

How to read XML file in Java – (SAX Parser)

By mkyong (<https://www.mkyong.com/author/mkyong/>) | December 7, 2008 | Updated : May 18, 2015 | Viewed : 705,894 times +1,353 pv/w

SAX parser is working differently with a DOM parser, it neither load any XML document into memory nor create any object representation of the XML document. Instead, the SAX parser use callback function (`org.xml.sax.helpers.DefaultHandler`) to informs clients of the XML document structure.

SAX Parser is faster and uses less memory than DOM parser.

See following SAX callback methods :

- **startDocument()** and **endDocument()** – Method called at the start and end of an XML document.
- **startElement()** and **endElement()** – Method called at the start and end of a document element.
- **characters()** – Method called with the text contents in between the start and end tags of an XML document element.

1. XML file

Create a simple XML file.

```
<?xml version="1.0"?>
<company>
  <staff>
    <firstname>yong</firstname>
    <lastname>mook kim</lastname>
    <nickname>mkyong</nickname>
    <salary>100000</salary>
  </staff>
  <staff>
    <firstname>low</firstname>
    <lastname>yin fong</lastname>
    <nickname>fong fong</nickname>
    <salary>200000</salary>
  </staff>
</company>
```

```
import javax.xml.parsers.SAXParser;
import javax.xml.parsers.SAXParserFactory;
import org.xml.sax.Attributes;
import org.xml.sax.SAXException;
import org.xml.sax.helpers.DefaultHandler;

public class ReadXMLFile {

    public static void main(String argv[]) {

        try {

            SAXParserFactory factory = SAXParserFactory.newInstance();
            SAXParser saxParser = factory.newSAXParser();

            DefaultHandler handler = new DefaultHandler() {

                boolean bfname = false;
                boolean blname = false;
                boolean bnname = false;
                boolean bsalary = false;

                public void startElement(String uri, String localName, String qName,
                    Attributes attributes) throws SAXException {

                    System.out.println("Start Element :" + qName);

                    if (qName.equalsIgnoreCase("FIRSTNAME")) {
                        bfname = true;
                    }

                    if (qName.equalsIgnoreCase("LASTNAME")) {
                        blname = true;
                    }

                    if (qName.equalsIgnoreCase("NICKNAME")) {
                        bnname = true;
                    }

                    if (qName.equalsIgnoreCase("SALARY")) {
                        bsalary = true;
                    }

                }

                public void endElement(String uri, String localName,
                    String qName) throws SAXException {

                    System.out.println("End Element :" + qName);
```

```
}

public void characters(char ch[], int start, int length) throws SAXException {

    if (bfname) {
        System.out.println("First Name : " + new String(ch, start, length));
        bfname = false;
    }

    if (blname) {
        System.out.println("Last Name : " + new String(ch, start, length));
        blname = false;
    }

    if (bnname) {
        System.out.println("Nick Name : " + new String(ch, start, length));
        bnname = false;
    }

    if (bsalary) {
        System.out.println("Salary : " + new String(ch, start, length));
        bsalary = false;
    }

}

};

saxParser.parse("c:\\file.xml", handler);

} catch (Exception e) {
    e.printStackTrace();
}

}

}
```

Result

```
Start Element :company
Start Element :staff
Start Element :firstname
First Name : yong
End Element :firstname
Start Element :lastname
Last Name : mook kim
End Element :lastname
Start Element :nickname
Nick Name : mkyong
End Element :nickname
Start Element :salary
Salary : 100000
End Element :salary
End Element :staff
Start Element :staff
Start Element :firstname
First Name : low
End Element :firstname
Start Element :lastname
Last Name : yin fong
End Element :lastname
Start Element :nickname
Nick Name : fong fong
End Element :nickname
Start Element :salary
Salary : 200000
End Element :salary
End Element :staff
End Element :company
```

Warning

This example may encounter exceptions for **UTF-8** XML file, please read this article about how to read the XML “UTF-8” file in SAX (<http://www.mkyong.com/java/how-to-read-utf-8-xml-file-in-java-sax-parser/>)

