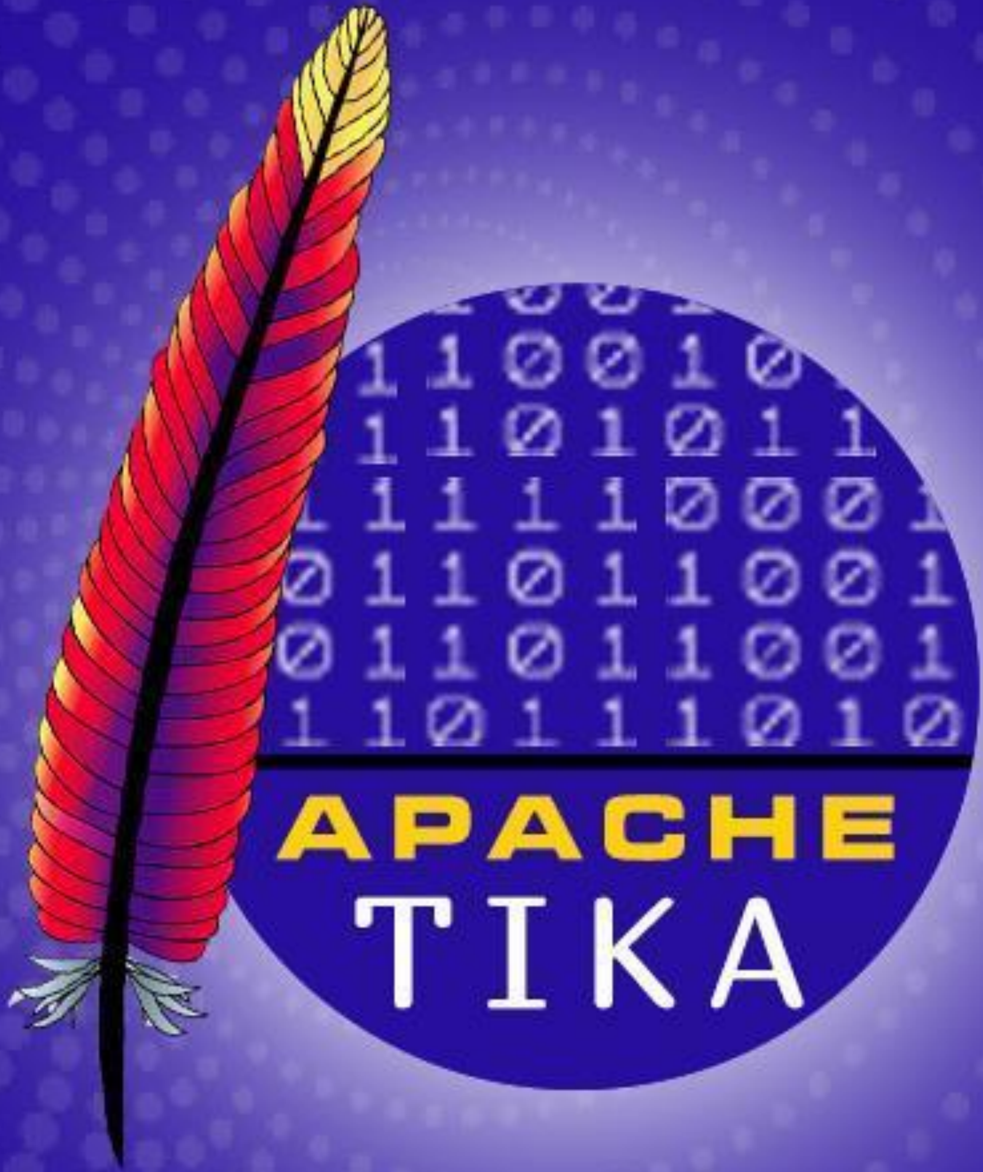

LEARN APACHE TIKA

parser library

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About the Tutorial

This tutorial provides a basic understanding of Apache Tika library, the file formats it supports, as well as content and metadata extraction using Apache Tika.

Audience

This tutorial is designed for all Java enthusiasts who want to learn document type detection and content extraction using Apache Tika.

Prerequisites

To make the most of this tutorial, the readers should have prior exposure to Java programming with JDK 1.6 and IO concepts in Java.

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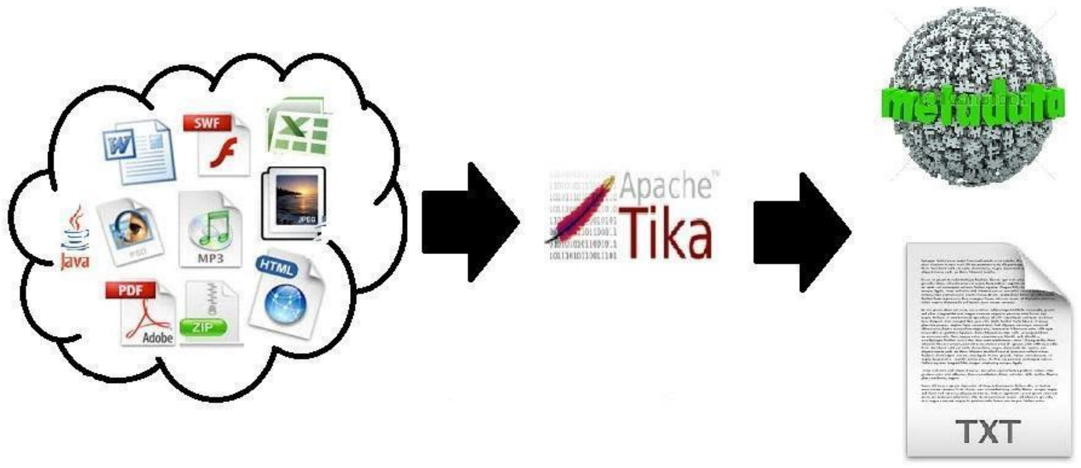
Table of Contents

1. APACHE TIKA OVERVIEW

What is Apache Tika?

- Apache Tika is a library that is used for document type detection and content extraction from various file formats.
- Internally, Tika uses existing various document parsers and document type detection techniques to detect and extract data.
- Using Tika, one can develop a universal type detector and content extractor to extract both structured text as well as metadata from different types of documents such as spreadsheets, text documents, images, PDFs and even multimedia input formats to a certain extent.
- Tika provides a single generic API for parsing different file formats. It uses existing specialized parser libraries for each document type.
- All these parser libraries are encapsulated under a single interface called the **Parser interface**.



Why Tika?

According to filext.com, there are about 15k to 51k content types, and this number is growing day by day. Data is being stored in various formats such as text documents, excel spreadsheet, PDFs, images, and multimedia files, to name a few. Therefore, applications such as search engines and content management systems need additional support for easy extraction of data from these document types. Apache Tika serves this purpose by providing a generic API to locate and extract data from multiple file formats.

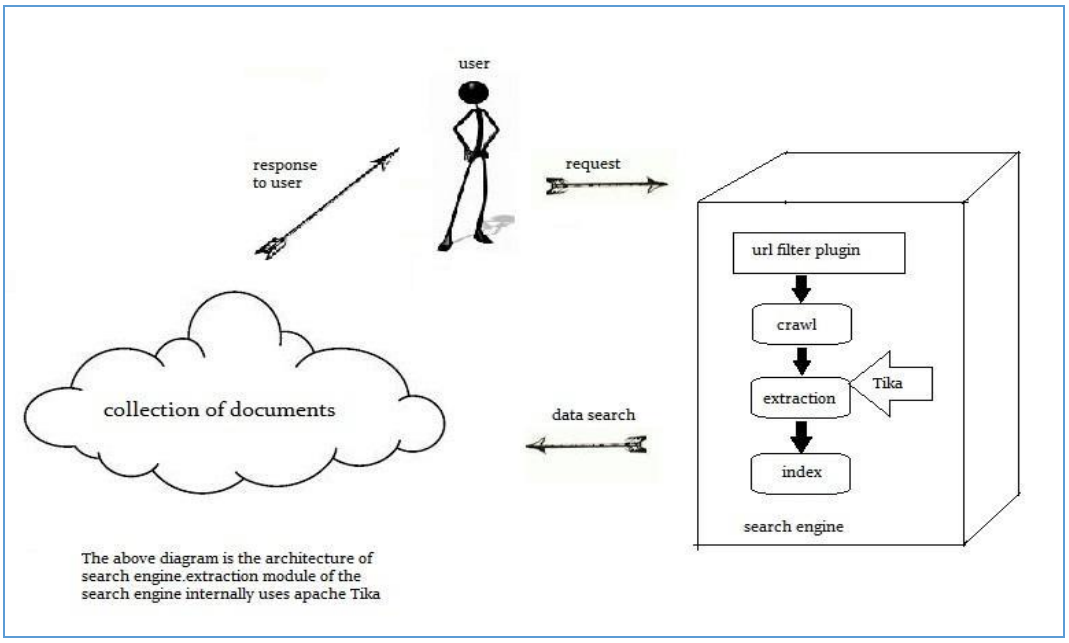
Apache Tika Applications

There are various applications that make use of Apache Tika. Here we will discuss a few prominent applications that depend heavily on Apache Tika.

Search Engines

Tika is widely used while developing search engines to index the text contents of digital documents.

- Search engines are information processing systems designed to search information and indexed documents from the Web.
- Crawler is an important component of a search engine that crawls through the Web to fetch the documents that are to be indexed using some indexing technique. Thereafter, the crawler transfers these indexed documents to an extraction component.
- The duty of extraction component is to extract the text and metadata from the document. Such extracted content and metadata are very useful for a search engine. This extraction component contains Tika.
- The extracted content is then passed to the indexer of the search engine that uses it to build a search index. Apart from this, the search engine uses the extracted content in many other ways as well.


user
response to user
request
url filter plugin
crawl
extraction
Tika
index
search engine
collection of documents
data search
The above diagram is the architecture of search engine.extraction module of the search engine internally uses apache Tika

Document Analysis

- In the field of artificial intelligence, there are certain tools to analyze documents automatically at semantic level and extract all kinds of data from them.

- In such applications, the documents are classified based on the prominent terms in the extracted content of the document.

- These tools make use of Tika for content extraction to analyze documents varying from plain text to digital documents.

Digital Asset Management

- Some organizations manage their digital assets such as photographs, e-books, drawings, music and video using a special application known as digital asset management (DAM).

- Such applications take the help of document type detectors and metadata extractor to classify the various documents.

Content Analysis

- Websites like Amazon recommend newly released contents of their website to individual users according to their interests. To do so, these websites follow **machine learning techniques**, or take the help of social media websites like Facebook to extract required information such as likes and interests of the users. This gathered information will be in the form of html tags or other formats that require further content type detection and extraction.

- For content analysis of a document, we have technologies that implement machine learning techniques such as **UIMA** and **Mahout**. These technologies are useful in clustering and analyzing the data in the documents.

- **Apache Mahout** is a framework which provides ML algorithms on Apache Hadoop – a cloud computing platform. Mahout provides an architecture by following certain clustering and filtering techniques. By following this architecture, programmers can write their own ML algorithms to produce recommendations by taking various text and metadata combinations. To provide inputs to these algorithms, recent versions of Mahout use Tika to extract text and metadata from binary content.

- **Apache UIMA** analyzes and processes various programming languages and produces UIMA annotations. Internally it uses Tika Annotator to extract document text and metadata.

History

Year	Development
2006	The idea of Tika was projected before the Lucene Project Management Committee.
2006	The concept of Tika and its usefulness in the Jackrabbit project was discussed.
2007	Tika entered into Apache incubator.
2008	Versions 0.1 and 0.2 were released and Tika graduated from the incubator to the Lucene sub-project.
2009	Versions 0.3, 0.4, and 0.5 were released.
2010	Version 0.6 and 0.7 were released and Tika graduated into the top-level Apache project.
2011	Tika 1.0 was released and the book on Tika "Tika in Action” was also released in the same year.

2. TIKA ARCHITECTURE

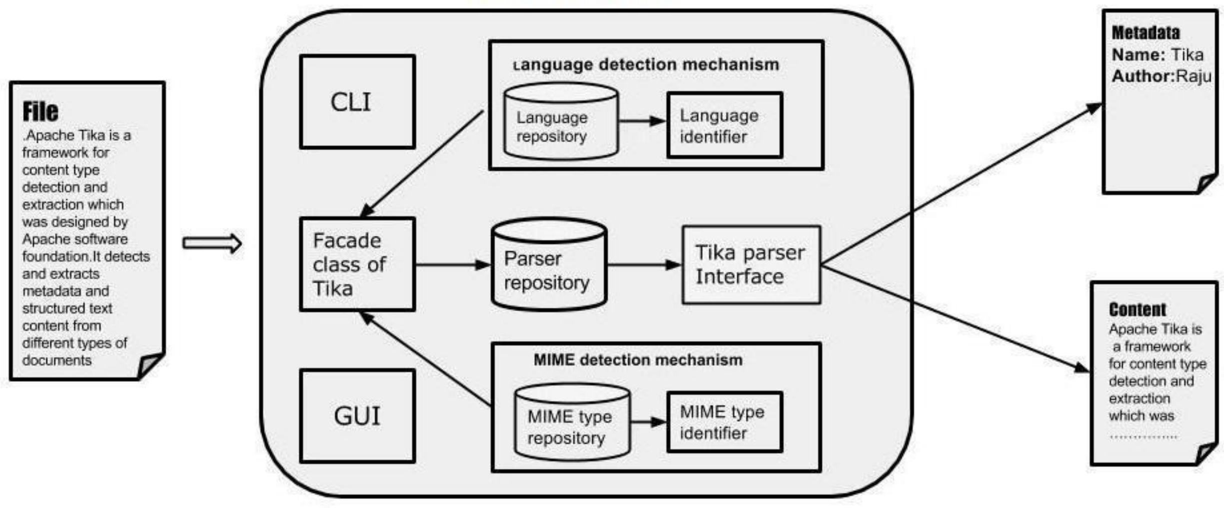
Application-Level Architecture of Tika

Application programmers can easily integrate Tika in their applications. Tika provides a Command Line Interface and a GUI to make it user friendly.

In this chapter, we will discuss the four important modules that constitute the Tika architecture. The following illustration shows the architecture of Tika along with its four modules:

- Language detection mechanism
- MIME detection mechanism
- Parser interface
- Tika Facade class

Tika Architecture


File
.Apache Tika is a framework for content type detection and extraction which was designed by Apache software foundation.It detects and extracts metadata and structured text content from different types of documents
CLI
Language detection mechanism
Language repository
Language identifier
Facade class of Tika
Parser repository
Tika parser Interface
GUI
MIME detection mechanism
MIME type repository
MIME type identifier
Metadata
Name: Tika
Author:Raju
Content
Apache Tika is a framework for content type detection and extraction which was ....

Language Detection Mechanism

Whenever a text document is passed to Tika, it will detect the language in which it was written. It accepts documents without language annotation and adds that information in the metadata of the document by detecting the language.

To support language identification, Tika has a class called **Language Identifier** in the package **org.apache.tika.language**, and a language identification repository inside which contains algorithms for language detection from a given text. Tika internally uses N-gram algorithm for language detection.

MIME Detection Mechanism

Tika can detect the document type according to the MIME standards. Default MIME type detection in Tika is done using **org.apache.tika.mime.mimeTypes**. It uses the **org.apache.tika.detect.Detector** interface for most of the content type detection.

Internally Tika uses several techniques like file globs, content-type hints, magic bytes, character encodings, and several other techniques.

Parser Interface

The parser interface of org.apache.tika.parser is the key interface for parsing documents in Tika. This Interface extracts the text and the metadata from a document and summarizes it for external users who are willing to write parser plugins.

Using different concrete parser classes, specific for individual document types, Tika supports a lot of document formats. These format specific classes provide support for different document formats, either by directly implementing the parser logic or by using external parser libraries.

Tika Facade Class

Using Tika facade class is the simplest and direct way of calling Tika from Java, and it follows the facade design pattern. You can find the Tika facade class in the org.apache.tika package of Tika API.

By implementing basic use cases, Tika acts as a broker of landscape. It abstracts the underlying complexity of the Tika library such as MIME detection mechanism, parser interface, and language detection mechanism, and provides the users a simple interface to use.

Features of Tika

- **Unified parser Interface:** Tika encapsulates all the third party parser libraries within a single parser interface. Due to this feature, the user escapes from the burden of selecting the suitable parser library and use it according to the file type encountered.
- **Low memory usage:** Tika consumes less memory resources therefore it is easily embeddable with Java applications. We can also use Tika within the application which run on platforms with less resources like mobile PDA.
- **Fast processing:** Quick content detection and extraction from applications can be expected.
- **Flexible metadata:** Tika understands all the metadata models which are used to describe files.

- **Parser integration:** Tika can use various parser libraries available for each document type in a single application.
- **MIME type detection:** Tika can detect and extract content from all the media types included in the MIME standards.
- **Language detection:** Tika includes language identification feature, therefore can be used in documents based on language type in a multi lingual websites.

