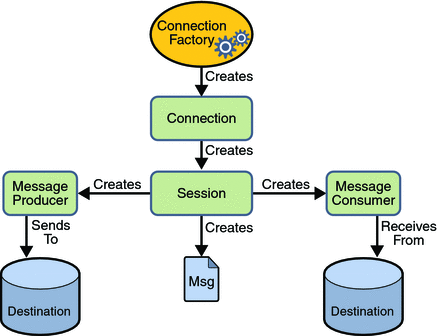
## Representative Questions – Please write your answers with an example for each questions.

**How do you design an application with JMS messaging?**

The first step to design JMs is to understand how it work, In the figure 1 you can observe the model for JMS API programming, you need to take in count all the concepts in the model the design your model.



**How do you handle exception in JMS consumers and how to you recover?**

JMSException is the root class for exceptions in methods JMS. Every exception encapsulates information:

* A specific exception message from the provider.
* A specific error code from the provider.
* A bound exception.

While a messaging provider may define and specify the behavior, an application should avoid tying with a specific vendor whenever possible. It would be probably a better choice to resolve application's business logic precisely and not rely a messaging provider to guess an error from the application.

**How do you implement LRU or MRU cache?**

We use two data structures to implement an LRU or MRU Cache.

* Queue which is implemented using a doubly linked list. The maximum size of the queue will be equal to the total number of frames available (cache size).The most recently used pages will be near front end and least recently pages will be near rear end.
* A Hash with page number as key and address of the corresponding queue node as value.

When a page is referenced, the required page may be in the memory. If it is in the memory, we need to detach the node of the list and bring it to the front of the queue.

If the required page is not in the memory, we bring that in memory. In simple words, we add a new node to the front of the queue and update the corresponding node address in the hash. If the queue is full, i.e. all the frames are full, we remove a node from the rear of queue, and add the new node to the front of queue.

**How would you implement Executor Service?**

Since ExecutorService is an interface, you need to its implementations in order to make any use of it. The ExecutorService has the following implementation in the java.util.concurrent package:

* ThreadPoolExecutor
* ScheduledThreadPoolExecutor.

**Describe singleton design pattern – how would you implement**?

A class has only one instance, and provides a global point of access to it. Encapsulated "just-in-time initialization" or "initialization on first use". Singleton patron is implemented creating a method in our class who is the responsible to create an instance of the object just when there is none created yet. To insurance that the class cannot be instanced again the constructor should be protected or private.

**Describe properties of Java String.**

Strings are immutable it means you cannot change them, you can create them explicit (new) or implicit (without new). A null string is the one who doesn’t have any character. Methods of Strings:

