

### String

a sequence of characters, implemented as array

create using 1) constructor `new String("")` 2) literals 3)concatenation

empty string ""

### Concatenation

if anyone of operand is string, all other operands are cast to String

`toString()` for reference type

primary is convert directly to string

If none of operand is String, the return will not be string

`int x=3;y=4; String s=x+y; // error can not assign int to String`

Default `toString()` return memory address for Object class: `class name@memory-address`

### Compare String

`==` memory location, only for test

`equals();equalsIgnoreCase()` content

`compareTo()` content

### Immutability and String Pool

Once initialized, never changed again, Chain of methods results in multiple Strings

String literals could be a largest chunk of memory.

### String pool

string literals,literal concatenation ( compiler time)

`obj.intern()`: will return a string in string pool or added if not exist

`String s = "Hel" + lo;`runtime concatenation, not using string pool

Math, Wrapper class, String: immutable  
Math,Wrapper, String, StringBuilder,S-system: final

### Methods

`length()` method instead of attribute, trade-offspace and performance

`charAt()` `StringIndexOutOfBoundsException`

`indexOf()` `0..length()-1, -1`

`substring(begin,end)` [ ...], exception, empty string

`toLowerCase()` `toUpperCase()`

`startsWith()` `endsWith()`

`s1.contains(s2)` `s.indexOf(s2) !=-1`

`replace(oldChar,newChar)`

`replace(oldCharSeq,newCharSeq)` character sequence - String, StringBuilder

`trim()` trim white space

### Why StringBuilder

efficient memory usage

Mutable and chain of operation will result in one sb

before java5, StringBuffer was used, but slower due to thread safe.

### Create a StringBuilder

`new StringBuilder();`

`new StringBuilder( sb2 );`

`new StringBuilder(size)=0; capacity=5r(5);`

### StringBuidler Methods

`append(str)`

`insert(offset,str)`

`delete(from,to)` [from,to]

`deleteCharAt()`

`reverse()`

`toString()` sb for performance, convert to string in the end

### StringBuidler Methods (cont)

`substring(int), substring(int,int)` returns string type

`CharAt();indexOf();length();substring()` see String class

`equals()` is not overridden in StringBuilder, use `toString().equals(s1);`