

How to encode decode String in Java base64 Encoding

Encoding and Decoding of String in Java using base64 is extremely easy if you are using **Apache commons code** open source library. it provides convenient [static](#) utility method `Base64.encodeBase64(byte[])` and `Base64.decodeBase64(byte[])` for **converting binary data into base64 encoded** binary Stream and then decoding back from encoded data in base64 encoding mechanism. Many times we need to encode sensitive data be it binary [String format](#) transferring over socket or transferring or storing data in [xml files](#). Though there are other open source library available which provides support to encode any String into base64 e.g. `MimeUtil` from `javax.mail` package but Apache commons codec package is really handy and doesn't add lot of extra stuff. its API is also very neat and clean. In this article we will see **how to encode and decode String into base64 encoding**.

Base64 Encoding Algorithm



For those who are not familiar with **base64 encoding** algorithm here is basic introduction. Base64 encodes (changes content of original String) [String](#) using an algorithm which uses 64 printable characters to replace each character in original string in an algorithmic sequence so that it can be decoded later. [Base64](#) encoding prevents misuse of data by encoding it into ASCII format. Though there are more advanced encryption algorithm available like **RSA-SHA** and **MD5** and you should use those in production but base64 is real simple and easy to use for simple encoding needs. By the way if like to learn more about String, there are lot of articles related to String in java e.g. [Why char array is preferred over String for storing password](#) and [Why String is immutable in Java](#), which you may like.

Encoding & Decoding String into Base64 Java

Here is a quick **example of encoding and decoding of String in base64 encoding algorithm**. we will first encode [String](#) by [converting it into byte array](#) and then passing down to `Base64.encodeBase64(byte[])` which encodes byte array as per **base64 encoding** algorithm and returns an encoded byte array, which can be converted into [String](#). In Later half we will decode the String by calling `Base64.decodeBase64(byte[])` method.

```
import org.apache.commons.codec.binary.Base64;

/**
 * Java program to encode and decode String in Java using Base64 encoding algorithm
 * @author http://javarevisited.blogspot.com
 */
public class Base64EncodingExample{

    public static void main(String args[]) throws IOException {
        String orig = "original String before base64 encoding in Java";

        //encoding byte array into base 64
        byte[] encoded = Base64.encodeBase64(orig.getBytes());

        System.out.println("Original String: " + orig);
        System.out.println("Base64 Encoded String : " + new String(encoded));

        //decoding byte array into base64
        byte[] decoded = Base64.decodeBase64(encoded);
        System.out.println("Base 64 Decoded String : " + new String(decoded));
    }
}
```

Output:

Original String: original String before base64 encoding in Java

Base64 Encoded String : b3JpZ2luYWwgU3RyaW5nIGJlZm9yZSBIYXNINjQgZW5jb2RpbmcgaW4gSmF2eQ==

Base 64 Decoded String : original String before base64 encoding in Java

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In order to execute this **Base64 Encoding Example in Java** you need to download and add `commons-codec-1.2.jar` into your application [classpath](#). if you are using Maven for managing your project dependency you can include following dependency in pom.xml:

```
<dependency>
<groupId>commons-codec</groupId>
<artifactId>commons-codec</artifactId>
<version>20041127.091804</version>
</dependency>
```

This is very simple and clean **base64 encoding example in Java** but serves the purpose. That's all in **how to encode Java String into Base64** encoding and **how to decode Java String**. let me know if you face any issue.

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Posted by Javin Paul 

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16 comments :

Anonymous said...

We can also use:

```
new sun.misc.BASE64Encoder().encode()
new sun.misc.BASE64Decoder().decode()
```

It comes with the JDK, no need for extra dependencies.

[February 17, 2012 at 6:49 AM](#)

Anonymous said...

base64 is NOT encryption! It is encoding.

[February 17, 2012 at 8:14 AM](#)

[Javin @ Split String in Java Example](#) said...

@Anonymous, new sun.misc.BASE64Encoder() seems a good option, does it available in all JDK or its added from Java 5 or 6? I agree this should be first preferred choice if available because it removes extra dependency. Thanks

[February 17, 2012 at 8:10 PM](#)

[Javin @ string replace example](#) said...

@Anonymous, Indeed base64 is not encryption because it doesn't involve any private or public key combination. I have used loose terminology where encoding is encryption servers similar purpose of changing data from clear text. but yes in precise terms its not encryption. thanks

[February 17, 2012 at 8:14 PM](#)

[Javin @ java arraylist iterate](#) said...

@Anonymous, There is also a risk of using new sun.misc.BASE64Encoder() because its part of non public API as sun may change it or it may not work on other JVM like Websphere server which uses IBM's JVM. I come to know about this when I tried to use it and I got error on Eclipse "Access restriction: The type BASE64Decoder is not accessible due to restriction on required library"

[February 17, 2012 at 8:36 PM](#)

Anonymous said...

javax.xml.bind.DatatypeConverter contains two static methods `parseBase64Binary` and `printBase64Binary`. The class is part of the JRE since Java 1.6. No need for roll-your-own or undocumented classes anymore.

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<http://docs.oracle.com/javase/6/docs/api/javax/xml/bind/DatatypeConverter.html>

February 19, 2012 at 10:57 PM

Anonymous said...

You are mixing encryption and encoding in the introduction: an encryption provides confidentiality whereas encoding simply provides robustness w/ or w/o advances concerning size and error correction.

February 19, 2012 at 11:42 PM

[Javin @ split String in java](#) said...

@Anonymous, Thanks for pointing it out DatatypeConverter, I am gonna look that but if it can work like Base64Encoder.encode() or able to covert byte array into base64 encoding that no doubt its an excellent choice, only thing is it looks like available from JDK6 onwards so if your project is in Java 5 and you are not upgrading it to Java 6 than Apache commons codec is still a good choice.

February 20, 2012 at 5:41 AM

[Javin @ Java String replace Example](#) said...

@Anonymous, Indeed there is difference in encoding and encryption and encryption is more robust and secure. Thanks for your comment.

February 20, 2012 at 5:42 AM

[Imby](#) said...

Thanks for the good article
you can also check following article

[Encode And Decode In Base64 Using Java](#)

May 5, 2012 at 7:28 AM

Anonymous said...

@Anonymous: thank you, javax.xml.bind.DatatypeConverter seems to work okay for me!
(The sun.misc.BASE64Encoder is not recommended, netbeans warns about it as well.)

April 11, 2013 at 11:08 AM

Anonymous said...

also, i would add that if you want this to work with all kinds of characters (accented, etc.), replace getBytes() with getBytes("UTF8") and new String(something) with new String(something, "UTF8")

April 15, 2013 at 6:22 AM

Kapil said...

Java 8 is adding new standard API for Base64 encoding and decoding, which means no need to use Apache commons code or sun.misc.BASE64Encoder and sun.misc.BASE64Decoder. Wait for Java 1.8, you will have more cleaner way to encode String in Base64.

April 21, 2013 at 7:24 PM

Anonymous said...

does this encoding system use of & character ???
i would like to use it on my link URL ???

June 22, 2013 at 5:52 AM

[Dea Venditama](#) said...

Thank you, this tutorial help me to encode byte array in RC4 encryption
<http://sleepingtux.blogspot.com>

January 18, 2014 at 12:30 PM

Anonymous said...

Hi
Java 8 introduces a formal API for base64 encoding - no more sun/oracle propriety or additional libraries are needed. You can see more at: <http://blog.eyallupu.com/2013/11/base64-encoding-in-java-8.html>

March 21, 2014 at 4:43 PM

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