

setMemoryAddress
public void setMemoryAddress(int address)

Sets the memory address of this device.

Parameters:
  address - The devices memory address.
getMemoryAddress
protected int getMemoryAddress()

Returns the memory address of the device.

Returns:
The devices memory address.

getNext
protected OOPicObject getNext()

Returns the next OOPicObject in the list.

Returns:
The next OOPicObject in the list.

setNext
protected void setNext(OOPicObject nextObject)

Sets the next OOPicObject in the list.

Parameters:
nextObject - The new object to add to the list.

getCodeDefintion
protected java.lang.String getCodeDefintion()

Returns the code to instanciate this object on the OOPic.

Returns:
String with this objects code definition.

getObjectMemory
protected java.util.BitSet getObjectMemory()

Returns the BitSet of this objects memory.

Returns:
Bitset containing this objects memory.

getObjectProperties
protected OOPicObjectProperty getObjectProperties()

Returns the first element of the objects properties.

Returns:
First element in list of this objects properties.

add
protected void add(OOPicObjectProperty newProperty)
Adds a new property to this object.

**Parameters:**

- `newProperty` - New Property to be added to this object.

---

**getHostOOPic**

```java
public OOPic getHostOOPic()
```

Returns the OOPic which this object resides on.

**Returns:**

The OOPic on which this object resides.

---

**setHostOOPic**

```java
public void setHostOOPic(OOPic hostOOPic)
```

Sets the host OOPic for this object.

**Parameters:**

- `hostOOPic` - An OOPic object to host this object.

---

**getObjectName**

```java
public java.lang.String getObjectName()
```

Returns the name of this object.

**Returns:**

A String containing the name of this object.

---

**setObjectName**

```java
public void setObjectName(java.lang.String objectName)
```

Sets the name of this object.

**Parameters:**

- `objectName` - A String containing the new name for this object.
public class OOPicObjectProperty
extends java.lang.Object

A Property for an OOPic Object.

Field Summary

<table>
<thead>
<tr>
<th>private</th>
<th>fromIndex</th>
</tr>
</thead>
<tbody>
<tr>
<td>private</td>
<td>name</td>
</tr>
<tr>
<td>private</td>
<td>next</td>
</tr>
<tr>
<td>private</td>
<td>objectMemory</td>
</tr>
<tr>
<td>private</td>
<td>parentObject</td>
</tr>
<tr>
<td>private</td>
<td>toIndex</td>
</tr>
</tbody>
</table>

Constructor Summary

<table>
<thead>
<tr>
<th>public</th>
<th>OOPicObjectProperty(OOPicObject parent, int fromIndex, int toIndex, java.lang.String propertyName)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Creates a new OOPicObject Property.</td>
</tr>
</tbody>
</table>