Note

You may interest to read this How to read XML file in Java – (DOM Parser) (<http://www.mkyong.com/java/how-to-read-xml-file-in-java-dom-parser/>)

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Tinder started in the same company that owns:

15



- A** Vox
- B** Match.com
- C** eHarmony
- D** Zoosk

Your Score **0** Question **1/10**

About the Author



mkyong

Founder of Mkyong.com (<http://mkyong.com>), love Java and open source stuff. Follow him on Twitter (<https://twitter.com/mkyong>), or befriend him on Facebook (<http://www.facebook.com/java.tutorial>) or Google Plus

(<https://plus.google.com/110948163568945735692?rel=author>). If you like my tutorials, consider make a donation to these charities (<http://www.mkyong.com/blog/donate-to-charity/>).

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yog • 4 years ago

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THNX

"SAX parser is work differently with DOM parser, it either load any XML document into memory nor create any object representation of the XML document."

IT SHOULD BE NEITHER , NOT EITHER.

7 ^ | ▾ • Reply • Share ›



sp • 3 years ago

Hi, can some one tell how to handle empty axml tags while parsing ? like or

4 ^ | ▾ • Reply • Share ›



sirj77 • 4 years ago

Hey!

I've tried to run this example, but received an error:

"Error: Could not find or load main class Tasks.XML Parser SAX"

Could anyone help me?

Could anyone help me:

4 ^ | v • Reply • Share ›



123mo → sirj77 • 2 years ago

Run using " java ReadXMLFile "

^ | v • Reply • Share ›



Anil • 3 years ago

Hello Mkyong

I am trying to parse one XML using SAX parser code similar to one you detailed in your article.

One of field has below type of data as shown for description tag which is not fully read for that field. It will just read ABC and ignores the rest. Can you please advice on this, how can I handle this?

```
<class name="xyz">
<attribute name="a1">
<description>ABC
[[0]: PCR, [1]: [0..5.0]%, [2]: [>5.0..10.0]%
</description>
</attribute>
</class>
```

2 ^ | v • Reply • Share ›



Anil Kumar Pal → Anil • 3 years ago

was able to read if enclose whole description with

^ | v • Reply • Share ›



Anil Kumar pal → Anil Kumar Pal • 3 years ago

was able to read if enclose whole description with CDATA tags

1 ^ | v • Reply • Share ›



Mal1990 • 3 years ago

Hi ,

I am totally new to java . I need to parse a EDI XML and display its attributes alone text file. The text file should be pipe delimited(|). ie; all the attributes should be separated by | symbol. Kindly help me on this

2 ^ | v • Reply • Share ›



Avnish alok • 3 years ago

one can visit this blog to know more in java

1 ^ | v • Reply • Share ›



vijaya • 4 years ago

Thanks, it helped me a lot.

4 ^ | v • Reply • Share ›

1 2 3 4 5 • Reply • Share ›



NAVEEN REDDY (NAVEE) • 7 months ago

if i gave xml file

```
<name>Company 1</name>
```

```
<employee>
```

```
<name>Doe</name>
```

and i want output for only employee name .

^ | v • Reply • Share ›



Amit Thakur • 7 months ago

Hi MKyong,

Issue --> Actually I am facing issue with xml parsing (SAX Parser) in Unix Machine. Same Jar/Java-Code behave differently on windows and Unix Machine, why ? :(

Windows Machine --> works fine , Using SAX Parser to load huge xml file , Read all values correctly and populate same values. `Charset.defaultCharset()` windows-1252

Unix Machine --> After then created JAR and deployed at Unix --> tomcat and execute the jar.

Tried to load same huge xml file But noticed that some values or characters are populated empty or incomplete like

Country Name populated as "ysia" instead of "Malaysia" or transaction Date populate as "3 PM" instead of "18/09/2016 03:31:23 PM". `Charset.defaultCharset()` UTF-8

Issue is only with Unix , Because when I load same xml at windows or my local eclipse it works fine and all values populate correctly.