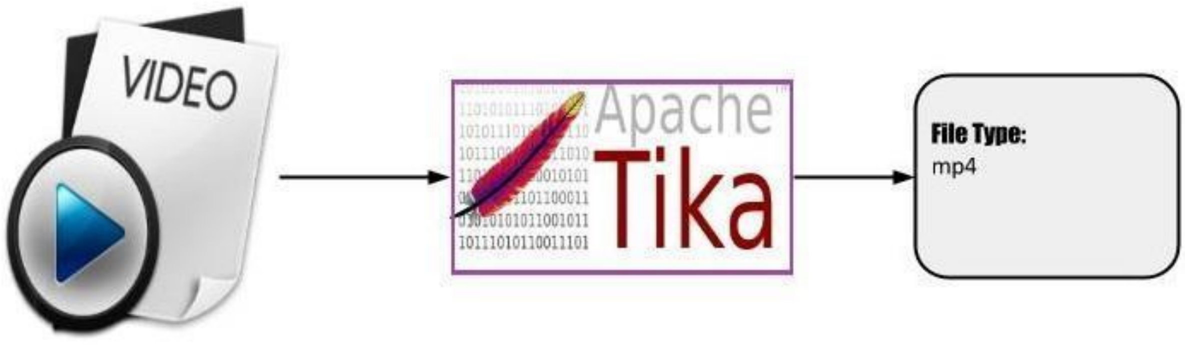
Functionalities of Tika

Tika supports various functionalities:

- Document type detection
- Content extraction
- Metadata extraction
- Language detection

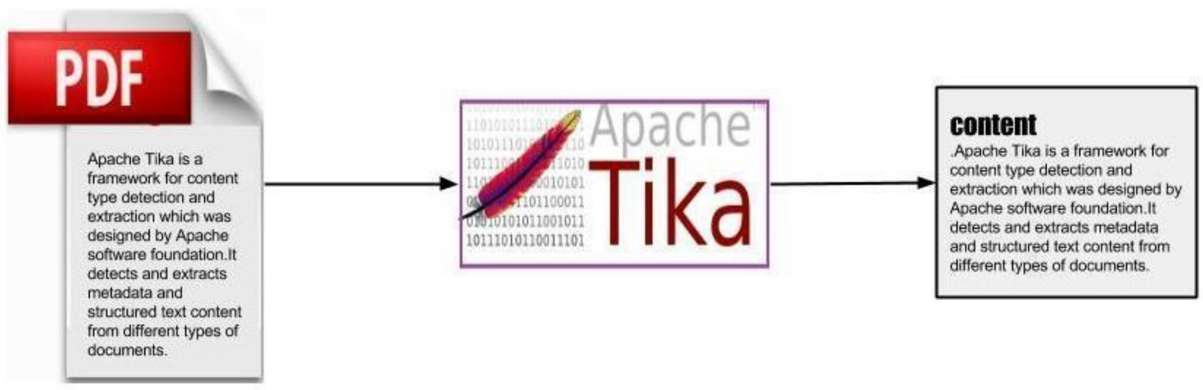
Document Type Detection

Tika uses various detection techniques and detects the type of the document given to it.



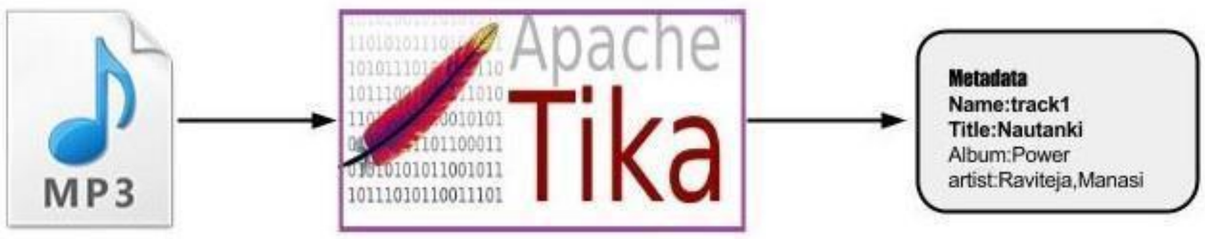
Content Extraction

Tika has a parser library that can parse the content of various document formats and extract them. After detecting the type of the document, it selects the appropriate parser from the parser repository and passes the document. Different classes of Tika have methods to parse different document formats.


PDF
Apache Tika is a framework for content type detection and extraction which was designed by Apache software foundation.It detects and extracts metadata and structured text content from different types of documents.
Apache Tika
content
.Apache Tika is a framework for content type detection and extraction which was designed by Apache software foundation.It detects and extracts metadata and structured text content from different types of documents.

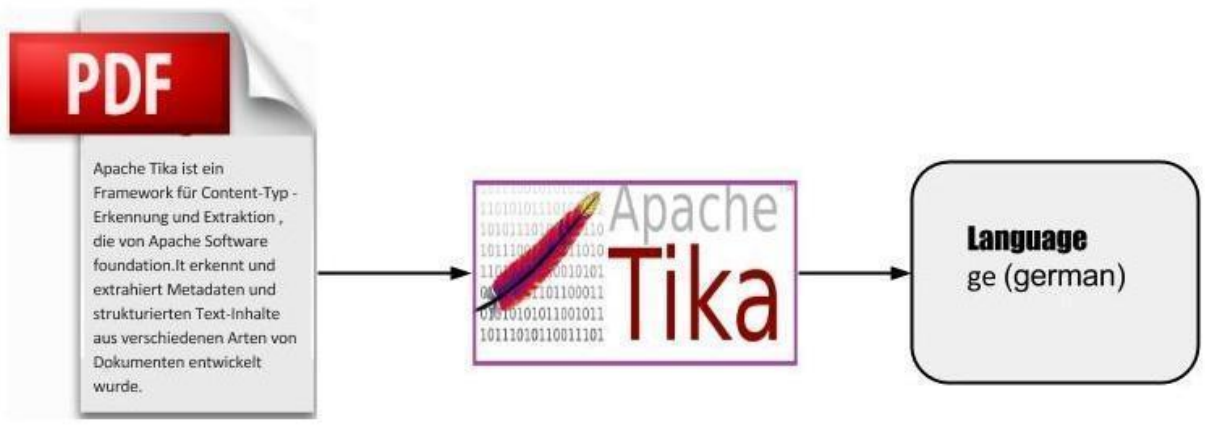
Metadata Extraction

Along with the content, Tika extracts the metadata of the document with the same procedure as in content extraction. For some document types, Tika have classes to extract metadata.



Language Detection

Internally, Tika follows algorithms like **n-gram** to detect the language of the content in a given document. Tika depends on classes like **Languageidentifier** and **Profiler** for language identification.


PDF
Apache Tika ist ein Framework für Content-Typ - Erkennung und Extraktion , die von Apache Software foundation.It erkennt und extrahiert Metadaten und strukturierten Text-Inhalte aus verschiedenen Arten von Dokumenten entwickelt wurde.
Apache Tika
Language
ge (german)

3. TIKA ENVIRONMENT

This chapter takes you through the process of setting up Apache Tika on Windows and Linux. User administration is needed while installing the Apache Tika.

System Requirements

JDK	Java SE 2 JDK 1.6 or above
Memory	1 GB RAM (recommeneded)
Disk Space	No minimum requirement
Operating System Version	Windows XP or above, Linux

Step 1: Verifying Java Installation

To verify Java installation, open the console and execute the following **java** command.

OS	Task	Command
Windows	Open command console	\>java –version
Linux	Open command terminal	$java –version

If Java has been installed properly on your system, then you should get one of the following outputs, depending on the platform you are working on.

OS	Output
Windows	Java version "1.7.0_60" Java (TM) SE Run Time Environment (build 1.7.0_60-b19) Java Hotspot (TM) 64-bit Server VM (build 24.60-b09, mixed mode)
Linux	java version "1.7.0_25" Open JDK Runtime Environment (rhel-2.3.10.4.el6_4-x86_64) Open JDK 64-Bit Server VM (build 23.7-b01, mixed mode)

- We assume the readers of this tutorial have Java 1.7.0_60 installed on their system before proceeding for this tutorial.
- In case you do not have Java SDK, download its current version from http://www.oracle.com/technetwork/java/javase/downloads/index.html and have it installed.

Step 2: Setting Java Environment

Set the JAVA_HOME environment variable to point to the base directory location where Java is installed on your machine. For example,

OS	Output
Windows	Set Environmental variable JAVA_HOME to C:\ProgramFiles\java\jdk1.7.0_60
Linux	export JAVA_HOME=/usr/local/java-current

Append the full path of the Java compiler location to the System Path.

OS	Output
Windows	Append the String; C:\Program Files\Java\jdk1.7.0_60\bin to the end of the system variable PATH.
Linux	export PATH=$PATH:$JAVA_HOME/bin/

Verify the command java-version from command prompt as explained above.

Step 3: Setting up Apache Tika Environment

Programmers can integrate Apache Tika in their environment by using

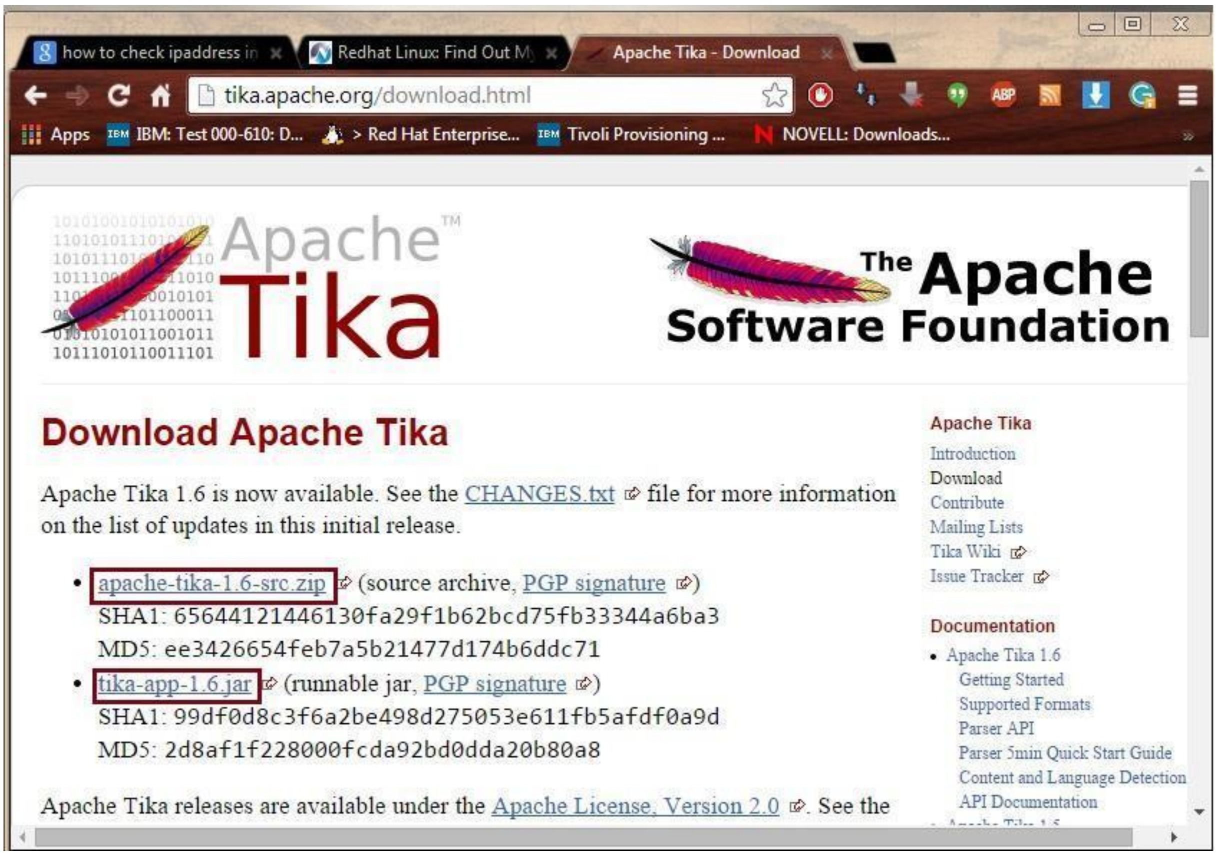
- Command line,
- Tika API,
- Command line interface (CLI) of Tika,
- Graphical User interface (GUI) of Tika, or
- the source code.

For any of these approaches, first of all, you have to download the source code of Tika.

You will find the source code of Tika at http://Tika.apache.org/download.html, where you will find two links:

- apache-tika-1.6-src.zip: It contains the source code of Tika, and
- Tika-app-1.6.jar: It is a jar file that contains the Tika application.

Download these two files. A snapshot of the official website of Tika is shown below.



Download Apache Tika

Apache Tika 1.6 is now available. See the CHANGES.txt file for more information on the list of updates in this initial release.

- apache-tika-1.6-src.zip (source archive, PGP signature)
  SHA1: 65644121446130fa29f1b62bcd75fb33344a6ba3
  MD5: ee3426654feb7a5b21477d174b6ddc71
- tika-app-1.6.jar (runnable jar, PGP signature)
  SHA1: 99df0d8c3f6a2be498d275053e611fb5afdf0a9d
  MD5: 2d8af1f228000fcda92bd0dda20b80a8

Apache Tika releases are available under the Apache License, Version 2.0. See the

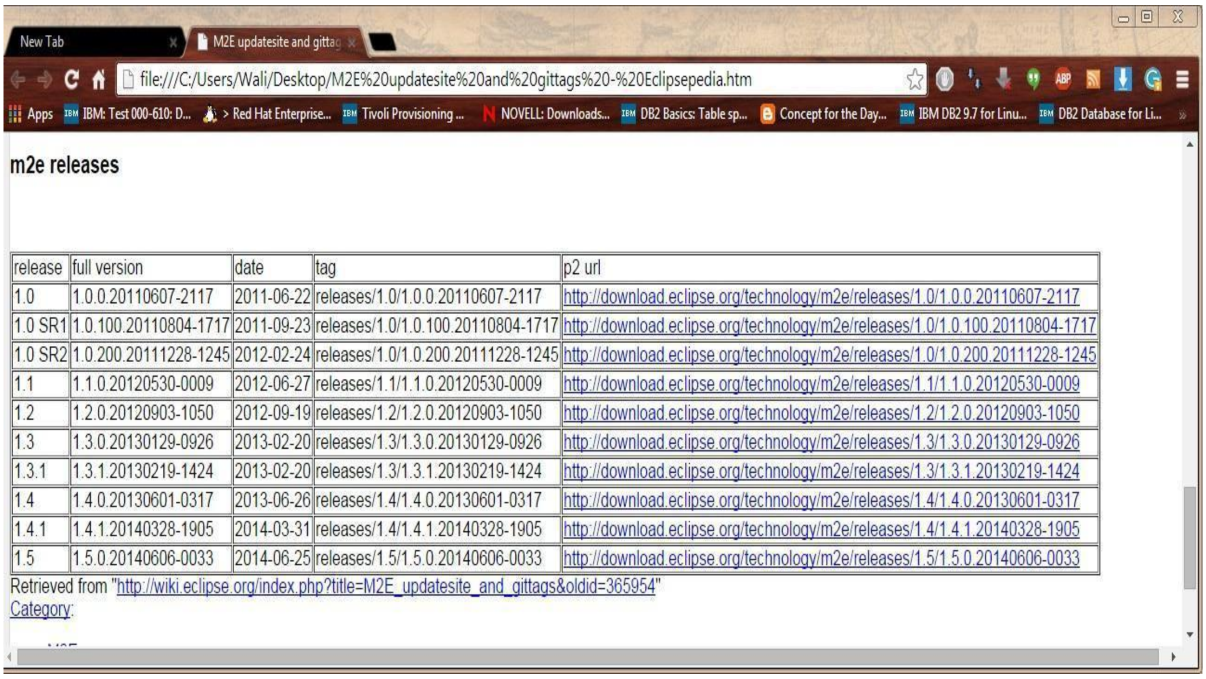
After downloading the files, set the classpath for the jar file **tika-app-1.6.jar**. Add the complete path of the jar file as shown in the table below.

OS	Output
Windows	Append the String "C:\jars\Tika-app-1.6.jar" to the user environment variable CLASSPATH
Linux	Export CLASSPATH=$CLASSPATH: /usr/share/jars/Tika-app-1.6.tar:

Apache provides Tika application, a Graphical User Interface (GUI) application using Eclipse.

