

# EGR 222 Exam 1 Cheat Sheet

## 1. Java String methods

Method name	Description
<code>indexOf(str)</code>	index where the start of the given string appears in this string (-1 if not found)
<code>length()</code>	number of characters in this string
<code>substring(index1, index2)</code> or <code>substring(index1)</code>	the characters in this string from <i>index1</i> (inclusive) to <i>index2</i> (exclusive); if <i>index2</i> is omitted, grabs till end of string
<code>toLowerCase()</code>	a new string with all lowercase letters
<code>toUpperCase()</code>	a new string with all uppercase letters

Method	Description
<code>equals(str)</code>	whether two strings contain the same characters
<code>equalsIgnoreCase(str)</code>	whether two strings contain the same characters, ignoring upper vs. lower case
<code>startsWith(str)</code>	whether one contains other's characters at start
<code>endsWith(str)</code>	whether one contains other's characters at end
<code>contains(str)</code>	whether the given string is found within this one

## 2. Java Math methods

Method name	Description
<code>Math.abs(value)</code>	absolute value
<code>Math.ceil(value)</code>	rounds up
<code>Math.floor(value)</code>	rounds down
<code>Math.log10(value)</code>	logarithm, base 10
<code>Math.max(value1, value2)</code>	larger of two values
<code>Math.min(value1, value2)</code>	smaller of two values
<code>Math.pow(base, exp)</code>	<i>base</i> to the <i>exp</i> power
<code>Math.random()</code>	random double between 0 and 1
<code>Math.round(value)</code>	nearest whole number
<code>Math.sqrt(value)</code>	square root
<code>Math.sin(value)</code> <code>Math.cos(value)</code> <code>Math.tan(value)</code>	sine/cosine/tangent of an angle in radians
<code>Math.toDegrees(value)</code> <code>Math.toRadians(value)</code>	convert degrees to radians and back

Constant	Description
<code>Math.E</code>	2.7182818...
<code>Math.PI</code>	3.1415926...

### 3. DrawingPanel Graphics methods

Method name	Description
<code>g.drawLine(x1, y1, x2, y2);</code>	line between points (x1, y1), (x2, y2)
<code>g.drawOval(x, y, width, height);</code>	outline largest oval that fits in a box of size <i>width</i> * <i>height</i> with top-left at (x, y)
<code>g.drawRect(x, y, width, height);</code>	outline of rectangle of size <i>width</i> * <i>height</i> with top-left at (x, y)
<code>g.drawString(text, x, y);</code>	text with bottom-left at (x, y)
<code>g.fillOval(x, y, width, height);</code>	fill largest oval that fits in a box of size <i>width</i> * <i>height</i> with top-left at (x, y)
<code>g.fillRect(x, y, width, height);</code>	fill rectangle of size <i>width</i> * <i>height</i> with top-left at (x, y)
<code>g.setColor(Color);</code>	set <code>Graphics</code> to paint any following shapes in the given color

### 4. Java Scanner methods

Method	Description
<code>nextInt()</code>	reads an <code>int</code> from the user and returns it
<code>nextDouble()</code>	reads a <code>double</code> from the user
<code>next()</code>	reads a one-word <code>String</code> from the user
<code>nextLine()</code>	reads a one-line <code>String</code> from the user

Method	Description
<code>hasNext()</code>	returns <code>true</code> if there is a next token
<code>hasNextInt()</code>	returns <code>true</code> if there is a next token and it can be read as an <code>int</code>
<code>hasNextDouble()</code>	returns <code>true</code> if there is a next token and it can be read as a <code>double</code>
<code>hasNextLine()</code>	returns <code>true</code> if there is a next line to be read as string

### 5. Java Random methods

Method name	Description
<code>nextInt()</code>	returns a random integer
<code>nextInt(max)</code>	returns a random integer in the range [0, max) in other words, 0 to max-1 inclusive
<code>nextDouble()</code>	returns a random real number in the range [0.0, 1.0)