Also I tried to modify my code and set encoding as UTF-8 for `inputSteamReader` but still it's not read value correctly at unix box.

Note : There is no special characters in xml. Also noticed one thing that when I take out same records (those value not populated correctly) in other xml file and load in unix machine with same jar it works fine. It means issues occur while load these records with huge data. :(

Please suggest , What should be the solution ?

^ | v • Reply • Share ›



Tony • 10 months ago

Hi ,

I want to do the same . Let say i have added one or more than one child attributes in that xml . I dont want to change my pojo /java file . But the output has to print correctly. I want it has to be generic for any xml .Can u please suggest me how to proceed

^ | v • Reply • Share ›



Ap • a year ago

I am trying to validate one xml , I am getting exception as `cvc-elt.5.2.2.1:The value '00' of element 'x' does not match the fixed length constraint`. Can anyone help to resolve this issue?

does not match the fixed {value constraint}U'. Can any one help to resolve this asap?

^ | v • Reply • Share ›



srikanth • 2 years ago

i am facing one problem while developing app that sax parser not reading "&" ... it is giving crash when the data contains & ... how can i resolve this issue.. thanks in advance.

^ | v • Reply • Share ›



Won-Hyung Park • 2 years ago

Great example, but sometimes characters in xml tag are missing with above example. Please refer to this link : <http://stackoverflow.com/qu...>

^ | v • Reply • Share ›



Pankaj • 2 years ago

Great tutorial only one question if i pass a static file here

saxParser.parse("c:\\myxmlfile.xml", handler) my code works without any issues but if pass a string that i get as response from a server which is same as ticket.xml i get this error Exception in thread "main" java.net.MalformedURLException: no protocol

so what i am doing wrong?

^ | v • Reply • Share ›



Anil • 3 years ago

Hello Mkyong

I am trying to parse one XML using SAX parser code similar to one you detailed in your article.

One of field has below type of data as shown for description tag which is not fully read for that field. It will just read ABC and ignores the rest. Can you please advice on this, how can I handle this?

```
<class name="xyz">
<attribute name="a1">
<description>ABC
[0]: PCR, [1]: [0..5.0]%
</description>
</attribute>
</class>
```

^ | v • Reply • Share ›



suresh • 3 years ago

i want to convert plain text with variable field length to xml how should i achieve it

^ | v • Reply • Share ›



mehfatiem • 3 years ago

How can I import org.xml.sax. ... I use eclipse as a development kid. Where can I find to org.sax library.

^ | v • Reply • Share ›



Andre Santos • 3 years ago

yes!! Works perfectly

^ | v • Reply • Share ›



Reji • 3 years ago

How can we use this parse to access the set of multiple occurrence of data containing nested records

Like

"

John

21

BeerLand

KIM

20

High Spirits

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Reji • 3 years ago

How can we use this parse to access the set of multiple occurrence of data containing nested records

Like

John

21

BeerLand

KIM

20

High Spirits

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Mal1990 • 3 years ago

Hi ,

I am totally new to java . I need to parse a EDI XML and display its attributes alone text file. The text file should be pipe delimited(|). ie; all the attributes should be separated by | symbol.

This has to be done using sax parser. Kindly help me on this

^ | v • Reply • Share ›



JC • 4 years ago

DOM Parser post helped me alot.

But I am stuck with 1 thing,could you please suggest which parser to use for redundant [tags.eg](#) :-

empData

Tom

25

English

French

Swiss

25

English

German

French

Each config can have 1 or more tag and each can have 1 or more tag.With Dom parser,either I am getting only first tag or all for all employees,I want corresponding to each employee.

Thanks

^ | v • Reply • Share ›



Andres • 4 years ago

Thanks for you post!!!

it helped me a lot

^ | v • Reply • Share ›



Mark Tielemans • 4 years ago

Bit lame I can't edit that comment :P.