Tika-Maven Build using Eclipse

- Open eclipse and create a new project.
- If you do not having Maven in your Eclipse, set it up by following the given steps.
  - o Open the link http://wiki.eclipse.org/M2E_updatesite_and_gittags . There you will find the m2e plugin releases in a tabular format

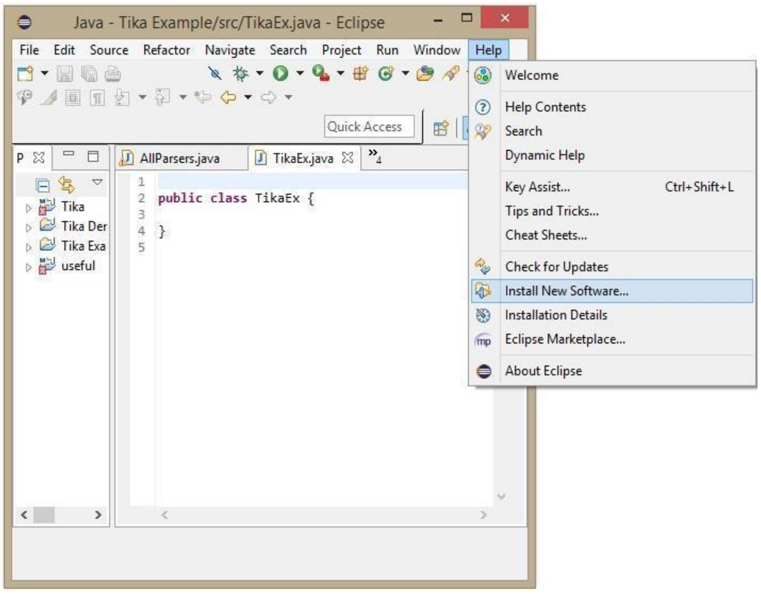


m2e releases

release	full version	date	tag	p2 url
1.0	1.0.0.20110607-2117	2011-06-22	releases/1.0/1.0.0.20110607-2117	http://download.eclipse.org/technology/m2e/releases/1.0/1.0.0.20110607-2117
1.0 SR1	1.0.100.20110804-1717	2011-09-23	releases/1.0/1.0.100.20110804-1717	http://download.eclipse.org/technology/m2e/releases/1.0/1.0.100.20110804-1717
1.0 SR2	1.0.200.20111228-1245	2012-02-24	releases/1.0/1.0.200.20111228-1245	http://download.eclipse.org/technology/m2e/releases/1.0/1.0.200.20111228-1245
1.1	1.1.0.20120530-0009	2012-06-27	releases/1.1/1.1.0.20120530-0009	http://download.eclipse.org/technology/m2e/releases/1.1/1.1.0.20120530-0009
1.2	1.2.0.20120903-1050	2012-09-19	releases/1.2/1.2.0.20120903-1050	http://download.eclipse.org/technology/m2e/releases/1.2/1.2.0.20120903-1050
1.3	1.3.0.20130129-0926	2013-02-20	releases/1.3/1.3.0.20130129-0926	http://download.eclipse.org/technology/m2e/releases/1.3/1.3.0.20130129-0926
1.3.1	1.3.1.20130219-1424	2013-02-20	releases/1.3/1.3.1.20130219-1424	http://download.eclipse.org/technology/m2e/releases/1.3/1.3.1.20130219-1424
1.4	1.4.0.20130601-0317	2013-06-26	releases/1.4/1.4.0.20130601-0317	http://download.eclipse.org/technology/m2e/releases/1.4/1.4.0.20130601-0317
1.4.1	1.4.1.20140328-1905	2014-03-31	releases/1.4/1.4.1.20140328-1905	http://download.eclipse.org/technology/m2e/releases/1.4/1.4.1.20140328-1905
1.5	1.5.0.20140606-0033	2014-06-25	releases/1.5/1.5.0.20140606-0033	http://download.eclipse.org/technology/m2e/releases/1.5/1.5.0.20140606-0033

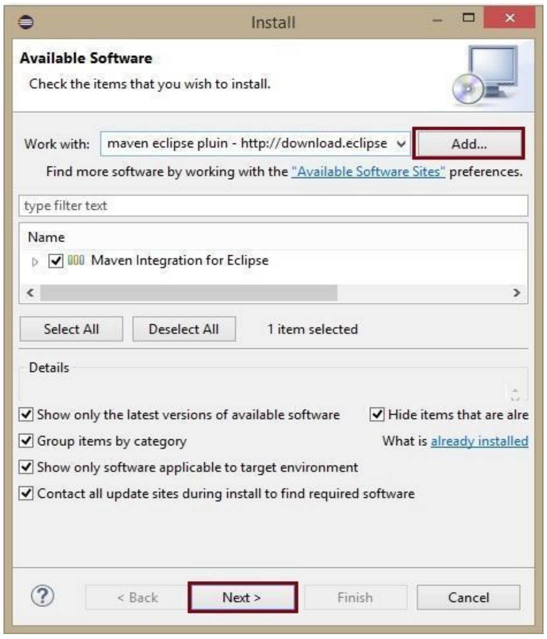
Retrieved from "http://wiki.eclipse.org/index.php?title=M2E_updatesite_and_gittags&oldid=365954"
Category:

  - o Pick the latest version and save the path of the url in p2 url column.
  - o Now revisit eclipse, in the menu bar, click **Help**, and choose **Install New Software** from the dropdown menu.



```

public class TikaEx {

}

```

- o Click the **Add** button, type any desired name, as it is optional. Now paste the saved url in the **Location** field.
- o A new plugin will be added with the name you have chosen in the previous step, check the checkbox in front of it, and click **Next**.


Install
Available Software
Check the items that you wish to install.
Work with:
maven eclipse pluin - http://download.eclipse
Add...
Find more software by working with the "Available Software Sites" preferences.
type filter text
Name
Maven Integration for Eclipse
Select All
Deselect All
1 item selected
Details
Show only the latest versions of available software
Hide items that are alre
Group items by category
What is already installed
Show only software applicable to target environment
Contact all update sites during install to find required software
< Back
Next >
Finish
Cancel

- o Proceed with the installation. Once completed, restart the Eclipse.
- o Now right click on the project, and in the **configure** option, select **convert to maven project**.
- o A new wizard for creating a new pom appears. Enter the Group Id as org.apache.tika, enter the latest version of Tika, select the **packaging** as jar, and click **Finish**.

The Maven project is successfully installed, and your project is converted into Maven. Now you have to configure the pom.xml file.

Configure the XML File

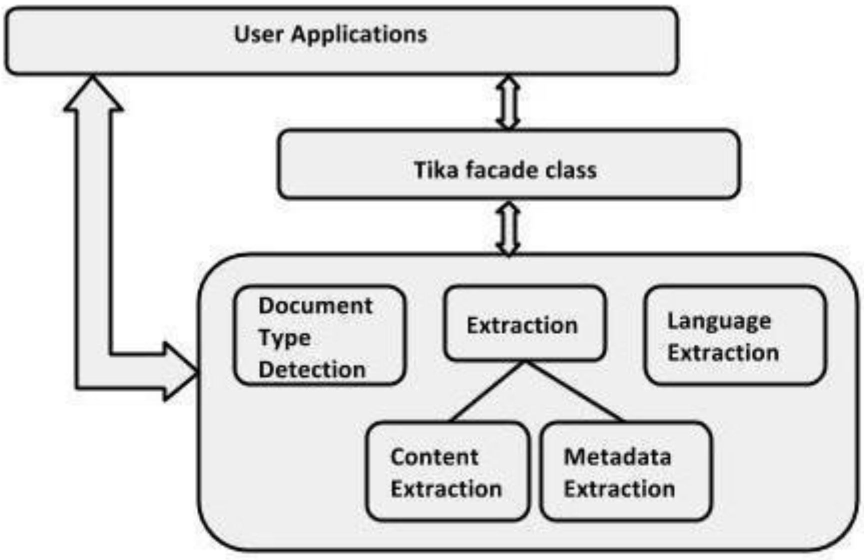
Get the Tika maven dependency from
http://mvnrepository.com/artifact/org.apache.tika

Shown below is the complete Maven dependency of Apache Tika.

```
<dependency>
      <groupId>org.apache.Tika</groupId>
      <artifactId>Tika-core</artifactId>
      <version>1.6</version>

      <groupId>org.apache.Tika</groupId>
      <artifactId>Tika-parsers</artifactId>
      <version>1.6</version>

      <groupId>org.apache.Tika</groupId>
      <artifactId>Tika</artifactId>
      <version>1.6</version>

      <groupId>org.apache.Tika</groupId>
      <artifactId>Tika-serialization</artifactId>
      <version>1.6</version>

      <groupId>org.apache.Tika</groupId>
      <artifactId>Tika-app</artifactId>
      <version>1.6</version>

      <groupId>org.apache.Tika</groupId>
      <artifactId>Tika-bundle</artifactId>
      <version>1.6</version>
</dependency>
```

4. TIKA REFERENCED API

Users can embed Tika in their applications using the Tika facade class. It has methods to explore all the functionalities of Tika. Since it is a facade class, Tika abstracts the complexity behind its functions. In addition to this, users can also use the various classes of Tika in their applications.



Tika Class (facade)

This is the most prominent class of the Tika library and follows the facade design pattern. Therefore, it abstracts all the internal implementations and provides simple methods to access the Tika functionalities. The following table lists the constructors of this class along with their descriptions.

package: org.apache.tika

class: Tika

S. No.	Constructor and Description
1	**Tika ()** Uses default configuration and constructs the Tika class.
2	**Tika (Detector detector)** Creates a Tika facade by accepting the detector instance as

	parameter.
3	**Tika (Detector detector, Parser parser)** Creates a Tika facade by accepting the detector and parser instances as parameters.
4	**Tika (Detector detector, Parser parser, Translator translator)** Creates a Tika facade by accepting the detector, the parser, and the translator instance as parameters.
5	**Tika (TikaConfig config)** Creates a Tika facade by accepting the object of the TikaConfig class as parameter.

Methods and Description

The following are the important methods of Tika facade class:

S. No.	Methods and Description
1	parse**ToString** (**File** file) This method and all its variants parses the file passed as parameter and returns the extracted text content in the String format. By default, the length of this string parameter is limited.
2	int **getMaxStringLength** () Returns the maximum length of strings returned by the parseToString methods.
3	void **setMaxStringLength** (int maxStringLength) Sets the maximum length of strings returned by the parseToString methods.
4	Reader **parse** (**File** file) This method and all its variants parses the file passed as parameter and returns the extracted text content in the form of java.io.reader object.

5	String **detect** (**InputStream** stream, **Metadata** metadata) This method and all its variants accepts an InputStream object and a Metadata object as parameters, detects the type of the given document, and returns the document type name as String object. This method abstracts the detection mechanisms used by Tika.
6	String **translate** (**InputStream** text,**String** targetLanguage) This method and all its variants accepts the InputStream object and a String representing the language that we want our text to be translated, and translates the given text to the desired language, attempting to auto-detect the source language.

Parser Interface

This is the interface that is implemented by all the parser classes of Tika package.

package: org.apache.tika.parser

Interface: Parser

Methods and Description

The following is the important method of Tika Parser interface:

S. No.	Methods and Description
1	**parse (InputStream stream, ContentHandler handler, Metadata metadata, ParseContext context)** This method parses the given document into a sequence of XHTML and SAX events. After parsing, it places the extracted document content in the object of the ContentHandler class and the metadata in the object of the Metadata class.

Metadata Class

This class implements various interfaces such as CreativeCommons, Geographic, HttpHeaders, Message, MSOffice, ClimateForcast, TIFF, TikaMetadataKeys, TikaMimeKeys, Serializable to support various data models. The following tables list the constructors and methods of this class along with their descriptions.

package: org.apache.tika.metadata

class: Metadata

S. No.	Constructor and description
1	Metadata() Constructs a new, empty metadata.

S. No.	Methods and Description
1	**add (Property property, String value)** Adds a metadata property/value mapping to a given document. Using this function, we can set the value to a property.
2	**add (String name, String value)** Adds a metadata property/value mapping to a given document. Using this method, we can set a new name value to the existing metadata of a document.
3	**String get (Property property)** Returns the value (if any) of the metadata property given.
4	**String get (String name)** Returns the value (if any) of the metadata name given.
5	**Date getDate (Property property)**

	Returns the value of Date metadata property.
6	**String[] getValues (Property property)** Returns all the values of a metadata property.
7	**String[] getValues (String name)** Returns all the values of a given metadata name.
8	**String[] names()** Returns all the names of metadata elements in a metadata object.
9	**set (Property property, Date date)** Sets the date value of the given metadata property.
10	**set (Property property, String[] values)** Sets multiple values to a metadata property.

Language Identifier Class

This class identifies the language of the given content. The following tables list the constructors of this class along with their descriptions.

package: org.apache.tika.language

class: Language Identifier

S. No.	Constructors and Description
1	**LanguageIdentifier (LanguageProfile profile)** Instantiates the language identifier. Here you have to pass a LanguageProfile object as parameter.
2	**LanguageIdentifier (String content)** This constructor can instantiate a language identifier by passing on a String from text content.

S. No.	Methods and Description
1	**String getLanguage** () Returns the language given to the current LanguageIdentifier object.

5. TIKA FILE FORMATS

File Formats Supported by Tika

The following table shows the file formats Tika supports.

File format	Package Library	Class in Tika
XML	org.apache.tika.parser.xml	XMLParser
HTML	org.apache.tika.parser.html and it uses Tagsoup Library	HtmlParser

MS-Office compound document
 	
Ole2 till 2007
 	
ooxml 2007 onwards
	org.apache.tika.parser.microsoft
	
	org.apache.tika.parser.microsoft.ooxml and it uses Apache Poi library
		OfficeParser(ole2)
		
		OOXMLParser(ooxml)

OpenDocument Format openoffice	org.apache.tika.parser.odf	OpenOfficeParser
portable Document Format(PDF)	org.apache.tika.parser.pdf and this package uses Apache PdfBox library	PDFParser
Electronic Publication Format (digital books)	org.apache.tika.parser.epub	EpubParser
Rich Text format	org.apache.tika.parser.rtf	RTFParser
Compression and packaging formats	org.apache.tika.parser.pkg and this package uses	PackageParser and

	Common compress library	CompressorParser and its sub-classes
Text format	org.apache.tika.parser.txt	TXTParser
Feed and syndication formats	org.apache.tika.parser.feed	FeedParser
Audio formats	org.apache.tika.parser.audio and org.apache.tika.parser.mp3	AudioParser MidiParser Mp3- for mp3parser
Imageparsers	org.apache.tika.parser.jpeg	JpegParser-for jpeg images
Videoformats	org.apache.tika.parser.mp4 and org.apache.tika.parser.video this parser internally uses Simple Algorithm to parse flash video formats	Mp4parser FlvParser
java class files and jar files	org.apache.tika.parser.asm	ClassParser CompressorParser
Mobxformat (email messages)	org.apache.tika.parser.mbox	MobXParser
Cad formats	org.apache.tika.parser.dwg	DWGParser
FontFormats	org.apache.tika.parser.font	TrueTypeParser
executable programs and libraries	org.apache.tika.parser.executable	ExecutableParser

6. DOCUMENT TYPE DETECTION

MIME Standards

Multipurpose Internet Mail Extensions (MIME) standards are the best available standards for identifying document types. The knowledge of these standards helps the browser during internal interactions.

Whenever the browser encounters a media file, it chooses a compatible software available with it to display its contents. In case it does not have any suitable application to run a particular media file, it recommends the user to get the suitable plugin software for it.

Type Detection in Tika

Tika supports all the Internet media document types provided in MIME. Whenever a file is passed through Tika, it detects the file and its document type. To detect media types, Tika internally uses the following mechanisms.

File Extensions

Checking the file extensions is the simplest and most-widely used method to detect the format of a file. Many applications and operating systems provide support for these extensions. Shown below are the extension of a few known file types.

File name	Extention
image	.jpg
audio	.mp3
java archive file	.jar
java class file	.class

Content-type Hints

Whenever you retrieve a file from a database or attach it to another document, you may lose the file's name or extension. In such cases, the metadata supplied with the file is used to detect the file extension.

Magic Bytes

Observing the raw bytes of a file, you can find some unique character patterns for each file. Some files have special byte prefixes called **magic bytes** that are specially made and included in a file for the purpose of identifying the file type.

For example, you can find CA FE BA BE (hexadecimal format) in a java file and %PDF (ASCII format) in a pdf file. Tika uses this information to identify the media type of a file.

Character Encodings

Files with plain text are encoded using different types of character encoding. The main challenge here is to identify the type of character encoding used in the files. Tika follows character encoding techniques like **Bom markers** and **Byte Frequencies** to identify the encoding system used by the plain text content.

XML Root Characters

To detect XML documents, Tika parses the xml documents and extracts the information such as root elements, namespaces, and referenced schemas from where the true media type of the files can be found.

Type Detection using Facade Class

The **detect()** method of facade class is used to detect the document type. This method accepts a file as input. Shown below is an example program for document type detection with Tika facade class.

```
import java.io.File;

import org.apache.tika.Tika;

public class Typedetection {

   public static void main(String[] args) throws Exception {

      //Assume example.mp3 is in your current directory
      File file = new File("example.mp3");//

      //Instantiating tika facade class
      Tika tika = new Tika();
      //detecting the file type using detect method
      String filetype = tika.detect(file);
      System.out.println(filetype);

   }

}
```

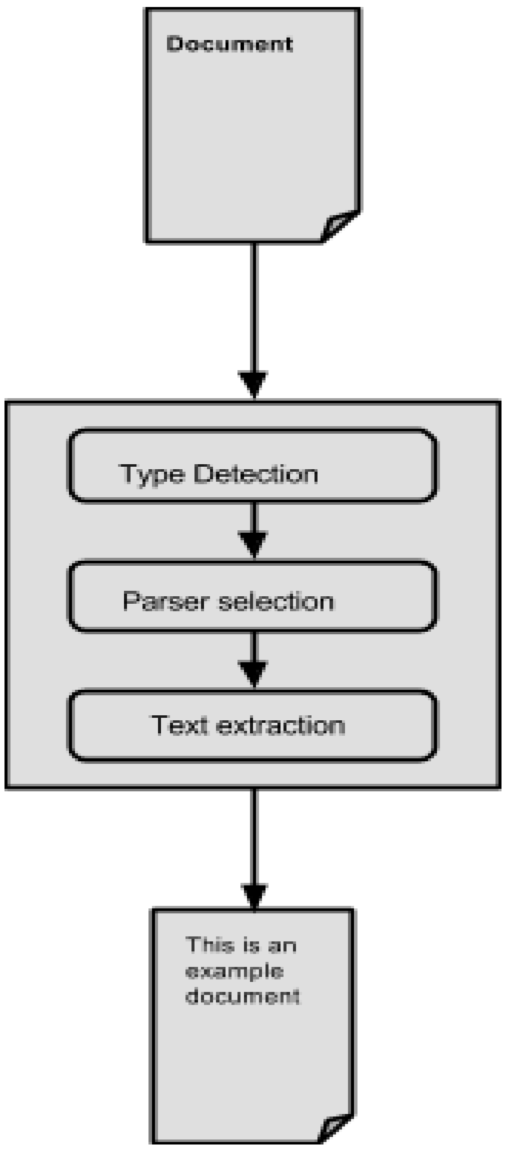
Save the above code as TypeDetection.java and run it from the command prompt using the following commands:

```
javac TypeDetection.java
java TypeDetection

audio/mpeg
```

7. CONTENT EXTRACTION

Tika uses various parser libraries to extract content from given parsers. It chooses the right parser for extracting the given document type.

For parsing documents, the parseToString() method of Tika facade class is generally used. Shown below are the steps involved in the parsing process and these are abstracted by the Tika ParsertoString() method.



Abstracting the parsing process:

- Initially when we pass a document to Tika, it uses a suitable type detection mechanism available with it and detects the document type.

- Once the document type is known, it chooses a suitable parser from its parser repository. The parser repository contains classes that make use of external libraries.

- Then the document is passed to choose the parser which will parse the content, extract the text, and also throw exceptions for unreadable formats.

Content Extraction using Tika

Given below is the program for extracting text from a file using Tika facade class:

```
import java.io.File;
import java.io.IOException;

import org.apache.tika.Tika;
import org.apache.tika.exception.TikaException;
import org.xml.sax.SAXException;

public class TikaExtraction {

   public static void main(final String[] args) throws
IOException, TikaException {

      //create a file object and Assume sample.txt is in your
current directory
      File file = new File("sample.txt");

      //Instantiating Tika facade class
      Tika tika = new Tika();
      String filecontent = tika.parseToString(file);
      System.out.println("Extracted Content: " + filecontent);

   }

}
```

Save the above code as TikaExtraction.java and run it from the command prompt:

```
javac TikaExtraction.java
java TikaExtraction
```

Given below is the content of sample.txt.