Method Summary

<table>
<thead>
<tr>
<th>void</th>
<th>clear()</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sets all of the device property bits to '0'.</td>
</tr>
<tr>
<td>boolean</td>
<td>equals(java.util.BitSet bitSetValue)</td>
</tr>
<tr>
<td></td>
<td>Returns true if the bitSet's are equal, otherwise false.</td>
</tr>
<tr>
<td>boolean</td>
<td>equals(int integerValue)</td>
</tr>
<tr>
<td></td>
<td>Returns true if the BitSet is the binary equivlent of integerValue, otherwise false.</td>
</tr>
<tr>
<td>java.lang.String</td>
<td>getName()</td>
</tr>
<tr>
<td></td>
<td>Returns the name of this OOPicObjectProperty.</td>
</tr>
<tr>
<td>OOPicObjectProperty</td>
<td>getNext()</td>
</tr>
<tr>
<td></td>
<td>Returns the next OOPicObjectProperty in the list.</td>
</tr>
<tr>
<td>int</td>
<td>memoryToInt()</td>
</tr>
<tr>
<td></td>
<td>Returns the contents of local memory as an Integer.</td>
</tr>
<tr>
<td>Method</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td><code>void readProperty()</code></td>
<td>Reads the Property from the OOPic.</td>
</tr>
<tr>
<td><code>void set()</code></td>
<td>Sets all of the device property bits to '1'.</td>
</tr>
<tr>
<td><code>void set(int integerValue)</code></td>
<td>Sets the object property in memory to <code>integerValue</code>.</td>
</tr>
<tr>
<td><code>void setNext(OOPicObjectProperty next)</code></td>
<td>Sets the next OOPicObjectProperty in the list.</td>
</tr>
<tr>
<td><code>java.lang.String toBinaryString()</code></td>
<td>Returns a String representing the device property in binary.</td>
</tr>
<tr>
<td><code>java.lang.String toDecimalString()</code></td>
<td>Returns a String representing the device property in decimal.</td>
</tr>
<tr>
<td><code>java.lang.String toHexString()</code></td>
<td>Returns a String representing the device property in hexadecimal.</td>
</tr>
<tr>
<td><code>int toInt()</code></td>
<td>Returns the state of the properties memory as an integer value.</td>
</tr>
<tr>
<td><code>int toInt(int from, int to)</code></td>
<td>Returns an integer of the specified parts of an objects memory.</td>
</tr>
<tr>
<td><code>java.lang.String toString()</code></td>
<td></td>
</tr>
<tr>
<td><code>void update(int integerValue)</code></td>
<td>Sets the object property in memory to <code>integerValue</code>.</td>
</tr>
<tr>
<td><code>void writeProperty()</code></td>
<td>Write the Property to the OOPic.</td>
</tr>
</tbody>
</table>

Methods inherited from class `java.lang.Object`:
- `clone`, `equals`, `finalize`, `getClass`, `hashCode`, `notify`, `notifyAll`, `registerNatives`, `toString`, `wait`, `wait`, `wait`.

### Fields

**fromIndex**

private int `fromIndex`

**toIndex**

private int `toIndex`
Constructors

**OOPicObjectProperty**

```java
public OOPicObjectProperty(OOPicObject parent,
                            int fromIndex,
                            int toIndex,
                            java.lang.String propertyName)
```

Creates a new OOPicObject Property.

**Parameters:**
- parent - The OOPic object for this OOPicObjectProperty
- fromIndex - Integer with start address in memory of this property
- toIndex - Integer with finishing address in memory of this property
- propertyName - String with the name of this property

Methods

**getNext**

```java
public OOPicObjectProperty getNext ()
```

Returns the next OOPicObjectProperty in the list.

**Returns:**
- The next OOPicObjectProperty in the list.

**setNext**

```java
public void setNext(OOPicObjectProperty next)
```

Sets the next OOPicObjectProperty in the list.

**Parameters:**
getName

protected java.lang.String getName()

Returns the name of this OOPicObjectProperty.

Returns:
String of this properties name.

toBinaryString

public java.lang.String toBinaryString()

Returns a String representing the device property in binary.

Returns:
String containing binary representation of device property.

toDecimalString

public java.lang.String toDecimalString()

Returns a String representing the device property in decimal.

Returns:
String containing decimal representation of device property.

toHexString

public java.lang.String toHexString()

Returns a String representing the device property in hexidecimal.

Returns:
String containing hexidecimal representation of device property.

toString

public java.lang.String toString()

toInt

public int toInt()

Returns the state of the properties memory as an integer value.

Returns:
the integer value of this device property.

memoryToInt

public int memoryToInt()

Returns the contents of local memory as an Integer.
Returns:
Integer of local memory value for property.

toInt

private int toInt(int from,
    int to)

Returns an integer of the specified parts of an objects memory.

Parameters:
from - Integer of first memory address.
to - Integer of last memory address.

Returns:
Integer of value between ranges.

equals

public boolean equals(int integerValue)

Returns true if the BitSet is the binary equivalent of integerValue, otherwise false.

Parameters:
integerValue - integer value to be compared.

Returns:
boolean result of comparison.

equals

public boolean equals(java.util.BitSet bitSetValue)

Returns true if the BitSet's are equal, otherwise false.