^ | v • Reply • Share ›



Mark Tielemans • 4 years ago

You can keep track of open/closed elements much more gracefully using a Map:

```
Map<String, Boolean> elements = new HashMap<String, Boolean>();
```

```
</pre
```

```
onStart:
```

```
<pre lang="java">elements.put(qName, true);
```

```
onEnd:
```

```
elements.put(qName, false);
```

Nice guide!

^ | v • Reply • Share ›



Erik → Mark Tielemans • 3 years ago

Hello!

Nice guide.

I had a very simple scenario with XML like:

...

...

...

This made it possible to just store the opening tag's gName in a variable and then handle it accordingly in the characters-method:

```
class XXX {  
  
    /* Item defined elsewhere */  
    private final LinkedList items = new LinkedList();  
  
    private final SimpleDateFormat dateFormat = new SimpleDateFormat("yyyy-MM-dd");
```

[see more](#)

^ | v • Reply • Share ›



Erik → Erik • 3 years ago

You just have to cut and paste the code into an IDE and code format it...

^ | v • Reply • Share ›



Gubs • 4 years ago

Hi Monk,

StartElement is not getting called in my sample below code. You have any idea ?

```
public class ReadXMLFileUsingSAXParser {  
  
    String fname = null;  
    String lname = null;  
    String sal = null;  
  
    /**  
     * @param args  
     * @throws IOException  
     */  
    public static void main(String[] args) throws IOException {  
  
        SAXParserFactory factory = SAXParserFactory.newInstance();  
        try {  
            SAXParser parser = factory.newSAXParser();
```

... ..

see more

^ | v • Reply • Share ›



Erik ➔ Gubs • 3 years ago

startElement should be inside DefaultHandler... check the code in the article one more time.

^ | v • Reply • Share ›



Nicholas ➔ Gubs • 4 years ago

hi Gubs,

i have no idea.

^ | v • Reply • Share ›



hendi santika • 4 years ago

I've tried the code, but i have a problem here.

The result is :

End Element :firstname

End Element :lastname

End Element :nickname

End Element :salary

End Element :staff

End Element :firstname

End Element :lastname

End Element :nickname

End Element :salary

End Element :staff

End Element :company

Why does it happen ???

Thanks

^ | v • Reply • Share ›



Sim ➔ hendi santika • 3 years ago

Solution (found at: <http://stackoverflow.com/qu...>

Check the import statement for the Attribute parameter, it should be:

import org.xml.sax.Attributes;

^ | v • Reply • Share ›



Sim ➔ hendi santika • 3 years ago

Same problem here too :(

^ | v • Reply • Share ›



Erik Larsson ↗ hendi santika • 4 years ago

I have the same problem, please answer someone!

^ | v • Reply • Share ›



krishnaveni • 4 years ago

Hi.,

This is really helped me..Thanks a lot for gave me such a nice tutorial...

^ | v • Reply • Share ›



LG • 4 years ago

"it either load any XML document into memory nor create any object representation of the XML document. Instead"

Are u trying to say neither load any XML document into memory

^ | v • Reply • Share ›



Andy • 4 years ago

I figured it out and made with XPath.

^ | v • Reply • Share ›



Andy • 4 years ago

Veery usefull! Thanks you!

Lets say I need to use name "yong" for one Activity, and name "low" for Another. Or I need to display only Yong, But if I use:

```
if (qName.equalsIgnoreCase("FIRSTNAME")) {  
    bfname = true;
```

and then System.out.println It will show me Only the last name "low".So what if i have few FIRSTNAME's , but I need to use only name with Id:3 , or 5 .

Im working with weather app. So Im interested how to get tempreture value for next 3 days , though the qName is the same for all of them....

^ | v • Reply • Share ›



Pankaj • 4 years ago

You have provided basic example of SAX Parser, I have extended it further to parse XML to Objects using SAXParser API, please have a look <http://www.journaldev.com/1...>

^ | v • Reply • Share ›



Williams Vo • 4 years ago

Thanks you for your entry. But can you demo with XML to support me? I'm beginning with Java.