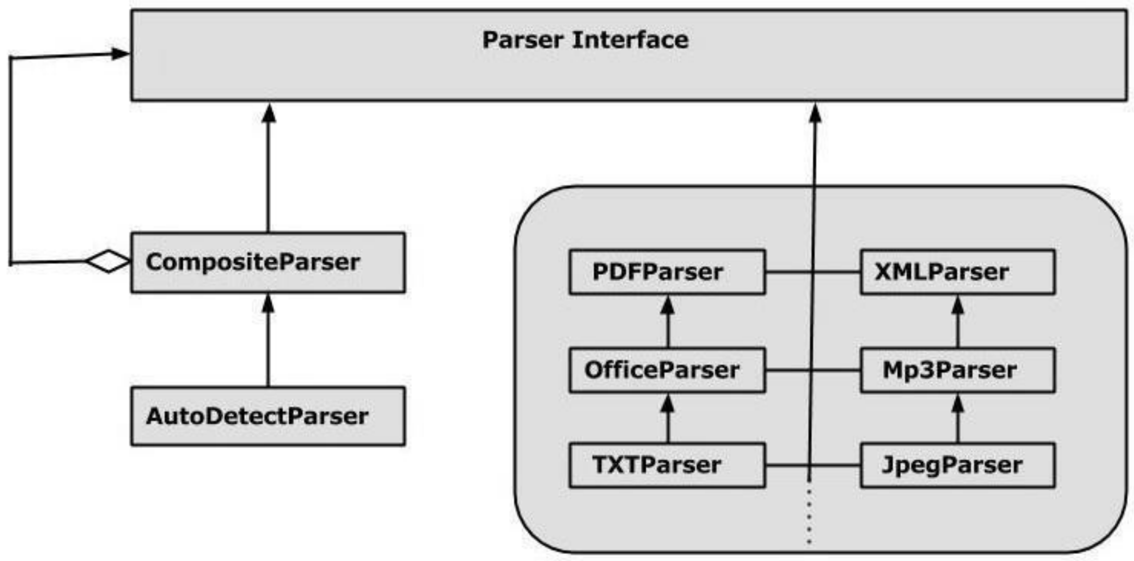
```
Hi students welcome to tutorialspoint
```

It gives you the following output:

```

Extracted Content: Hi students welcome to tutorialspoint
```

Content Extraction using Parser Interface

The parser package of Tika provides several interfaces and classes using which we can parse a text document. Given below is the block diagram of the **org.apache.tika.parser** package.



There are several parser classes available, e.g., pdf parser, Mp3Passer, OfficeParser, etc., to parse respective documents individually. All these classes implement the parser interface.

CompositeParser

The given diagram shows Tika's general-purpose parser classes: **CompositeParser** and **AutoDetectParser**. Since the CompositeParser class follows composite design pattern, you can use a group of parser instances as a single parser. The CompositeParser class also allows access to all the classes that implement the parser interface.

AutoDetectParser

This is a subclass of CompositeParser and it provides automatic type detection. Using this functionality, the AutoDetectParser automatically sends the incoming documents to the appropriate parser classes using the composite methodology.

parse() method

Along with parseToString(), you can also use the parse() method of the parser Interface. The prototype of this method is shown below.

```
parse (InputStream stream, ContentHandler handler, Metadata metadata, ParseContext context)
```

The following table lists the four objects it accepts as parameters.

S. No.	Object and Description
1	**InputStream stream** Any Inputstream object that contains the content of the file.
2	**ContentHandler handler** Tika passes the document as XHTML content to this handler, thereafter the document is processed using SAX API. It provides efficient post-processing of the contents in a document.
3	**Metadata metadata** The metadata object is used both as a source and a target of document metadata.
4	**ParseContext context** This object is used in cases where the client application wants to customize the parsing process.

Example:

Given below is an example that shows how the parse() method is used.

Step 1:

To use the parse() method of the parser interface, instantiate any of the classes providing the implementation for this interface.

There are individual parser classes such as PDFParser, OfficeParser, XMLParser, etc. You can use any of these individual document parsers. Alternatively, you can use either CompositeParser or AutoDetectParser that uses all the parser classes internally and extracts the contents of a document using a suitable parser.

```
Parser parser = new AutoDetectParser();
                    (or)
Parser parser = new CompositeParser();
                    (or)
object of any individual parsers given in Tika Library
```

Step 2:

Create a handler class object. Given below are the three content handlers:

S. No.	**Class and Description**
1	**BodyContentHandler** This class picks the body part of the XHTML output and writes that content to the output writer or output stream. Then it redirects the XHTML content to another content handler instance.
2	**LinkContentHandler** This class detects and picks all the H-Ref tags of the XHTML document and forwards those for the use of tools like web crawlers.
3	**TeeContentHandler** This class helps in using multiple tools simultaneously.

Since our target is to extract the text contents from a document, instantiate BodyContentHandler as shown below:

```
BodyContentHandler handler = new BodyContentHandler( );
```

Step 3:

Create the Metadata object as shown below:

```
Metadata metadata = new Metadata();
```

Step 4:

Create any of the input stream objects, and pass your file that should be extracted to it.

FileInputstream

Instantiate a file object by passing the file path as parameter and pass this object to the FileInputStream class constructor.

Note: The path passed to the file object should not contain spaces.

The problem with these input stream classes is that they don’t support random access reads, which is required to process some file formats efficiently. To resolve this problem, Tika provides TikaInputStream.

```
File file=new File(filepath)
FileInputStream inputstream=new FileInputStream(file);
                   (or)
InputStream stream = TikaInputStream.get(new File(filename));
```

Step 5:

Create a parse context object as shown below:

```
ParseContext context =new ParseContext();
```

Step 6:

Instantiate the parser object, invoke the parse method, and pass all the objects required, as shown in the prototype below:

```
parser.parse(inputstream, handler, metadata, context);
```

Given below is the program for content extraction using the parser interface:

```
import java.io.File;

import java.io.FileInputStream;
import java.io.IOException;


import org.apache.tika.exception.TikaException;

import org.apache.tika.metadata.Metadata;

import org.apache.tika.parser.AutoDetectParser;

import org.apache.tika.parser.ParseContext;

import org.apache.tika.parser.Parser;

import org.apache.tika.sax.BodyContentHandler;

import org.xml.sax.SAXException;


public class ParserExtraction {


   public static void main(final String[] args) throws IOException,
TikaException {


      //Assume sample.txt is in your current directory

      File file = new File("sample.txt");


      //parse method parameters

      Parser parser = new AutoDetectParser();

      BodyContentHandler handler = new BodyContentHandler();

      Metadata metadata = new Metadata();

      FileInputStream inputstream = new FileInputStream(file);

      ParseContext context = new ParseContext();


      //parsing the file

      parser.parse(inputstream, handler, metadata, context);

         System.out.println("The extracted content is " +
handler.toString());


      }
}
```

Save the above code as ParserExtraction.java and run it from the command prompt:

```
javac  ParserExtraction.java
java  ParserExtraction
```

Given below is the content of sample.txt.

```
Hi students welcome to tutorialspoint
```

If you execute the above program, it will give you the following output:

```
Extracted Content: Hi students welcome to tutorialspoint
```

8. METADATA EXTRACTION

Besides content, Tika also extracts the metadata from a file. Metadata is nothing but the additional information supplied with a file. If we consider an audio file, the artist name, album name, title comes under metadata.

XMP Standards

The Extensible Metadata Platform (XMP) is a standard for processing and storing information related to the content of a file. It was created by Adobe Systems Inc. XMP provides standards for defining, creating, and processing of metadata. You can embed this standard into several file formats such as PDF, JPEG, JPEG, GIF, PNG, HTML, etc.

Property Class

Tika uses the Property class to follow XMP property definition. It provides the PropertyType and ValueType enums to capture the name and value of a metadata.

Metadata Class

This class implements various interfaces such as ClimateForcast, CativeCommons, Geographic,TIFF etc. to provide support for various metadata models. In addition, this class provides various methods to extract the content from a file.

Metadata Names

We can extract the list of all metadata names of a file from its metadata object using the method **names()**. It returns all the names as a string array. Using the name of the metadata, we can get the value using the **get()** method. It takes a metadata name and returns a value associated with it.

```
String[] metadaNames = metadata.names();

String value = metadata.get(name);
```

Extracting Metadata using Parse Method

Whenever we parse a file using parse(), we pass an empty metadata object as one of the parameters. This method extracts the metadata of the given file (if that file contains any), and places them in the metadata object. Therefore, after parsing the file using parse(), we can extract the metadata from that object.

```
Parser parser = new AutoDetectParser();
BodyContentHandler handler = new BodyContentHandler();
Metadata metadata = new Metadata();   //empty metadata object
FileInputStream inputstream = new FileInputStream(file);
ParseContext context = new ParseContext();
parser.parse(inputstream, handler, metadata, context);
// now this metadata object contains the extracted metadata of the
given file.
metadata.metadata.names();
```

Given below is the complete program to extract metadata from a text file.

```
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;

import org.apache.tika.exception.TikaException;
import org.apache.tika.metadata.Metadata;
import org.apache.tika.parser.AutoDetectParser;
import org.apache.tika.parser.ParseContext;
import org.apache.tika.parser.Parser;
import org.apache.tika.sax.BodyContentHandler;
import org.xml.sax.SAXException;

public class GetMetadata {

   public static void main(final String[] args) throws
IOException,TikaException {

      //Assume boy.jpg is n your current directory
      File file=new File("boy.jpg");

      //Parser method parameters
      Parser parser = new AutoDetectParser();
      BodyContentHandler handler = new BodyContentHandler();
      Metadata metadata = new Metadata();
      FileInputStream inputstream = new FileInputStream(file);
      ParseContext context = new ParseContext();
      parser.parse(inputstream, handler, metadata, context);
      System.out.println(handler.toString());
      //getting the list of all meta data elements
      String[] metadataNames = metadata.names();

      for(String name : metadataNames){
         System.out.println(name + ": " + metadata.get(name));

      }

   }

}
```

Save the above code as GetMetadata.java and run it from the command prompt using the following commands:

```
javac  GetMetadata .java
java  GetMetadata
```

Given below is the snapshot of boy.jpg

It gives the following output:

```
Resolution Units: inch
Compression Type: Baseline
Data Precision: 8 bits
Number of Components: 3
tiff:ImageLength: 1000
Component 2: Cb component: Quantization table 1, Sampling factors 1 horiz/1 vert
Component 1: Y component: Quantization table 0, Sampling factors 1 horiz/1 vert
Image Height: 1000 pixels
X Resolution: 300 dots
Original Transmission Reference:
53616c7465645f5fd22a84941585d89cc735d889c9d5ac58a01faf2c92ee3c6f9bcb38359bbe1eef
```

```
Image Width: 714 pixels
IPTC-NAA record: 92 bytes binary data
Component 3: Cr component: Quantization table 1, Sampling factors 1 horiz/1 vert
tiff:BitsPerSample: 8
Application Record Version: 4
tiff:ImageWidth: 714
Content-Type: image/jpeg
Y Resolution: 300 dots
```

We can also get our desired metadata values.

Adding New Metadata Values

We can add new metadata values using the add() method of the metadata class. Given below is the syntax of this method. Here we are adding the author name.

```
metadata.add(“author”,”Tutorials point”);
```

The Metadata class has predefined properties including the properties inherited from classes like ClimateForcast, CativeCommons, Geographic, etc., to support various data models. Shown below is the usage of the SOFTWARE data type inherited from the TIFF interface implemented by Tika to follow XMP metadata standards for TIFF image formats.

```
metadata.add(Metadata.SOFTWARE,"ms paint");
```

Given below is the complete program that demonstrates how to add metadata values to a given file. Here the list of the metadata elements is displayed in the output so that you can observe the change in the list after adding new values.

```
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;
import java.util.Arrays;

import org.apache.tika.exception.TikaException;
import org.apache.tika.metadata.Metadata;
import org.apache.tika.parser.AutoDetectParser;
import org.apache.tika.parser.ParseContext;
import org.apache.tika.parser.Parser;
import org.apache.tika.sax.BodyContentHandler;
import org.xml.sax.SAXException;

public class AddMetadata {

   public static void main(final String[] args) throws IOException,
TikaException {
      //Assume sample.txt is in your current directory
      File file = new File("Example.txt");

      //Parser method parameters
      Parser parser = new AutoDetectParser();
      BodyContentHandler handler = new BodyContentHandler();
      Metadata metadata = new Metadata();
      FileInputStream inputstream = new FileInputStream(file);
      ParseContext context = new ParseContext();

      //parsing the document
      parser.parse(inputstream, handler, metadata, context);

      //list of meta data elements before adding new elements
      System.out.println(      "      metadata      elements      :"
+Arrays.toString(metadata.names()));

      //adding new meta data name value pair
      metadata.add("Author","Tutorials Point");
      System.out.println(" metadata name value pair is successfully
added");
      //printing  all  the  meta  data  elements  after  adding  new
elements
      System.out.println("Here  is  the  list  of  all  the  metadata
elements  after adding new elements ");
      System.out.println( Arrays.toString(metadata.names()));

   }

}
```

Save the above code as AddMetadata.java class and run it from the command prompt:

```
javac  AddMetadata .java
java  AddMetadata
```

Given below is the content of Example.txt

```
Hi students welcome to tutorialspoint
```

If you execute the above program, it will give you the following output:

```
metadata elements of the given file :[Content-Encoding, Content-Type]
enter the number of metadata name value pairs to be added
1
```

```
enter metadata1name:
Author
enter metadata1value:
Tutorials point
metadata name value pair is successfully added
Here is the list of all the metadata elements  after adding new elements
[Content-Encoding, Author, Content-Type]
```

Setting Values to Existing Metadata Elements

You can set values to the existing metadata elements using the set() method. The syntax of setting the date property using the set() method is as follows:

```
metadata.set(Metadata.DATE, new Date());
```

You can also set multiple values to the properties using the set() method. The syntax of setting multiple values to the Author property using the set() method is as follows:

```
 metadata.set(Metadata.AUTHOR, "ram ,raheem ,robin ");
```

Given below is the complete program demonstrating the set() method.

```
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;
import java.util.Date;

import org.apache.tika.exception.TikaException;
import org.apache.tika.metadata.Metadata;
import org.apache.tika.parser.AutoDetectParser;
import org.apache.tika.parser.ParseContext;
import org.apache.tika.parser.Parser;
import org.apache.tika.sax.BodyContentHandler;
import org.xml.sax.SAXException;

public class SetMetadata {

   public static void main(final String[] args) throws IOException,
TikaException {

      //Assume example.txt is in your current directory
      File file = new File("example.txt");

      //parameters of parse() method
      Parser parser = new AutoDetectParser();
      BodyContentHandler handler = new BodyContentHandler();
      Metadata metadata = new Metadata();
      FileInputStream inputstream = new FileInputStream(file);
      ParseContext context = new ParseContext();

      //Parsing the given file
      parser.parse(inputstream, handler, metadata, context);

      //list of meta data elements elements
      System.out.println( " metadata elements and values of the
given file :");
      String[] metadataNamesb4 = metadata.names();
      for(String name : metadataNamesb4){

        System.out.println(name + ": " + metadata.get(name));

      }

      //setting date meta data
      metadata.set(Metadata.DATE, new Date());

      //setting multiple values to author property
      metadata.set(Metadata.AUTHOR, "ram ,raheem ,robin ");

      //printing all the meta data elements with new elements
      System.out.println("List of all the metadata elements  after
adding new elements ");
      String[] metadataNamesafter = metadata.names();
      for(String name : metadataNamesafter){
      System.out.println(name + ": " + metadata.get(name));

      }

   }

}
```

Save the above code as SetMetadata.java and run it from the command prompt:

```
javac  SetMetadata.java
java  SetMetadata
```

Given below is the content of example.txt.

```

Hi students welcome to tutorialspoint
```

If you execute the above program it will give you the following output. In the output, you can observe the newly added metadata elements.

```
 metadata elements and values of the given file :
Content-Encoding: ISO-8859-1
Content-Type: text/plain; charset=ISO-8859-1
Here is the list of all the metadata elements  after adding new elements
date: 2014-09-24T07:01:32Z
Content-Encoding: ISO-8859-1
Author: ram ,raheem ,robin
Content-Type: text/plain; charset=ISO-8859-1
```

9. LANGUAGE DETECTION

Need for Language Detection

For classification of documents based on the language they are written in a multilingual website, a language detection tool is needed. This tool should accept documents without language annotation (metadata) and add that information in the metadata of the document by detecting the language.

Algorithms for Profiling Corpus

What is Corpus?

To detect the language of a document, a language profile is constructed and compared with the profile of the known languages. The text set of these known languages is known as a **corpus**.

A corpus is a collection of texts of a written language that explains how the language is used in real situations.

The corpus is developed from books, transcripts, and other data resources like the Internet. The accuracy of the corpus depends upon the profiling algorithm we use to frame the corpus.

What are Profiling Algorithms?

The common way of detecting languages is by using dictionaries. The words used in a given piece of text will be matched with those that are in the dictionaries.

A list of common words used in a language will be the most simple and effective corpus for detecting a particular language, for example, articles **a, an, the** in English.

Using Word Sets as Corpus

Using word sets, a simple algorithm is framed to find the distance between two corpora, which will be equal to the sum of differences between the frequencies of matching words.

Such algorithms suffer from the following problems:

- Since the frequency of matching words is very less, the algorithm cannot efficiently work with small texts having few sentences. It needs a lot of text for accurate match.
- It cannot detect word boundaries for languages having compound sentences, and those having no word dividers like spaces or punctuation marks.

Due to these difficulties in using word sets as corpus, individual characters or character groups are considered.