Parameters:
bitSetValue - BitSet to for comparison

Returns:
boolean result of comparison

set

public void set()

Sets all of the device property bits to '1'.

set

public void set(int integerValue)

Sets the object property in memory to integerValue.

Parameters:
integerValue - integer value to be placed in memory.
clear
public void clear()

Sets all of the device property bits to '0'.

update
public void update(int integerValue)

Sets the object property in memory to integerValue.

Parameters:
integerValue - integer value to be placed in memory.

readProperty
private void readProperty()

Reads the Property from the OOPic.

writeProperty
private void writeProperty()

Write the Property to the OOPic.
Package

ooPic.hardwareObjects
ooPic.hardwareObjects
Class oIRRange

```
java.lang.Object
   +-ooPic.OOPicObject
   +-ooPic.hardwareObjects.oIRRange
```

public class oIRRange
extends OOPicObject

### Field Summary

<table>
<thead>
<tr>
<th>public</th>
<th>Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>public</td>
<td>IOLine</td>
</tr>
<tr>
<td>public</td>
<td>Operate</td>
</tr>
<tr>
<td>public</td>
<td>Value</td>
</tr>
</tbody>
</table>

Fields inherited from class ooPic.OOPicObject

- hostOOPic
- nextObject
- objectMemory
- objectMemoryAddress
- objectMemorySize
- objectName
- objectProperties

### Constructor Summary

| public | oIRRange(OOPic host) |

Methods inherited from class ooPic.OOPicObject

- add
- getCodeDefinition
- getHostOOPic
- getMemoryAddress
- getMemorySize
- getNext
- getObjectMemory
- getObjectName
- getObjectProperties
- setHostOOPic
- setMemoryAddress
- setMemorySize
- setNext
- setObjectName

Methods inherited from class java.lang.Object

- clone
- equals
- finalize
- getClass
- hashCode
- notify
- notifyAll
- registerNatives
- toString
- wait
- wait
- wait

### Fields

**Center**

public ooPic.OOPicObjectProperty Center
IOLine
public ooPic.OOPicObjectProperty IOLine

Operate
public ooPic.OOPicObjectProperty Operate

Value
public ooPic.OOPicObjectProperty Value

Constructors

oIRRRange
public oIRRRange(OOPic host)
ooPic.hardwareObjects
Class oQEncode

doesn't generally use

public class oQEncode
extends OOPicObject

<table>
<thead>
<tr>
<th>Field Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field</td>
</tr>
<tr>
<td>--------------</td>
</tr>
<tr>
<td>public</td>
</tr>
<tr>
<td>public</td>
</tr>
<tr>
<td>public</td>
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<td>public</td>
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</tr>
<tr>
<td>public</td>
</tr>
<tr>
<td>public</td>
</tr>
<tr>
<td>public</td>
</tr>
</tbody>
</table>

Fields inherited from class ooPic.OOPicObject
hostOOPic, nextObject, objectMemory, objectMemoryAddress, objectMemorySize, objectName, objectProperties

<table>
<thead>
<tr>
<th>Constructor Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>public</td>
</tr>
</tbody>
</table>

Methods inherited from class ooPic.OOPicObject
add, getCodeDefintion, getHostOOPic, getMemoryAddress, getMemorySize, getNext, getObjectMemory, getObjectName, getObjectProperties, setHostOOPic, setMemoryAddress, setMemorySize, setNext, setObjectName |
Methods inherited from class java.lang.Object
clone, equals, finalize, getClass, hashCode, notify, notifyAll, registerNatives, toString, wait, wait, wait

Fields

Direction
public ooPic.OOPicObjectProperty Direction

InvertD
public ooPic.OOPicObjectProperty InvertD

IOLine1
public ooPic.OOPicObjectProperty IOLine1

IOLine2
public ooPic.OOPicObjectProperty IOLine2

Moved
public ooPic.OOPicObjectProperty Moved

Operate
public ooPic.OOPicObjectProperty Operate

Signed
public ooPic.OOPicObjectProperty Signed

Value
public ooPic.OOPicObjectProperty Value
ValueB
public ooPic.OOPicObjectProperty ValueB