John

Male

20

Williams

Male

21

Thanks you for your support!

^ | v • Reply • Share ›



Vaibhav • 4 years ago

I am parsing an XML file using SAX parser. I found that sax parser when detects a node which has no value () it skips that node also it does not call the character method for the particular node.

I want to throw an exception if i come through such nodes in a XML file. Please suggest an alternative to do so. Any help will be highly appreciated.

Please email me if any solution persist.

Merry christmas and a Happy new year.

^ | v • Reply • Share ›



Tammara • 4 years ago

Howdy! I could have sworn I've been to this website before but after browsing through some of the post I realized it's new to me.

Nonetheless, I'm definitely delighted I found it and I'll be book-marking and checking back often!

^ | v • Reply • Share ›



sandeep • 4 years ago

very helpfull ...

^ | v • Reply • Share ›



Derek • 4 years ago

Thank you for this! It really helped me. :)

^ | v • Reply • Share ›



Ron • 5 years ago

Mkyong

This is an awesome tutorial. thank you very much. It worked like a charm.

I'm also trying to have the populated bean data from this XML taken , and made into an XML of a different format. In other words I'm just changing the format of the XML on the whole.

Could anyone please advice me how to do it?

Thanks

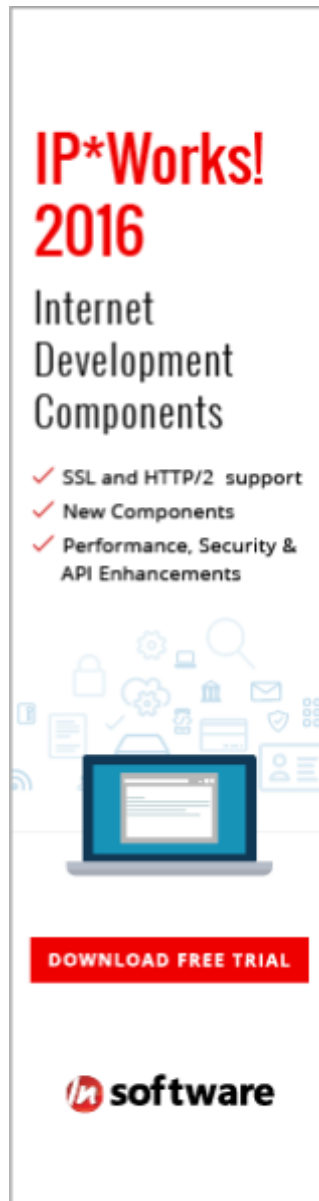
R

^ | v • Reply • Share ›



stefan2k • 5 years ago

Thank you very much! Your tutorials have helped me several times



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JSP Home Page (<https://jsp.java.net/>)
Maven Central Repository (<http://search.maven.org/>)
Gradle User Guide (<https://docs.gradle.org/current/userguide/userguide.html>)
Hibernate ORM (<http://hibernate.org/orm/>)
JAX-WS Home Page (<https://jax-ws.java.net/>)
JAX-RS Home Page (Jersey) (<https://jax-ws.java.net/>)
Tomcat 8 Documentation (<http://tomcat.apache.org/tomcat-8.0-doc/index.html>)

Partners & Bookmarks

Java Code Geeks (<http://www.javacodegeeks.com/>)
TestNG Founder (<http://beust.com/weblog/>)
DZone (<https://dzone.com>)

About Mkyong.com

Mkyong.com is for Java and J2EE developers, all examples are simple and easy to understand, and well tested in my development environment.

Mkyong.com is created, written by, and maintained by Yong Mook Kim, aka Mkyong. It is built on WordPress (<https://wordpress.org/>), hosted by Liquid Web (<http://www.liquidweb.com/?RID=mkyong>), and the caches are served by CloudFlare CDN.

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