Using Character Sets as Corpus

Since the characters that are commonly used in a language are finite in number, it is easy to apply an algorithm based on word frequencies rather than characters. This algorithm works even better in case of certain character sets used in one or very few languages.

This algorithm suffers from the following drawbacks:

- It is difficult to differentiate two languages having similar character frequencies.

- There is no specific tool or algorithm to specifically identify a language with the help of (as corpus) the character set used by multiple languages.

N-gram Algorithm

The drawbacks stated above gave rise to a new approach of using character sequences of a given length for profiling corpus. Such sequence of characters are called as N-grams in general, where N represents the length of the character sequence.

- N-gram algorithm is an effective approach for language detection, especially in case of European languages like English.

- This algorithm works fine with short texts.

- Though there are advanced language profiling algorithms to detect multiple languages in a multilingual document having more attractive features, Tika uses the 3-grams algorithm, as it is suitable in most practical situations.

Language Detection in Tika

Among all the 184 standard languages standardized by ISO 639-1, Tika can detect 18 languages. Language detection in Tika is done using the **getLanguage()** method of the **LanguageIdentifier** class. This method returns the code name of the language in String format. Given below is the list of the 18 language-code pairs detected by Tika:

da—Danish	de—German	et—Estonian	el—Greek
en—English	es—Spanish	fi—Finnish	fr—French
hu—Hungarian	is—Icelandic	it—Italian	nl—Dutch
no—Norwegian	pl—Polish	pt—Portuguese	ru—Russian
sv—Swedish	th—Thai		

While instantiating the **LanguageIdentifier** class, you should pass the String format of the content to be extracted, or a **LanguageProfile** class object.

```
LanguageIdentifier object=new LanguageIdentifier(“this is
english”);
```

Given below is the example program for Language detection in Tika.

```
import java.io.IOException;


import org.apache.tika.exception.TikaException;
import org.apache.tika.language.LanguageIdentifier;
import org.xml.sax.SAXException;

public class LanguageDetection {

   public static void main(String args[])throws IOException,
TikaException{

      LanguageIdentifier identifier = new LanguageIdentifier("this
is english ");
      String language = identifier.getLanguage();
      System.out.println("Language of the given content is:" +
language);

   }

}
```

Save the above code as **LanguageDetection.java** and run it from the command prompt using the following commands:

```
javac  LanguageDetection.java
java  LanguageDetection
```

If you execute the above program it gives the following output:

```
Language of the given content is:en
```

Language Detection of a Document

To detect the language of a given document, you have to parse it using the parse() method. The parse() method parses the content and stores it in the handler object, which was passed to it as one of the arguments. Pass the String format of the handler object to the constructor of the **LanguageIdentifier** class as shown below:

```
parser.parse(inputstream, handler, metadata, context);
LanguageIdentifier object = new
LanguageIdentifier(handler.toString());
```

Given below is the complete program that demonstrates how to detect the language of a given document:

```
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;

import org.apache.tika.exception.TikaException;
import org.apache.tika.metadata.Metadata;
import org.apache.tika.parser.AutoDetectParser;
import org.apache.tika.parser.ParseContext;
import org.apache.tika.parser.Parser;
import org.apache.tika.sax.BodyContentHandler;
import org.xml.sax.SAXException;
import org.apache.tika.language.*;

public class DocumentLanguageDetection {

   public static void main(final String[] args) throws IOException,
TikaException {

      //Instantiating a file object
      File file = new File("Example.txt");

      //Parser method parameters
      Parser parser = new AutoDetectParser();
      BodyContentHandler handler = new BodyContentHandler();
      Metadata metadata = new Metadata();
      FileInputStream content = new FileInputStream(file);
      //Parsing the given document
      parser.parse(content, handler, metadata, new ParseContext());

      LanguageIdentifier object = new
LanguageIdentifier(handler.toString());
      System.out.println("Language name :" + object.getLanguage());

   }

}
```

Save the above code as SetMetadata.java and run it from the command prompt:

```
javac  DocumentLanguageDetection.java
java  DocumentLanguageDetection
```

Note: Given below is the content of Example.txt.

```
Hi students welcome to tutorialspoint
```

If you execute the above program, it will give you the following output:

```
Language name :en
```

Along with the Tika jar, Tika provides a Graphical User Interface application (GUI) and a Command Line Interface (CLI) application. You can execute a Tika application from the command prompt too like other Java applications.

10. TIKA GUI

Graphical User Interface (GUI)

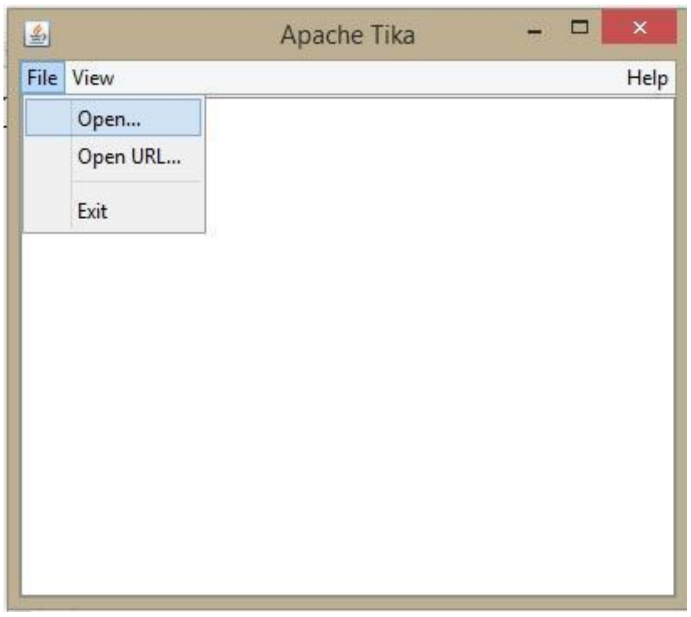
- Tika provides a jar file along with its source code in the following link http://tika.apache.org/download.html.

- Download both the files, set the classpath for the jar file.

- Extract the source code zip folder, open the tika-app folder.

- In the extracted folder at "tika-1.6\tika-app\src\main\java\org\apache\Tika\gui" you will see two class files: **ParsingTransferHandler.java** and **TikaGUI.java**.

- Compile both the class files and execute the TikaGUI.java class file, it opens the following window.



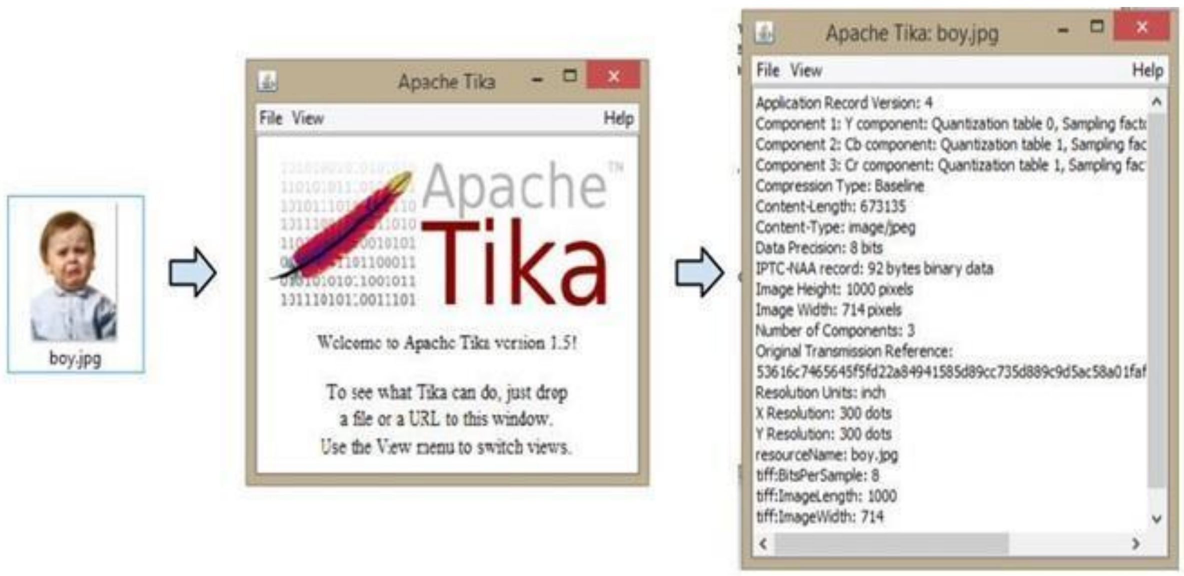
Let us now see how to make use of the Tika GUI.

On the GUI, click open, browse and select a file that is to be extracted, or drag it onto the whitespace of the window.

Tika extracts the content of the files and displays it in five different formats, viz. metadata, formatted text, plain text, main content, and structured text. You can choose any of the format you want.

In the same way, you will also find the CLI class in the "tika-1.6\tika-app\src\main\java\org\apache\tika\cli" folder.

The following illustration shows what Tika can do. When we drop the image on the GUI, Tika extracts and displays its metadata.



Welcome to Apache Tika version 1.5!

To see what Tika can do, just drop a file or a URL to this window.
Use the View menu to switch views.

```
Application Record Version: 4
Component 1: Y component: Quantization table 0, Sampling fact
Component 2: Cb component: Quantization table 1, Sampling fac
Component 3: Cr component: Quantization table 1, Sampling fac
Compression Type: Baseline
Content-Length: 673135
Content-Type: image/jpeg
Data Precision: 8 bits
IPTC-NAA record: 92 bytes binary data
Image Height: 1000 pixels
Image Width: 714 pixels
Number of Components: 3
Original Transmission Reference:
53616c7465645f5fd22a84941585d89cc735d889c9d5ac58a01faf
Resolution Units: inch
X Resolution: 300 dots
Y Resolution: 300 dots
resourceName: boy.jpg
tiff:BitsPerSample: 8
tiff:ImageLength: 1000
tiff:ImageWidth: 714
```

11. EXTRACTING PDF

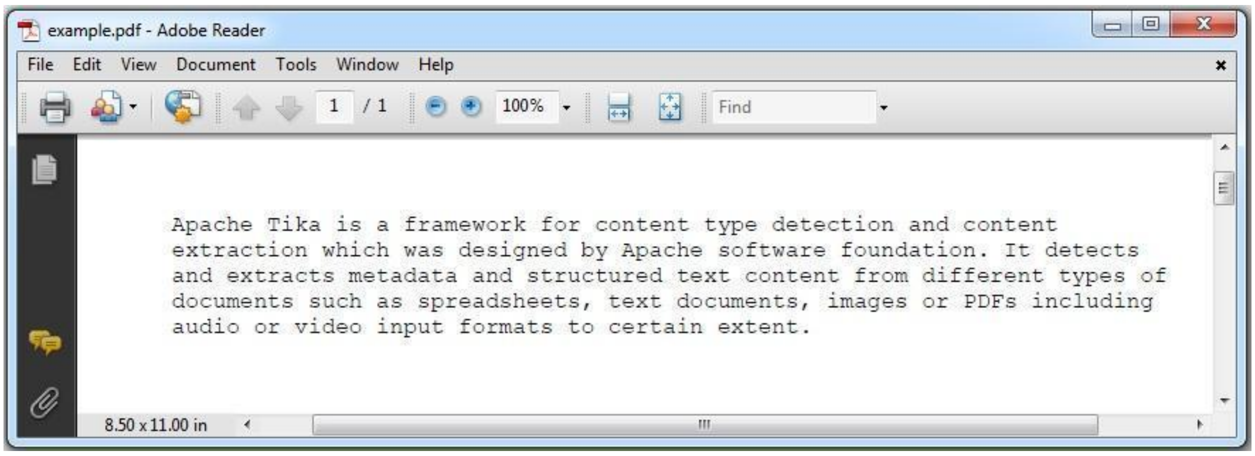
Given below is the program to extract content and metadata from a PDF.

```
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;

import org.apache.tika.exception.TikaException;
import org.apache.tika.metadata.Metadata;
import org.apache.tika.parser.ParseContext;
import org.apache.tika.parser.pdf.PDFParser;
import org.apache.tika.sax.BodyContentHandler;
import org.xml.sax.SAXException;

public class PdfParse {

   public static void main(final String[] args) throws IOException,
TikaException{

      BodyContentHandler handler = new BodyContentHandler();
      Metadata metadata = new Metadata();
      FileInputStream inputstream=new FileInputStream(new
File("Example.pdf"));
      ParseContext pcontext=new ParseContext();

      //parsing the document using PDF parser
      PDFParser pdfparser=new PDFParser();
      pdfparser.parse(inputstream, handler, metadata,pcontext);
      //getting the content of the document
    System.out.println("Contents of the PDF :"+handler.toString());


      //getting metadata of the document
      System.out.println("Metadata of the PDF:");
      String[] metadataNames = metadata.names();
      for(String name : metadataNames){
      System.out.println(name+ " : " + metadata.get(name));


      }


   }


}
```

Save the above code as **PdfParse.java**, and compile it from the command prompt by using the following commands:

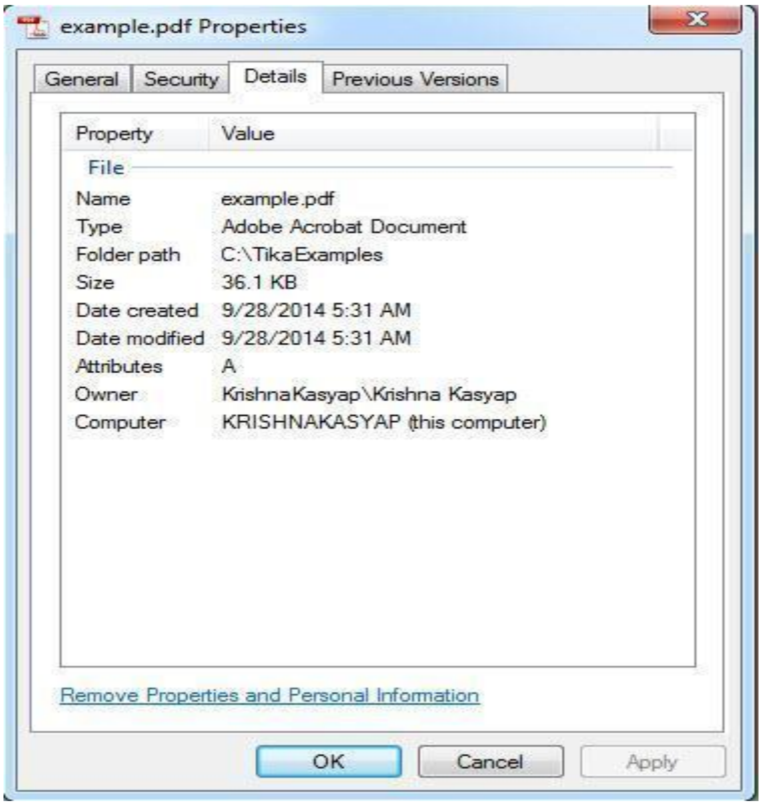
```
javac PdfParse.java
java PdfParse
```

Below give is the snapshot of example.pdf


example.pdf - Adobe Reader
File Edit View Document Tools Window Help
1 / 1
100%
Find
8.50 x 11.00 in

Apache Tika is a framework for content type detection and content extraction which was designed by Apache software foundation. It detects and extracts metadata and structured text content from different types of documents such as spreadsheets, text documents, images or PDFs including audio or video input formats to certain extent.

The PDF we are passing has the following properties:



example.pdf Properties

General | Security | Details | Previous Versions

Property	Value
File	
Name	example.pdf
Type	Adobe Acrobat Document
Folder path	C:\TikaExamples
Size	36.1 KB
Date created	9/28/2014 5:31 AM
Date modified	9/28/2014 5:31 AM
Attributes	A
Owner	KrishnaKasyap\Krishna Kasyap
Computer	KRISHNAKASYAP (this computer)

After compiling the program, you will get the output as shown below.