ValueAB
public ooPic.OOPicObjectProperty ValueAB

Constructors

oQEncode
public oQEncode(OOPic host)
ooPic.hardwareObjects
Class oServo

public class oServo
extends OO PIC Object
Operate
public ooPic.OOPicObjectProperty Operate

Center
public ooPic.OOPicObjectProperty Center

InvertOut
public ooPic.OOPicObjectProperty InvertOut

Value
public ooPic.OOPicObjectProperty Value

Constructors

oServo
public oServo(OOPic host)
ooPic.hardwareObjects
Class oSonarDV

public class oSonarDV
extends OOPicObject

Field Summary

<table>
<thead>
<tr>
<th>public</th>
<th>IOLineE</th>
</tr>
</thead>
<tbody>
<tr>
<td>public</td>
<td>IOLineP</td>
</tr>
<tr>
<td>public</td>
<td>Operate</td>
</tr>
<tr>
<td>public</td>
<td>Received</td>
</tr>
<tr>
<td>public</td>
<td>TimeOut</td>
</tr>
<tr>
<td>public</td>
<td>Transmitting</td>
</tr>
<tr>
<td>public</td>
<td>Value</td>
</tr>
<tr>
<td>public</td>
<td>ValueAB</td>
</tr>
<tr>
<td>public</td>
<td>ValueB</td>
</tr>
</tbody>
</table>

Fields inherited from class ooPic.OOPicObject

hostOOPic, nextObject, objectMemory, objectMemoryAddress, objectMemorySize, objectName, objectProperties

Constructor Summary

| public | oSonarDV(OOPic host) |

Methods inherited from class ooPic.OOPicObject

add, getCodeDefinition, getHostOOPic, getMemoryAddress, getMemorySize, getNext, getObjectMemory, getObjectName, getObjectProperties, setHostOOPic, setMemoryAddress, setMemorySize, setNext, setObjectName

Methods inherited from class java.lang.Object
clone, equals, finalize, getClass, hashCode, notify, notifyAll, registerNatives, toString, wait, wait, wait

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOLineP</td>
<td>public ooPic.OOPicObjectProperty</td>
</tr>
<tr>
<td>IOLineE</td>
<td>public ooPic.OOPicObjectProperty</td>
</tr>
<tr>
<td>Operate</td>
<td>public ooPic.OOPicObjectProperty</td>
</tr>
<tr>
<td>Recieved</td>
<td>public ooPic.OOPicObjectProperty</td>
</tr>
<tr>
<td>TimeOut</td>
<td>public ooPic.OOPicObjectProperty</td>
</tr>
<tr>
<td>Transmitting</td>
<td>public ooPic.OOPicObjectProperty</td>
</tr>
<tr>
<td>Value</td>
<td>public ooPic.OOPicObjectProperty</td>
</tr>
<tr>
<td>ValueB</td>
<td>public ooPic.OOPicObjectProperty</td>
</tr>
</tbody>
</table>

ooPic.hardwareObjects.oSonarDV
ValueAB

public ooPic.OOPicObjectProperty ValueAB

Constructors

oSonarDV

public oSonarDV(OOPic host)
ooPic.hardwareObjects
Class Pic

java.lang.Object
   +--ooPic.OOPicObject
      +--ooPic.hardwareObjects.Pic

public class Pic
extends OOPicObject

This object will be implemented in Release 3 and allow access to the Pic object on the OOPic controller.

Field Summary

<table>
<thead>
<tr>
<th>Public</th>
<th>SPBRG_REG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>TXSTA_BRGH</td>
</tr>
</tbody>
</table>

Fields inherited from class ooPic.OOPicObject
hostOOPic, nextObject, objectMemory, objectMemoryAddress, objectMemorySize, objectName, objectProperties

Constructor Summary

| Public | Pic(OOPic host) |

Methods inherited from class ooPic.OOPicObject
add, getCodeDefinition, getHostOOPic, getMemoryAddress, getMemorySize, getNext, getObjectMemory, getName, getObjectProperties, setHostOOPic, setMemoryAddress, setMemorySize, setNext, setObjectName