|  |  |
| --- | --- |
| **Modifier and Type** | **Method and Description** |
| Char | [charAt(int index)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#charAt(int)) |
| Returns the char value at the specified index. |
| Int | [codePointAt(int index)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#codePointAt(int)) |
| Returns the character (Unicode code point) at the specified index. |
| Int | [codePointBefore(int index)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#codePointBefore(int)) |
| Returns the character (Unicode code point) before the specified index. |
| Int | [codePointCount(int beginIndex, int endIndex)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#codePointCount(int,%20int)) |
| Returns the number of Unicode code points in the specified text range of this String. |
| Int | **compareTo**(**String** anotherString) |
| Compares two strings lexicographically. |
| Int | **compareToIgnoreCase**(**String** str) |
| Compares two strings lexicographically, ignoring case differences. |
| [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | **concat**(**String** str) |
| Concatenates the specified string to the end of this string. |
| boolean | **contains**(**CharSequence** s) |
| Returns true if and only if this string contains the specified sequence of char values. |
| boolean | **contentEquals**(**CharSequence** cs) |
| Compares this string to the specified CharSequence. |
| boolean | **contentEquals**(**StringBuffer** sb) |
| Compares this string to the specified StringBuffer. |
| [static String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [copyValueOf(char[] data)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#copyValueOf(char[])) |
| Returns a String that represents the character sequence in the array specified. |
| [static String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [copyValueOf(char[] data, int offset, int count)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#copyValueOf(char[],%20int,%20int)) |
| Returns a String that represents the character sequence in the array specified. |
| boolean | **endsWith**(**String** suffix) |
| Tests if this string ends with the specified suffix. |
| boolean | **equals**(**Object** anObject) |
| Compares this string to the specified object. |
| boolean | **equalsIgnoreCase**(**String** anotherString) |
| Compares this String to another String, ignoring case considerations. |
| [static String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | **format**(**Locale** l, **String** format, **Object**... args) |
| Returns a formatted string using the specified locale, format string, and arguments. |
| [static String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | **format**(**String** format, **Object**... args) |
| Returns a formatted string using the specified format string and arguments. |
| byte[] | [getBytes()](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#getBytes()) |
| Encodes this String into a sequence of bytes using the platform's default charset, storing the result into a new byte array. |
| byte[] | **getBytes**(**Charset** charset) |
| [Encodes this String into a sequence of bytes using the given charset, storing the result into a new byte array.](https://docs.oracle.com/javase/7/docs/api/java/nio/charset/Charset.html) |
| Void | [getBytes(int srcBegin, int srcEnd, byte[] dst, int dstBegin)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#getBytes(int,%20int,%20byte[],%20int)) |
| **Deprecated.** |
| [This method does not properly convert characters into bytes. As of JDK 1.1, the preferred way to do this is via the getBytes() method, which uses the platform's default charset.](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#getBytes()) |
| byte[] | **getBytes**(**String** charsetName) |
| Encodes this String into a sequence of bytes using the named charset, storing the result into a new byte array. |
| Void | [getChars(int srcBegin, int srcEnd, char[] dst, int dstBegin)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#getChars(int,%20int,%20char[],%20int)) |
| Copies characters from this string into the destination character array. |
| Int | [hashCode()](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#hashCode()) |
| Returns a hash code for this string. |
| Int | [indexOf(int ch)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#indexOf(int)) |
| Returns the index within this string of the first occurrence of the specified character. |
| Int | [indexOf(int ch, int fromIndex)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#indexOf(int,%20int)) |
| Returns the index within this string of the first occurrence of the specified character, starting the search at the specified index. |
| Int | **indexOf**(**String** str) |
| Returns the index within this string of the first occurrence of the specified substring. |
| Int | **indexOf**(**String** str, int fromIndex) |
| Returns the index within this string of the first occurrence of the specified substring, starting at the specified index. |
| [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [intern()](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#intern()) |
| Returns a canonical representation for the string object. |
| boolean | [isEmpty()](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#isEmpty()) |
| [Returns true if, and only if, length() is 0.](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#length()) |
| Int | [lastIndexOf(int ch)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#lastIndexOf(int)) |
| Returns the index within this string of the last occurrence of the specified character. |
| Int | [lastIndexOf(int ch, int fromIndex)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#lastIndexOf(int,%20int)) |
| Returns the index within this string of the last occurrence of the specified character, searching backward starting at the specified index. |
| Int | **lastIndexOf**(**String** str) |
| Returns the index within this string of the last occurrence of the specified substring. |
| Int | **lastIndexOf**(**String** str, int fromIndex) |
| Returns the index within this string of the last occurrence of the specified substring, searching backward starting at the specified index. |
| Int | [length()](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#length()) |
| Returns the length of this string. |
| boolean | **matches**(**String** regex) |
| [Tells whether or not this string matches the given regular expression.](https://docs.oracle.com/javase/7/docs/api/java/util/regex/Pattern.html#sum) |
| Int | [offsetByCodePoints(int index, int codePointOffset)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#offsetByCodePoints(int,%20int)) |