Output:

```
Contents of the PDF:


Apache Tika is a framework for content type detection and content extraction
which was designed by Apache software foundation. It detects and extracts
metadata and structured text content from different types of documents such as
spreadsheets, text documents, images or PDFs including audio or video input
formats to certain extent.


Metadata of the PDF:


dcterms:modified :     2014-09-28T12:31:16Z
meta:creation-date :     2014-09-28T12:31:16Z
meta:save-date :     2014-09-28T12:31:16Z
dc:creator :     Krishna Kasyap
pdf:PDFVersion :     1.5
Last-Modified :     2014-09-28T12:31:16Z
Author :     Krishna Kasyap
dcterms:created :     2014-09-28T12:31:16Z
date :     2014-09-28T12:31:16Z
modified :     2014-09-28T12:31:16Z
creator :     Krishna Kasyap
xmpTPg:NPages :     1
Creation-Date :     2014-09-28T12:31:16Z
pdf:encrypted :     false
meta:author :     Krishna Kasyap
created :     Sun Sep 28 05:31:16 PDT 2014
```

```
dc:format :     application/pdf; version=1.5
producer :     Microsoft® Word 2013
Content-Type :     application/pdf
xmp:CreatorTool :     Microsoft® Word 2013
Last-Save-Date :     2014-09-28T12:31:16Z
```

12. EXTRACTING ODF

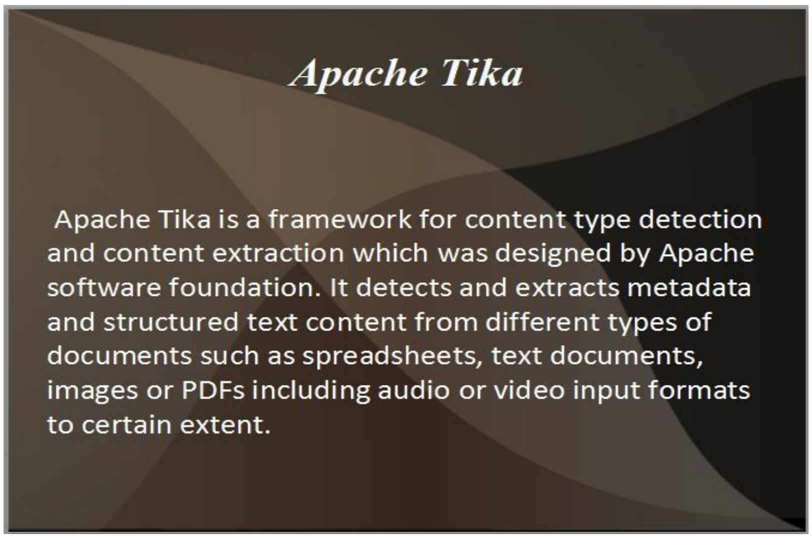
Given below is the program to extract content and metadata from Open Office Document Format (ODF).

```
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;

import org.apache.tika.exception.TikaException;
import org.apache.tika.metadata.Metadata;
import org.apache.tika.parser.ParseContext;
import org.apache.tika.parser.odf.OpenDocumentParser;
import org.apache.tika.sax.BodyContentHandler;
import org.xml.sax.SAXException;

public class OpenDocumentParse {

   public static void main(final String[] args) throws IOException,
TikaException{

      //detecting the file type
      BodyContentHandler handler = new BodyContentHandler();
      Metadata metadata = new Metadata();
      FileInputStream inputstream=new FileInputStream(new
File("example_open_document_presentation.odp"));
      ParseContext pcontext=new ParseContext();

      //Open Document Parser
      OpenDocumentParser openofficeparser=new OpenDocumentParser ();
      openofficeparser.parse(inputstream, handler,
metadata,pcontext);

      System.out.println("Contents of the document:"
+handler.toString());

      System.out.println("Metadata of the document:");

      String[] metadataNames = metadata.names();

      for(String name : metadataNames){


        System.out.println(name + ":  " + metadata.get(name));


      }


   }


}
```

Save the above code as **OpenDocumentParse.java**, and compile it in the command prompt by using the following commands:

```
javac OpenDocumentParse.java

java OpenDocumentParse
```

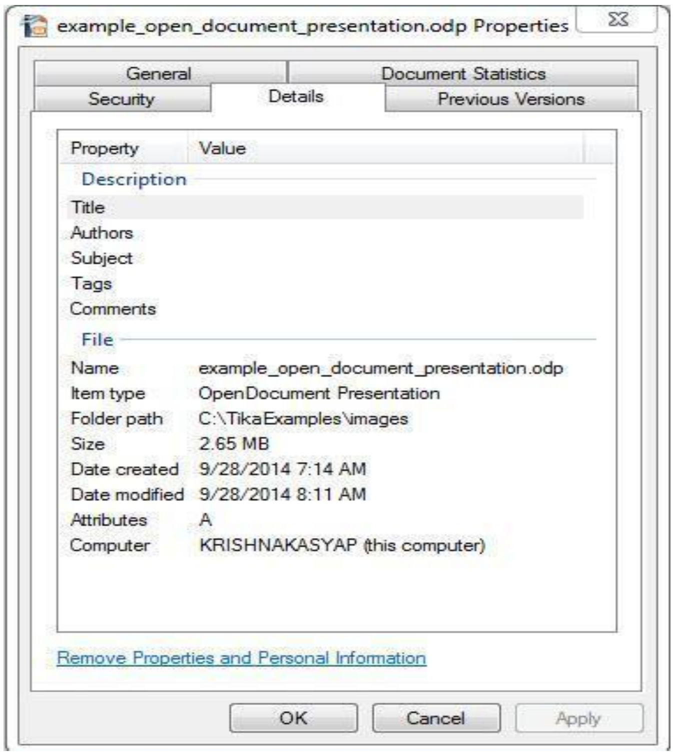
Given below is snapshot of `example_open_document_presentation.odp` file.



Apache Tika

Apache Tika is a framework for content type detection and content extraction which was designed by Apache software foundation. It detects and extracts metadata and structured text content from different types of documents such as spreadsheets, text documents, images or PDFs including audio or video input formats to certain extent.

This document has the following properties:



example_open_document_presentation.odp Properties

Property	Value
Description	
Title	
Authors	
Subject	
Tags	
Comments	
File	
Name	example_open_document_presentation.odp
Item type	OpenDocument Presentation
Folder path	C:\TikaExamples\images
Size	2.65 MB
Date created	9/28/2014 7:14 AM
Date modified	9/28/2014 8:11 AM
Attributes	A
Computer	KRISHNAKASYAP (this computer)

After compiling the program, you will get the following output.

Output:

```
Contents of the document:
```

```
Apache Tika

Apache Tika is a framework for content type detection and content extraction
which was designed by Apache software foundation. It detects and extracts
metadata and structured text content from different types of documents such as
spreadsheets, text documents, images or PDFs including audio or video input
formats to certain extent.


Metadata of the document:

editing-cycles:   4

meta:creation-date:   2009-04-16T11:32:32.86

dcterms:modified:   2014-09-28T07:46:13.03

meta:save-date:   2014-09-28T07:46:13.03

Last-Modified:   2014-09-28T07:46:13.03

dcterms:created:   2009-04-16T11:32:32.86

date:   2014-09-28T07:46:13.03

modified:   2014-09-28T07:46:13.03

nbObject:   36

Edit-Time:   PT32M6S

Creation-Date:   2009-04-16T11:32:32.86

Object-Count:   36

meta:object-count:   36

generator:   OpenOffice/4.1.0$Win32   OpenOffice.org_project/410m18$Build-
9764

Content-Type:   application/vnd.oasis.opendocument.presentation

Last-Save-Date:   2014-09-28T07:46:13.03
```

13. EXTRACTING MS-OFFICE FILES

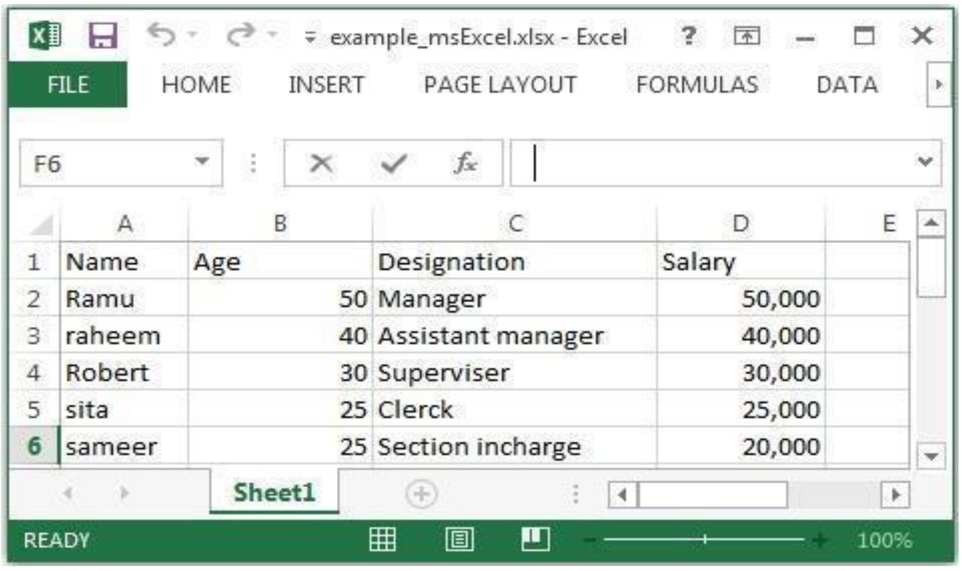
Given below is the program to extract content and metadata from a Microsoft Office Document.

```
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;

import org.apache.tika.exception.TikaException;
import org.apache.tika.metadata.Metadata;
import org.apache.tika.parser.ParseContext;
import org.apache.tika.parser.microsoft.ooxml.OOXMLParser;
import org.apache.tika.sax.BodyContentHandler;
import org.xml.sax.SAXException;

public class MSExcelParse {

   public static void main(final String[] args) throws
IOException,SAXException, TikaException{

      //detecting the file type
      BodyContentHandler handler = new BodyContentHandler();
      Metadata metadata = new Metadata();
      FileInputStream inputstream=new FileInputStream(new
File("example_msExcel.xlsx"));
      ParseContext pcontext=new ParseContext();

      //OOXml parser
      OOXMLParser  msofficeparser=new OOXMLParser ();
     msofficeparser.parse(inputstream, handler, metadata,pcontext);
 System.out.println("Contents of the document:"
+handler.toString());
      System.out.println("Metadata of the document:");
      String[] metadataNames = metadata.names();
      for(String name : metadataNames){

         System.out.println(name + ": " + metadata.get(name));

      }

   }

}
```

Save the above code as **MSExelParse.java**, and compile it from the command prompt by using the following commands:

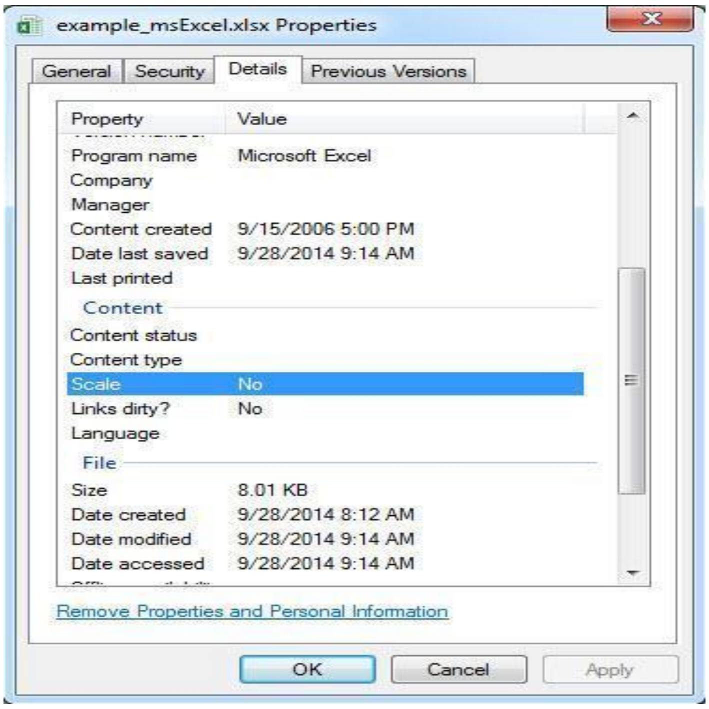
```
javac MSExcelParse.java
java MSExcelParse
```

Here we are passing the following sample Excel file.



	A	B	C	D	E
1	Name	Age	Designation	Salary	
2	Ramu	50	Manager	50,000	
3	raheem	40	Assistant manager	40,000	
4	Robert	30	Superviser	30,000	
5	sita	25	Clerck	25,000	
6	sameer	25	Section incharge	20,000	

The given Excel file has the following properties:


example_msExcel.xlsx Properties
General
Security
Details
Previous Versions
Remove Properties and Personal Information
OK
Cancel
Apply

Property	Value
Program name	Microsoft Excel
Company	
Manager	
Content created	9/15/2006 5:00 PM
Date last saved	9/28/2014 9:14 AM
Last printed	
Content	
Content status	
Content type	
Scale	No
Links dirty?	No
Language	
File	
Size	8.01 KB
Date created	9/28/2014 8:12 AM
Date modified	9/28/2014 9:14 AM
Date accessed	9/28/2014 9:14 AM

After executing the above program you will get the following output.

Output:

```
Contents of the document:
             Sheet1
        Name   Age  Designation             Salary
        Ramu   50   Manager                 50,000
        Raheem  40  Assistant manager      40,000
        Robert          30    Superviser                30,000
        sita      25    Clerck                          25,000
        sameer          25    Section incharge        20,000

Metadata of the document:
meta:creation-date:    2006-09-16T00:00:00Z
dcterms:modified:    2014-09-28T15:18:41Z
meta:save-date:    2014-09-28T15:18:41Z
Application-Name:    Microsoft Excel
extended-properties:Company:
dcterms:created:    2006-09-16T00:00:00Z
Last-Modified:    2014-09-28T15:18:41Z
Application-Version:    15.0300
date:    2014-09-28T15:18:41Z
publisher:
modified:    2014-09-28T15:18:41Z
Creation-Date:    2006-09-16T00:00:00Z
extended-properties:AppVersion:    15.0300
protected:    false
dc:publisher:
```

```
extended-properties:Application:    Microsoft Excel
Content-Type:                                   application/vnd.openxmlformats-
officedocument.spreadsheetml.sheet
Last-Save-Date:    2014-09-28T15:18:41Z
```

14. EXTRACTING TEXT DOCUMENT

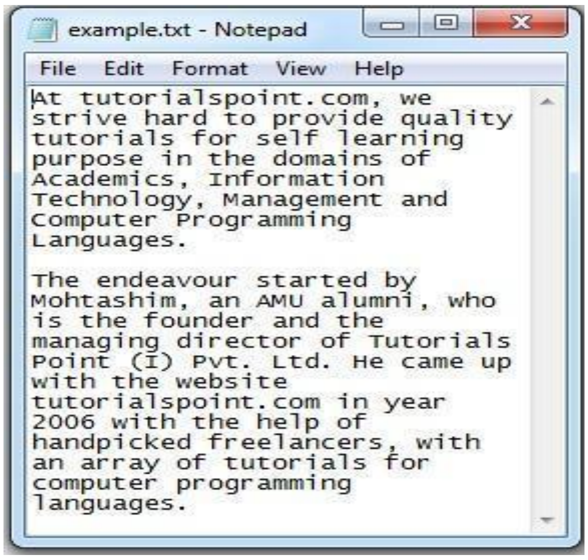
Given below is the program to extract content and metadata from a Text document:

```
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;

import org.apache.tika.exception.TikaException;
import org.apache.tika.metadata.Metadata;
import org.apache.tika.parser.ParseContext;
import org.apache.tika.sax.BodyContentHandler;
import org.xml.sax.SAXException;
import org.apache.tika.parser.txt.TXTParser;

public class TextParser {

   public static void main(final String[] args) throws IOException,
TikaException{

      //detecting the file type
      BodyContentHandler handler = new BodyContentHandler();
      Metadata metadata = new Metadata();
      FileInputStream inputstream = new FileInputStream(new
File("example.txt"));
      ParseContext pcontext = new ParseContext();

      //Text document parser
      TXTParser  TexTParser = new  TXTParser();
      TexTParser.parse(inputstream, handler, metadata,pcontext);
      System.out.println("Contents of the document:"
+handler.toString());
      System.out.println("Metadata of the document:");
      String[] metadataNames = metadata.names();
      for(String name : metadataNames){
      System.out.println(name + " : " + metadata.get(name));

      }

   }

}
```

Save the above code as **TextParser.java**, and compile it from the command prompt by using the following commands:

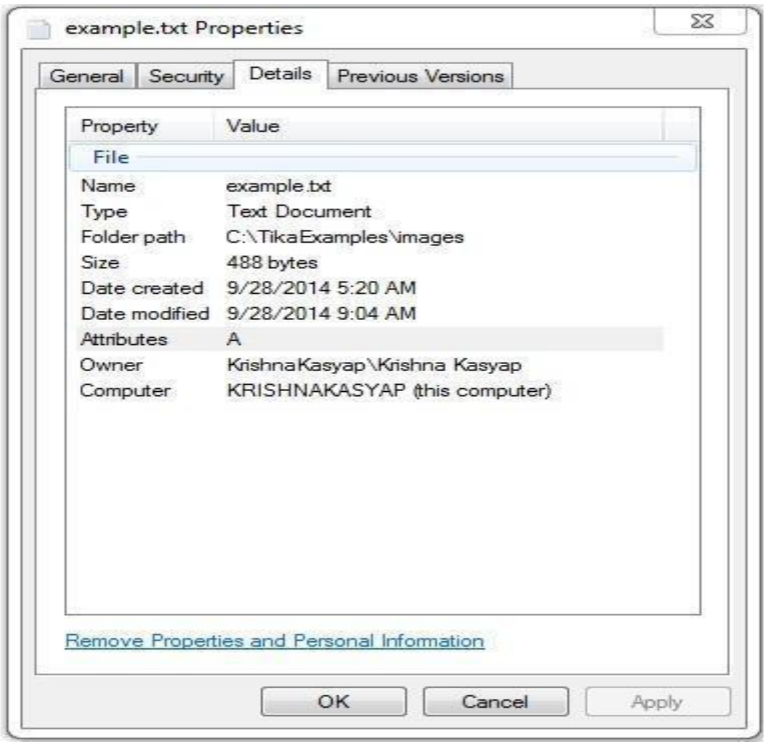
```
javac TextParser .java
java TextParser
```

Given below is the snapshot of sample.txt file:



```
At tutorialspoint.com, we
strive hard to provide quality
tutorials for self learning
purpose in the domains of
Academics, Information
Technology, Management and
Computer Programming
Languages.

The endeavour started by
Mohtashim, an AMU alumni, who
is the founder and the
managing director of Tutorials
Point (I) Pvt. Ltd. He came up
with the website
tutorialspoint.com in year
2006 with the help of
handpicked freelancers, with
an array of tutorials for
computer programming
languages.
```

The text document has the following properties:



Property	Value
File	
Name	example.txt
Type	Text Document
Folder path	C:\TikaExamples\images
Size	488 bytes
Date created	9/28/2014 5:20 AM
Date modified	9/28/2014 9:04 AM
Attributes	A
Owner	KrishnaKasyap\Krishna Kasyap
Computer	KRISHNAKASYAP (this computer)

If you execute the above program it will give you the following output.