Methods inherited from class java.lang.Object
clone, equals, finalize, getClass, hashCode, notify, notifyAll, registerNatives, toString, wait, wait, wait

Fields

TXSTA_BRGH
public ooPic.OOPicObjectProperty TXSTA_BRGH

SPBRG_REG
public ooPic.OOPicObjectProperty SPBRG_REG
Constructors

Pic

public Pic(OOPic host)
Package

ooPic.i2cObjects
public class `cmps03digitalcompass` extends `i2cObject`

### Field Summary

<table>
<thead>
<tr>
<th>Public</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>public</td>
<td><code>Bearing</code></td>
</tr>
<tr>
<td>public</td>
<td><code>BearingWord</code></td>
</tr>
<tr>
<td>public</td>
<td><code>Calibrate</code></td>
</tr>
<tr>
<td>public</td>
<td><code>Revision</code></td>
</tr>
</tbody>
</table>

Fields inherited from class `ooPic.i2cObject`

- `hostOOPic`, `nextObject`, `objectMemory`, `objectMemoryAddress`, `objectMemorySize`, `objectName`, `objectProperties`

### Constructor Summary

```java
public `cmps03digitalcompass`(`OOPic` host, int i2cAddress)
```

Methods inherited from class `ooPic.i2cObject`

- `add`, `getHostOOPic`, `getMemoryAddress`, `getMemorySize`, `getNext`, `getObjectMemory`, `getObjectName`, `getObjectProperties`, `setHostOOPic`, `setMemoryAddress`, `setMemorySize`, `setNext`, `setObjectName`

Methods inherited from class `java.lang.Object`

- `clone`, `equals`, `finalize`, `getClass`, `hashCode`, `notify`, `notifyAll`, `registerNatives`, `toString`, `wait`, `wait`, `wait`

### Fields

**Revision**

```java
public `ooPic.i2cObjectProperty` `Revision`
```
Bearing

public ooPic.i2cObjectProperty Bearing

BearingWord

public ooPic.i2cObjectProperty BearingWord

Calibrate

public ooPic.i2cObjectProperty Calibrate

Constructors

cmps03digitalcompass

public cmps03digitalcompass(OOPic host,
int i2cAddress)
ooPic.i2cObjects

Class md22Controller

ing java.lang.Object

+- ooPic.i2cObject

+- ooPic.i2cObjects.md22Controller

public class md22Controller
extends i2cObject

Field Summary

<table>
<thead>
<tr>
<th>public</th>
<th>Acceleration</th>
</tr>
</thead>
<tbody>
<tr>
<td>public</td>
<td>Mode</td>
</tr>
<tr>
<td>public</td>
<td>Revision</td>
</tr>
<tr>
<td>public</td>
<td>Speed1</td>
</tr>
<tr>
<td>public</td>
<td>Speed1and2</td>
</tr>
<tr>
<td>public</td>
<td>Speed2</td>
</tr>
</tbody>
</table>

Fields inherited from class ooPic.i2cObject

hostOOPic, nextObject, objectMemory, objectMemoryAddress, objectMemorySize, objectName, objectProperties

Constructor Summary

| public | md22Controller(OOPic host, int i2cAddress) |

Methods inherited from class ooPic.i2cObject

add, getHostOOPic, getMemoryAddress, getMemorySize, getNext, getObjectMemory, getObjectName, getObjectProperties, setHostOOPic, setMemoryAddress, setMemorySize, setNext, setObjectName

Methods inherited from class java.lang.Object

clonet, equals, finalize, getClass, hashCode, notify, notifyAll, registerNatives, toString, wait, wait, wait

Fields
Mode
public ooPic.i2cObjectProperty Mode

Speed1
public ooPic.i2cObjectProperty Speed1

Speed2
public ooPic.i2cObjectProperty Speed2

Acceleration
public ooPic.i2cObjectProperty Acceleration

Revision
public ooPic.i2cObjectProperty Revision

Speed1and2
public ooPic.i2cObjectProperty Speed1and2

Constructors

md22Controller
public md22Controller(OOPic host,
    int T2cAddress)