

CHAPTER 6: COMMONLY USED LIBRARIES

Libraries: It is a set of ready-made software routines that can be reused in new programs. Libraries are made available in a program using import statement e.g. `import java.io.*;`

String Library: It is a part of java language library `java.lang`, which is by default imported to the program. **There are 3 classes to work with characters:**

- (i) **Character Class** whose instances can hold single character data.
- (ii) **String Class** whose instances can hold unchanging string. Every time we change, a new object is created automatically.
`String s = "Excellent" ;` or `String s = new String("Excellent");`
- (iii) **StringBuffer Class** whose instances can hold mutable strings.
`StringBuffer sb = new StringBuffer();` or `StringBuffer sb = new StringBuffer("First");` or
`StringBuffer sb = new StringBuffer(10);` // to hold 10 characters
`String s = "crack", r = "rack";`

Method Prototype	Description
<code>String toString()</code>	<code>r = s.toString();</code> Returns the string itself.
<code>String concat(String)</code>	Concat two strings. <code>s = s.concat(r);</code> -> crackrack
<code>str1 + str2</code>	Concatenation operator. <code>s = s + r ;</code>
<code>int length()</code>	<code>n = s.length()</code> -> 5
<code>String toLowerCase()</code>	<code>r = s.toLowerCase();</code>
<code>String toUpperCase()</code>	<code>r = s.toUpperCase();</code>
<code>String trim()</code>	<code>r = s.trim();</code> Removes white spaces from both ends.
<code>String substring(int beginindex, int endindex)</code>	<code>s.substring(1,3);</code> ==> ra. Inclusive of start index and exclusive of end index. Index starts at 0.
<code>boolean equals(str)</code>	<code>b = s.equals(r);</code>
<code>boolean equalsIgnoreCase(str)</code>	<code>b = s.equalsIgnoreCase(r);</code>
<code>String valueOf(all types)</code>	<code>r = s.valueOf(r);</code> Returns string representation of passed argument i.e. 30 is returned as "30".
<code>valueOf()</code>	<code>int i = Integer.valueOf(k);</code> Returns Integer representation of passed argument i.e. "30" is returned as 30. <code>double x = Double.valueOf(k);</code> //x becomes 30.0

`String s = "art", r = "science";`
`StringBuffer sb = new StringBuffer(s);`

Additional stringBuffer Methods:

Method Prototype	Description
<code>append(x)</code>	Adds x char at the end. <code>sb.append(r);</code> ==> artscience.
<code>reverse()</code>	<code>sb.reverse();</code> ==> ecneicstra

Math Functions: It is found in Math library and used as `Math.sqrt(a*a + b*c)`

Function	Action	Function	Action	Function	Action
pow(x,y)	X^Y	ceil(x)	Round up	floor(x)	Round down
sqrt(x)	Root	abs(a)	Absolute	max(a,b), min(a,b)	Max, min
round(x): Rounds off a number to its nearest integer. If argument is double then it returns long and for float it returns int. If the argument is NaN, then the result is zero. Round(-4.5) is -4. Round(4.5) is 5. (NaN means Not a Number).					

Sample Questions:

1. What will be display in a jTextField1 after executing the following code?

```
int m= 16;    m=m+1;
if (m<15)    jTextField.setText(Integer.toString(m));    else
jTextField1.setText(Integer.toString(m+15));
```
2. What does round() return if a negative float value is passed to it?
3. Write code to display IP 12 CBSE in a dialog box (JOptionPane).
4. What will be the output of the following code: (i) `Math.round(1.5)` (ii) `"Welcome".toUpperCase()`.
5. What will be the value X1 after the execution of the following code ?

```
String X1= "Graduate" ,X2="Post" ;    X1=X2.concat (X1) ;
```