Output:

```
Contents of the document:
At tutorialspoint.com, we strive hard to provide quality tutorials for self-learning
purpose in the domains of Academics, Information Technology, Management and
Computer Programming Languages.
The endeavour started by Mohtashim, an AMU alumni, who is the founder and
the managing director of Tutorials Point (I) Pvt. Ltd. He came up with the
website tutorialspoint.com in year 2006 with the help of handpicked freelancers,
with an array of tutorials for computer programming languages.


Metadata of the document:
Content-Encoding:   windows-1252
Content-Type:   text/plain; charset=windows-1252
```

15. EXTRACTING HTML DOCUMENT

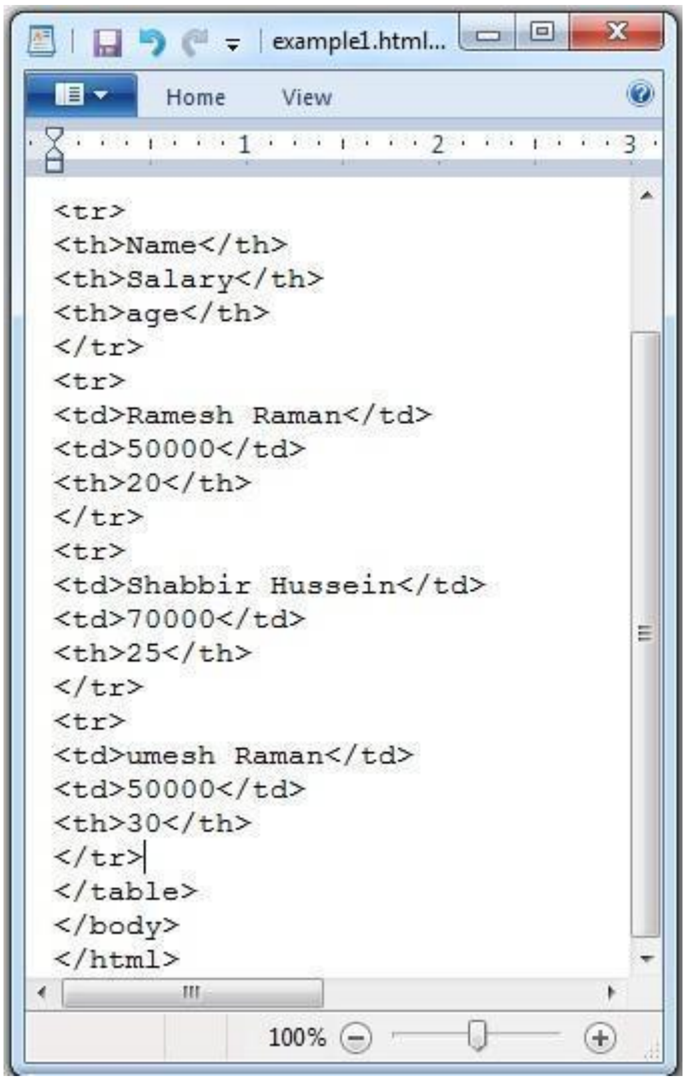
Given below is the program to extract content and metadata from an HTML document.

```
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;

import org.apache.tika.exception.TikaException;
import org.apache.tika.metadata.Metadata;
import org.apache.tika.parser.ParseContext;
import org.apache.tika.parser.html.HtmlParser;
import org.apache.tika.sax.BodyContentHandler;
import org.xml.sax.SAXException;

public class HtmlParse {

   public static void main(final String[] args) throws
IOException,SAXException, TikaException{

      //detecting the file type
      BodyContentHandler handler = new BodyContentHandler();
      Metadata metadata = new Metadata();
      FileInputStream inputstream=new FileInputStream(new
File("example.html"));
      ParseContext pcontext=new ParseContext();

      //Html parser
      HtmlParser htmlparser =new HtmlParser();
      htmlparser.parse(inputstream, handler, metadata,pcontext);
      System.out.println("Contents of the document:"
+handler.toString());
      System.out.println("Metadata of the document:");
      String[] metadataNames = metadata.names();
      for(String name : metadataNames){

         System.out.println(name + ":   " + metadata.get(name));

      }

   }

}
```

Save the above code as **HtmlParse.java**, and compile it from the command prompt by using the following commands:

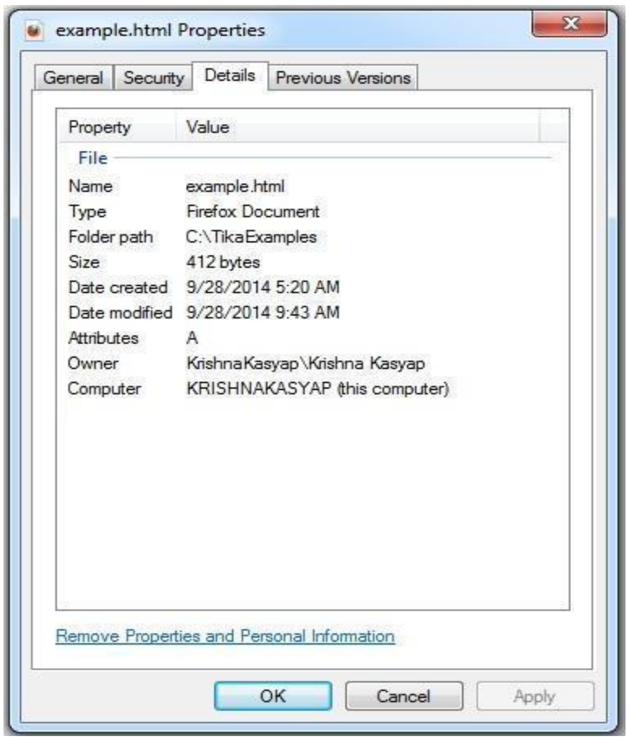
```
javac HtmlParse.java
java HtmlParse
```

Given below is the snapshot of example.txt file.



```
<tr>
<th>Name</th>
<th>Salary</th>
<th>age</th>
</tr>
<tr>
<td>Ramesh Raman</td>
<td>50000</td>
<th>20</th>
</tr>
<tr>
<td>Shabbir Hussein</td>
<td>70000</td>
<th>25</th>
</tr>
<tr>
<td>umesh Raman</td>
<td>50000</td>
<th>30</th>
</tr>
</table>
</body>
</html>
```

The HTML document has the following properties:



example.html Properties

General | Security | Details | Previous Versions

Property	Value
File	
Name	example.html
Type	Firefox Document
Folder path	C:\TikaExamples
Size	412 bytes
Date created	9/28/2014 5:20 AM
Date modified	9/28/2014 9:43 AM
Attributes	A
Owner	KrishnaKasyap\Krishna Kasyap
Computer	KRISHNAKASYAP (this computer)

Remove Properties and Personal Information

OK | Cancel | Apply

If you execute the above program it will give you the following output.

Output:

```
Contents of the document:
        Name                      Salary          age
        Ramesh Raman      50000    20
        Shabbir Hussein   70000     25
        Umesh Raman                50000          30
        Somesh                 50000          35
Metadata of the document:
title:   HTML Table Header
Content-Encoding:   windows-1252
Content-Type:   text/html; charset=windows-1252
dc:title:   HTML Table Header
```

16. EXTRACTING XML DOCUMENT

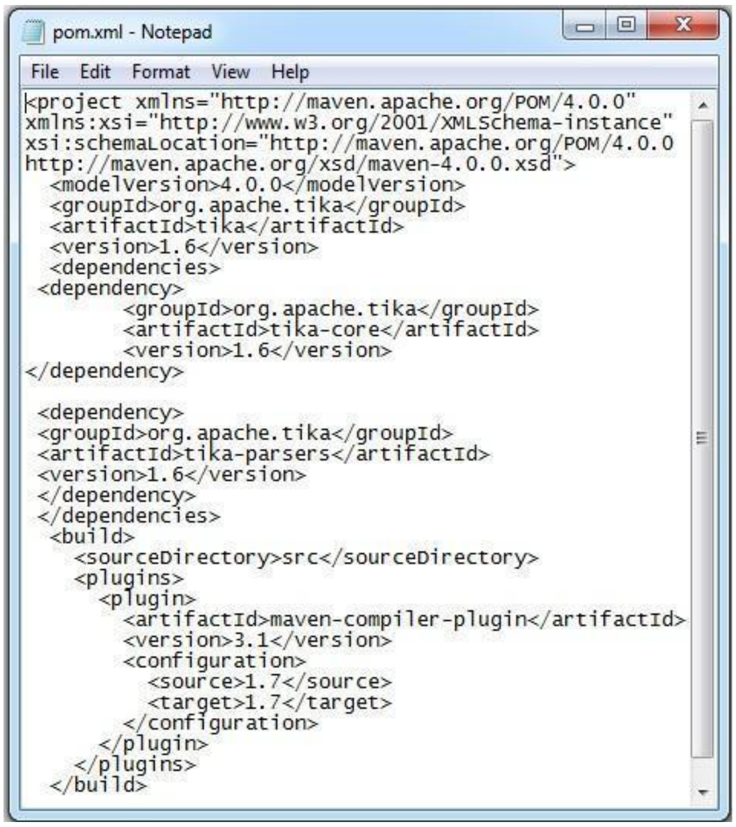
Given below is the program to extract content and metadata from an XML document:

```
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;

import org.apache.tika.exception.TikaException;
import org.apache.tika.metadata.Metadata;
import org.apache.tika.parser.ParseContext;
import org.apache.tika.parser.xml.XMLParser;
import org.apache.tika.sax.BodyContentHandler;
import org.xml.sax.SAXException;

public class XmlParse {

   public static void main(final String[] args) throws
IOException,SAXException, TikaException{

      //detecting the file type
      BodyContentHandler handler = new BodyContentHandler();
      Metadata metadata = new Metadata();
      FileInputStream inputstream=new FileInputStream(new
File("pom.xml"));
      ParseContext pcontext=new ParseContext();

      //Xml parser
      XMLParser xmlparser=new  XMLParser();
      xmlparser.parse(inputstream, handler, metadata, pcontext);
      System.out.println("Contents of the document:"
+handler.toString());
      System.out.println("Metadata of the document:");
      String[] metadataNames = metadata.names();
      for(String name : metadataNames){
      System.out.println(name + ":    " + metadata.get(name));

      }

   }

}
```

Save the above code as **XmlParse.java**, and compile it from the command prompt by using the following commands:

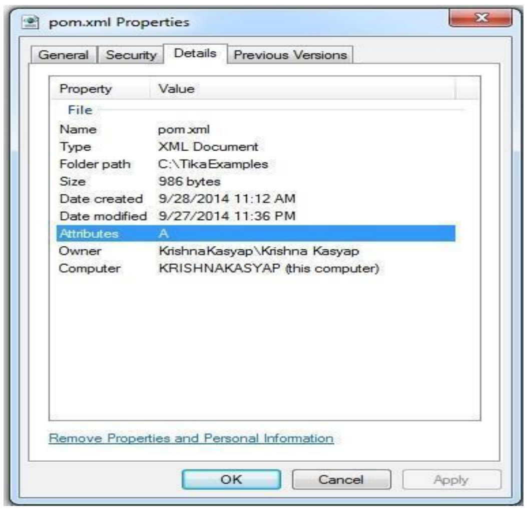
```
javac XmlParse.java
java XmlParse
```

Given below is the snapshot of example.xml file



```
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
  <modelVersion>4.0.0</modelVersion>
  <groupId>org.apache.tika</groupId>
  <artifactId>tika</artifactId>
  <version>1.6</version>
  <dependencies>
 <dependency>
       <groupId>org.apache.tika</groupId>
       <artifactId>tika-core</artifactId>
       <version>1.6</version>
</dependency>

 <dependency>
 <groupId>org.apache.tika</groupId>
 <artifactId>tika-parsers</artifactId>
 <version>1.6</version>
 </dependency>
 </dependencies>
  <build>
    <sourceDirectory>src</sourceDirectory>
    <plugins>
      <plugin>
        <artifactId>maven-compiler-plugin</artifactId>
        <version>3.1</version>
        <configuration>
          <source>1.7</source>
          <target>1.7</target>
        </configuration>
      </plugin>
    </plugins>
  </build>
```

This document has the following properties:



Property	Value
File	
Name	pom.xml
Type	XML Document
Folder path	C:\TikaExamples
Size	986 bytes
Date created	9/28/2014 11:12 AM
Date modified	9/27/2014 11:36 PM
Attributes	A
Owner	KrishnaKasyap\Krishna Kasyap
Computer	KRISHNAKASYAP (this computer)

If you execute above program it will give you the following output:

Output:

```
Contents of the document:
```

```
4.0.0
org.apache.tika
tika
1.6
org.apache.tika
tika-core
1.6
org.apache.tika
tika-parsers
1.6
src
maven-compiler-plugin
3.1
1.7
1.7

Metadata of the document:
Content-Type:   application/xml
```

17. EXTRACTING .CLASS FILE

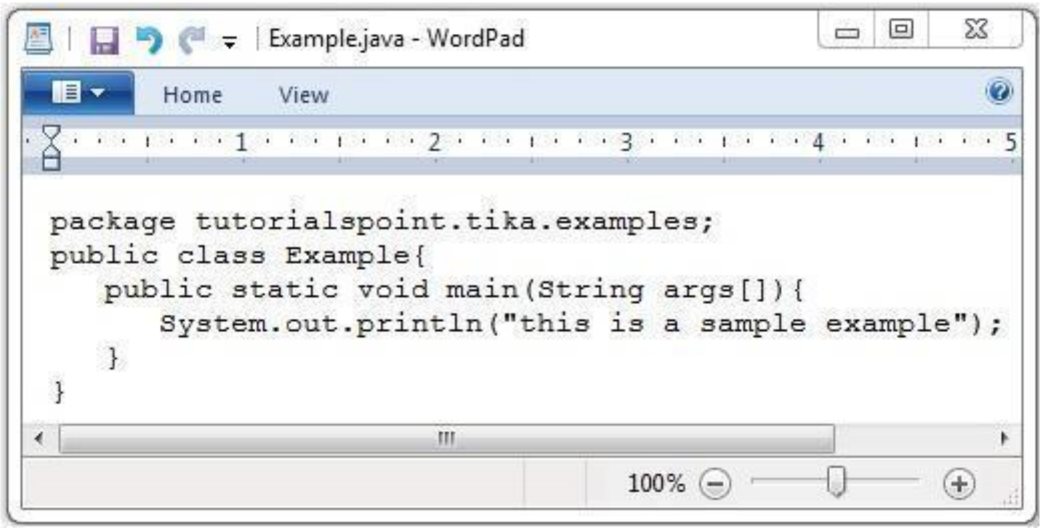
Given below is the program to extract content and metadata from a .class file.

```
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;

import org.apache.tika.exception.TikaException;
import org.apache.tika.metadata.Metadata;
import org.apache.tika.parser.ParseContext;
import org.apache.tika.parser.asm.ClassParser;
import org.apache.tika.sax.BodyContentHandler;
import org.xml.sax.SAXException;

public class JavaClassParse {

   public static void main(final String[] args) throws
IOException,SAXException, TikaException{

      //detecting the file type
      BodyContentHandler handler = new BodyContentHandler();
      Metadata metadata = new Metadata();
      FileInputStream inputstream=new FileInputStream(new
File("Example.class"));
      ParseContext pcontext=new ParseContext();

      //Html parser
      ClassParser  ClassParser =new  ClassParser();
      ClassParser.parse(inputstream, handler, metadata,pcontext);
      System.out.println("Contents of the document:"
+handler.toString());
      System.out.println("Metadata of the document:");
      String[] metadataNames = metadata.names();
      for(String name : metadataNames){

         System.out.println(name + " :  " + metadata.get(name));

      }

   }

}
```

Save the above code as **JavaClassParse.java**, and compile it from the command prompt by using the following commands:

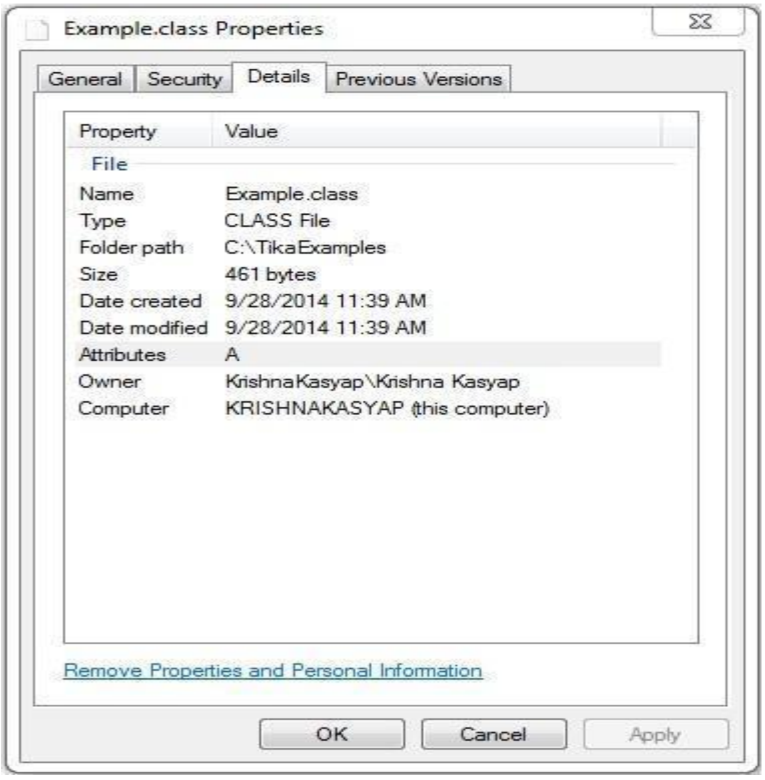
```
javac JavaClassParse.java
java JavaClassParse
```

Given below is the snapshot of **Example.java** which will generate Example.class after compilation.



```
package tutorialspoint.tika.examples;
public class Example{
   public static void main(String args[]){
      System.out.println("this is a sample example");
   }
}
```

Example.class file has the following properties:



Property	Value
File	
Name	Example.class
Type	CLASS File
Folder path	C:\TikaExamples
Size	461 bytes
Date created	9/28/2014 11:39 AM
Date modified	9/28/2014 11:39 AM
Attributes	A
Owner	KrishnaKasyap\Krishna Kasyap
Computer	KRISHNAKASYAP (this computer)

After executing the above program, you will get the following output.