| Returns the index within this String that is offset from the given index by codePointOffset code points. |
| boolean | **regionMatches**(boolean ignoreCase, int toffset, **String** other, int ooffset, int len) |
| Tests if two string regions are equal. |
| boolean | **regionMatches**(int toffset, **String** other, int ooffset, int len) |
| Tests if two string regions are equal. |
| [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [replace(char oldChar, char newChar)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#replace(char,%20char)) |
| Returns a new string resulting from replacing all occurrences of oldChar in this string with newChar. |
| [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | **replace**(**CharSequence** target, **CharSequence** replacement) |
| Replaces each substring of this string that matches the literal target sequence with the specified literal replacement sequence. |
| [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | **replaceAll**(**String** regex, **String** replacement) |
| [Replaces each substring of this string that matches the given regular expression with the given replacement.](https://docs.oracle.com/javase/7/docs/api/java/util/regex/Pattern.html#sum) |
| [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | **replaceFirst**(**String** regex, **String** replacement) |
| [Replaces the first substring of this string that matches the given regular expression with the given replacement.](https://docs.oracle.com/javase/7/docs/api/java/util/regex/Pattern.html#sum) |
| [String[]](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | **split**(**String** regex) |
| [Splits this string around matches of the given regular expression.](https://docs.oracle.com/javase/7/docs/api/java/util/regex/Pattern.html#sum) |
| [String[]](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | **split**(**String** regex, int limit) |
| [Splits this string around matches of the given regular expression.](https://docs.oracle.com/javase/7/docs/api/java/util/regex/Pattern.html#sum) |
| boolean | **startsWith**(**String** prefix) |
| Tests if this string starts with the specified prefix. |
| boolean | **startsWith**(**String** prefix, int toffset) |
| Tests if the substring of this string beginning at the specified index starts with the specified prefix. |
| [CharSequence](https://docs.oracle.com/javase/7/docs/api/java/lang/CharSequence.html) | [subSequence(int beginIndex, int endIndex)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#subSequence(int,%20int)) |
| Returns a new character sequence that is a subsequence of this sequence. |
| [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [substring(int beginIndex)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#substring(int)) |
| Returns a new string that is a substring of this string. |
| [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [substring(int beginIndex, int endIndex)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#substring(int,%20int)) |
| Returns a new string that is a substring of this string. |
| char[] | [toCharArray()](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#toCharArray()) |
| Converts this string to a new character array. |
| [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [toLowerCase()](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#toLowerCase()) |
| Converts all of the characters in this String to lower case using the rules of the default locale. |
| [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | **toLowerCase**(**Locale** locale) |
| Converts all of the characters in this String to lower case using the rules of the given Locale. |
| [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [toString()](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#toString()) |
| This object (which is already a string!) is itself returned. |
| [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [toUpperCase()](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#toUpperCase()) |
| Converts all of the characters in this String to upper case using the rules of the default locale. |
| [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | **toUpperCase**(**Locale** locale) |
| Converts all of the characters in this String to upper case using the rules of the given Locale. |
| [String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [trim()](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#trim()) |
| Returns a copy of the string, with leading and trailing whitespace omitted. |
| [static String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [valueOf(boolean b)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#valueOf(boolean)) |
| Returns the string representation of the boolean argument. |
| [static String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [valueOf(char c)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#valueOf(char)) |
| Returns the string representation of the char argument. |
| [static String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [valueOf(char[] data)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#valueOf(char[])) |
| Returns the string representation of the char array argument. |
| [static String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [valueOf(char[] data, int offset, int count)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#valueOf(char[],%20int,%20int)) |
| Returns the string representation of a specific subarray of the char array argument. |
| [static String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [valueOf(double d)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#valueOf(double)) |
| Returns the string representation of the double argument. |
| [static String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [valueOf(float f)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#valueOf(float)) |
| Returns the string representation of the float argument. |
| [static String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [valueOf(int i)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#valueOf(int)) |
| Returns the string representation of the int argument. |
| [static String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | [valueOf(long l)](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html#valueOf(long)) |
| Returns the string representation of the long argument. |
| [static String](https://docs.oracle.com/javase/7/docs/api/java/lang/String.html) | **valueOf**(**Object** obj) |
| Returns the string representation of the Object argument. |

**References**

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<https://docs.oracle.com/javase/7/docs/api/java/lang/String.html>

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