Output:

```
Contents of the document:
package tutorialspoint.tika.examples;
public synchronized class Example {
    public void Example();
    public static void main(String[]);
}

Metadata of the document:
title: Example
resourceName: Example.class
dc:title: Example
```

18. EXTRACTING JAR FILE

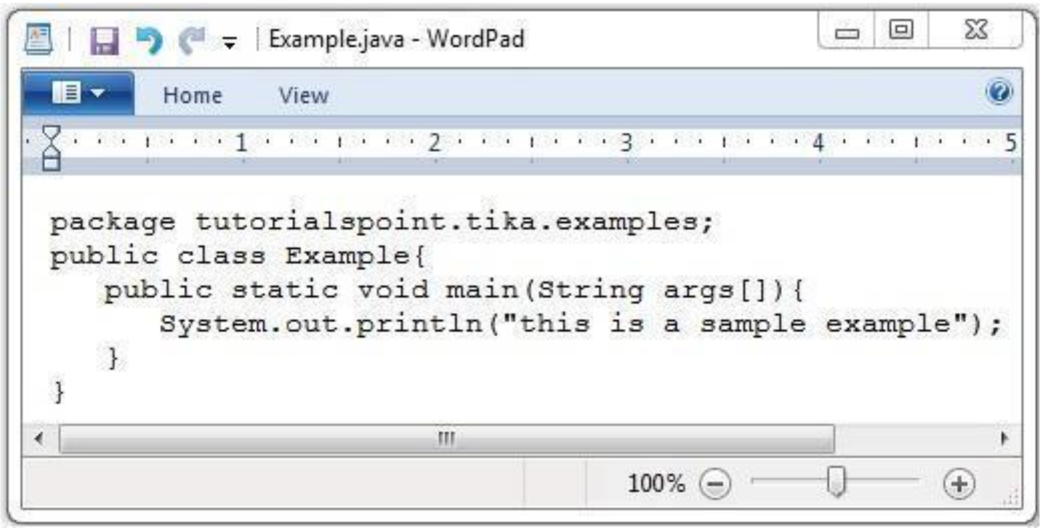
Given below is the program to extract content and metadata from a Java Archive (jar) file:

```
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;

import org.apache.tika.exception.TikaException;
import org.apache.tika.metadata.Metadata;
import org.apache.tika.parser.ParseContext;
import org.apache.tika.sax.BodyContentHandler;
import org.xml.sax.SAXException;
import org.apache.tika.parser.pkg.PackageParser;

public class PackageParse {

   public static void main(final String[] args) throws
IOException,SAXException, TikaException{

      //detecting the file type
      BodyContentHandler handler = new BodyContentHandler();
      Metadata metadata = new Metadata();
      FileInputStream inputstream=new FileInputStream(new
File("Example.jar"));
      ParseContext pcontext=new ParseContext();

      //Package parser
      PackageParser packageparser =new PackageParser();
      packageparser.parse(inputstream, handler, metadata,pcontext);
      System.out.println("Contents of the document:
"+handler.toString());
      System.out.println("Metadata of the document:");
      String[] metadataNames = metadata.names();
      for(String name : metadataNames){

         System.out.println(name + ":   " + metadata.get(name));

      }

   }

}
```

Save the above code as **PackageParse .java**, and compile it from the command prompt by using the following commands:

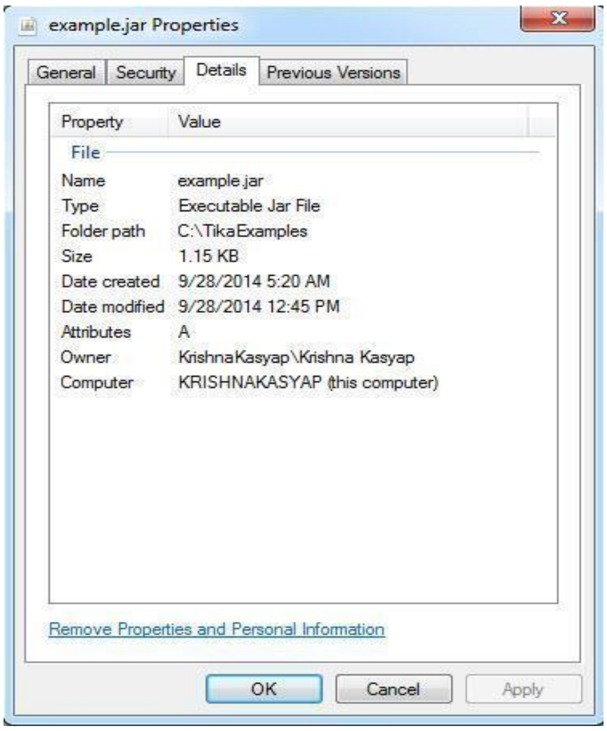
```
javac PackageParse.java
java PackageParse
```

Given below is the snapshot of Example.java that resides inside the package.



```
package tutorialspoint.tika.examples;
public class Example{
   public static void main(String args[]){
      System.out.println("this is a sample example");
   }
}
```

The jar file has the following properties:



Property	Value
File	
Name	example.jar
Type	Executable Jar File
Folder path	C:\TikaExamples
Size	1.15 KB
Date created	9/28/2014 5:20 AM
Date modified	9/28/2014 12:45 PM
Attributes	A
Owner	KrishnaKasyap\Krishna Kasyap
Computer	KRISHNAKASYAP (this computer)

After executing the above program, it will give you the following output:

Output:

```
Contents of the document:
META-INF/MANIFEST.MF
tutorialspoint/tika/examples/Example.class

Metadata of the document:
Content-Type:   application/zip
```

19. EXTRACTING IMAGE FILE

Given below is the program to extract content and metadata from a JPEG image.

```
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;

import org.apache.tika.exception.TikaException;
import org.apache.tika.metadata.Metadata;
import org.apache.tika.parser.ParseContext;
import org.apache.tika.parser.jpeg.JpegParser;
import org.apache.tika.sax.BodyContentHandler;
import org.xml.sax.SAXException;

public class JpegParse {

   public static void main(final String[] args) throws
IOException,SAXException, TikaException{

      //detecting the file type
      BodyContentHandler handler = new BodyContentHandler();
      Metadata metadata = new Metadata();
      FileInputStream inputstream=new FileInputStream(new
File("boy.jpg"));
      ParseContext pcontext=new ParseContext();

      //Jpeg Parse
      JpegParser  JpegParser =new JpegParser();
      JpegParser.parse(inputstream, handler, metadata,pcontext);
      System.out.println("Contents of the document:"
+handler.toString());
      System.out.println("Metadata of the document:");
      String[] metadataNames = metadata.names();
      for(String name : metadataNames){
       System.out.println(name + ": " + metadata.get(name));

      }

   }

}
```

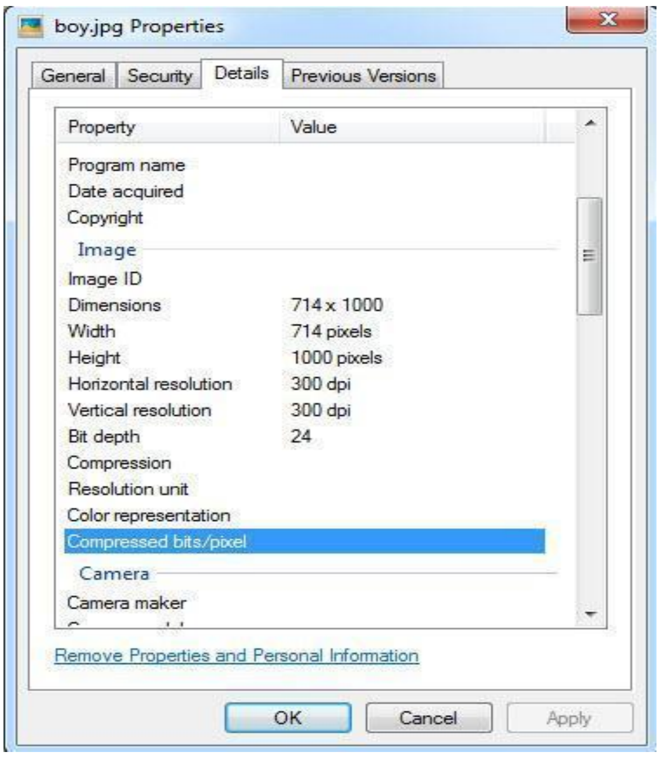
Save the above code as JpegParse.java, and compile it from the command prompt by using the following commands:

```
javac JpegParse.java
```

```
java JpegParse
```

Given below is the snapshot of Example.jpeg:

The JPEG file has the following properties:



Property	Value
Program name	
Date acquired	
Copyright	
Image	
Image ID	
Dimensions	714 x 1000
Width	714 pixels
Height	1000 pixels
Horizontal resolution	300 dpi
Vertical resolution	300 dpi
Bit depth	24
Compression	
Resolution unit	
Color representation	
Compressed bits/pixel	
Camera	
Camera maker	

After executing the program, you will get the following output.

Output:

```
Contents of the document:



Metadata of the document:
IPTC-NAA record: 92 bytes binary data
Number of Components: 3
Image Height: 1000 pixels
Resolution Units: inch
Data Precision: 8 bits
tiff:BitsPerSample: 8
Compression Type: Baseline
Component 1: Y component: Quantization table 0, Sampling factors 1 horiz/1
vert
Component 2: Cb component: Quantization table 1, Sampling factors 1 horiz/1
vert
tiff:ImageLength: 1000
Component 3: Cr component: Quantization table 1, Sampling factors 1 horiz/1
vert
X Resolution: 300 dots
tiff:ImageWidth: 714
Application Record Version: 4
Image Width: 714 pixels
Original Transmission Reference:
53616c7465645f5fd22a84941585d89cc735d889c9d5ac58a01faf2c92ee3c6f9bcb
38359bbe1eef
Y Resolution: 300 dots
```

20. EXTRACTING MP4 FILES

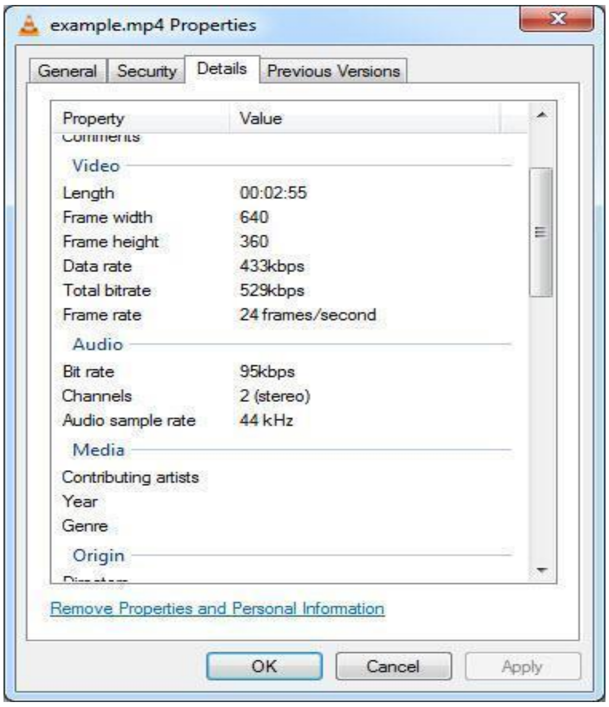
Given below is the program to extract content and metadata from mp4 files:

```
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;

import org.apache.tika.exception.TikaException;
import org.apache.tika.metadata.Metadata;
import org.apache.tika.parser.ParseContext;
import org.apache.tika.parser.mp4.MP4Parser;
import org.apache.tika.sax.BodyContentHandler;
import org.xml.sax.SAXException;

public class Mp4Parse {

   public static void main(final String[] args) throws
IOException,SAXException, TikaException{

      //detecting the file type
      BodyContentHandler handler = new BodyContentHandler();
      Metadata metadata = new Metadata();
      FileInputStream inputstream=new FileInputStream(new
File("example.mp4"));
      ParseContext pcontext=new ParseContext();

      //Html parser
      MP4Parser MP4Parser =new MP4Parser();
      MP4Parser.parse(inputstream, handler, metadata,pcontext);
      System.out.println("Contents of the document:
:"+handler.toString());
      System.out.println("Metadata of the document:");
      String[] metadataNames = metadata.names();
      for(String name : metadataNames){
      System.out.println(name + ": " + metadata.get(name));

      }

   }

}
```

Save the above code as JpegParse.java, and compile it from the command prompt by using the following commands:

```
javac Mp4Parse.java
java Mp4Parse
```

Given below is the snapshot of properties of Example.mp4 file.



Property	Value
Comments	
Video	
Length	00:02:55
Frame width	640
Frame height	360
Data rate	433kbps
Total bitrate	529kbps
Frame rate	24 frames/second
Audio	
Bit rate	95kbps
Channels	2 (stereo)
Audio sample rate	44 kHz
Media	
Contributing artists	
Year	
Genre	
Origin	
Directors	

After executing the above program, you will get the following output:

Output:

```
Contents of the document:


Metadata of the document:
dcterms:modified: 2014-01-06T12:10:27Z
meta:creation-date: 1904-01-01T00:00:00Z
meta:save-date: 2014-01-06T12:10:27Z
Last-Modified: 2014-01-06T12:10:27Z
dcterms:created: 1904-01-01T00:00:00Z
date: 2014-01-06T12:10:27Z
tiff:ImageLength: 360
modified: 2014-01-06T12:10:27Z
Creation-Date: 1904-01-01T00:00:00Z
```

```
tiff:ImageWidth: 640
Content-Type: video/mp4
Last-Save-Date: 2014-01-06T12:10:27Z
```

21. EXTRACTING MP3 FILES

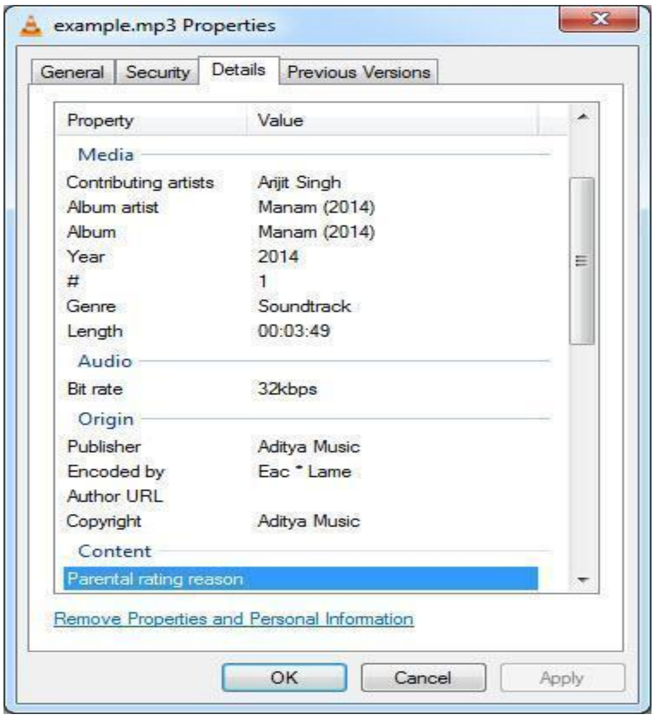
Given below is the program to extract content and metadata from mp3 files:

```
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;

import org.apache.tika.exception.TikaException;
import org.apache.tika.metadata.Metadata;
import org.apache.tika.parser.ParseContext;
import org.apache.tika.parser.mp3.LyricsHandler;
import org.apache.tika.parser.mp3.Mp3Parser;
import org.apache.tika.sax.BodyContentHandler;
import org.xml.sax.SAXException;

public class Mp3Parse {

   public static void main(final String[] args) throws
Exception,IOException,SAXException, TikaException{

      //detecting the file type
      BodyContentHandler handler = new BodyContentHandler();
      Metadata metadata = new Metadata();
      FileInputStream inputstream=new FileInputStream(new
File("example.mp3"));
      ParseContext pcontext=new ParseContext();

      //Mp3 parser
      Mp3Parser  Mp3Parser =new  Mp3Parser();
      Mp3Parser.parse(inputstream, handler, metadata, pcontext);
      LyricsHandler lyrics =new LyricsHandler(inputstream,handler);
      while(lyrics.hasLyrics()){

        System.out.println(lyrics.toString());

      }
      System.out.println("Contents of the document:"
+handler.toString());
      System.out.println("Metadata of the document:");
      String[] metadataNames = metadata.names();
      for(String name : metadataNames){

        System.out.println(name + ": " + metadata.get(name));

      }

   }
}
```

Save the above code as **JpegParse.java**, and compile it from the command prompt by using the following commands:

```
javac Mp3Parse.java
java Mp3Parse
```

Example.mp3 file has the following properties:



Property	Value
Media	
Contributing artists	Arijit Singh
Album artist	Manam (2014)
Album	Manam (2014)
Year	2014
#	1
Genre	Soundtrack
Length	00:03:49
Audio	
Bit rate	32kbps
Origin	
Publisher	Aditya Music
Encoded by	Eac * Lame
Author URL	
Copyright	Aditya Music
Content	
Parental rating reason	

You will get the following output after executing the program. If the given file has any lyrics, our application will capture and display that along with the output.

Output:

```
Contents of the document:
Kanulanu Thaake
Arijit Singh
Manam (2014), track 01/06
2014
Soundtrack
30171.65
```

```
eng -
DRGM
Arijit Singh
Manam (2014), track 01/06
2014
Soundtrack
30171.65
eng -
DRGM

Metadata of the document:
xmpDM:releaseDate: 2014
xmpDM:duration: 30171.650390625
xmpDM:audioChannelType: Stereo
dc:creator: Arijit Singh
xmpDM:album: Manam (2014)
Author: Arijit Singh
xmpDM:artist: Arijit Singh
channels: 2
xmpDM:audioSampleRate: 44100
xmpDM:logComment: eng -
DRGM
xmpDM:trackNumber: 01/06
version: MPEG 3 Layer III Version 1
creator: Arijit Singh
xmpDM:composer: Music : Anoop Rubens | Lyrics : Vanamali
xmpDM:audioCompressor: MP3
title: Kanulanu Thaake
samplerate: 44100
meta:author: Arijit Singh
```

```
xmpDM:genre: Soundtrack
Content-Type: audio/mpeg
xmpDM:albumArtist: Manam (2014)
dc:title: Kanulanu Thaake
```