

String Methods

.toUpperCase()	.equals(str)
.toLowerCase()	.indexOf(e)
.substring(i,j) <i>j is excluded</i>	.concat(str)
.length()	.charAt(i)
.compareTo(str)	.contains(e)
Integer.parseInt(intString)	
Double.parseDouble(doubleString)	

```
import java.util.Scanner;
Scanner input= new Scanner(System.in);
```

Scanner Methods:

```
.nextLine() ends with line
.next() ends with white space
.nextDouble()
.nextInt()
```

Naming

keywords	lowercase	rule
variables	camelCase	convention
constants	ALL_CAPS	rule
class names	CamelCase	convention

Math Methods

Math.pow(a, b)	Math.PI()
Math.log(x), Math.log10(x)	Math.sqrt(x)
Math.floor <i>rounds down</i>	Math.ceil() <i>rounds up</i>
Math.random()	Math.min(), Math.max()

```
import java.lang.Math;
```

has sin, cos, tan, toRadians, toDegree, asin, acos, atan

low + Math.random()* high (non-inclusive)

Escape Sequences

\t	tab
\n	newline
\"	double quote
\\	backslash

Date Class

```
jav.util.Date date= new java.util.Date;

date.toString();
```

Point2D Class

```
import java.geometry.Point2D;

Point2D variable = new Point2D(x, y);
```

Objects

no variable constructor	Circle() { }
constructor	Circle (double radius) { this.radius=radius; }
getter	double getArea() { return 2 x radius x radius x Math.PI; }
setter	void setRadius(double radius) { this.radius=radius; }
instanceof	tests whether an object is an instance of a class
super();	calls no arg constructor of superclass
super(-arg);	calls matching arg constructor of superclass
array of objects	for (int i, i<thing.length, i++) array[i]= new Thing(param);}

"this.radius" is an instance variable, as is the original data field
"radius" is the local variable

constructors must have same name as class
constructors do not have a return type, not even void
constructors are invoked using the new operator when an object is created
default constructor goes to class with no other constructors defined

Abstract Classes and Interfaces

Abstract Classes	Interfaces
cannot use "new"	only has abstract methods
methods have no body	no constructors
mix of abstract/non-abstract methods	"implements"
"extends"	contains constants
has constructors	
contains contacts and variables	
public abstract class ClassName {	
java.lang.Comparable	
public interface comparable <E>{	
public int compareTo(E o); }	
<i>returns -1 for less than, 0 for equals, 1 for greater than</i>	
java.lang.Cloneable	
public interface clonable {	
<i>use .clone()</i>	

Loops

while	int x=n; while (x>1) { change x; }
for	for (int i, i<variable, i++){
for each (arrays)	for (int i: list){
boolean	(boolean ? true : false)

Characters

.isDigit(ch)	.isLetter(ch)
.isLowerCase(ch), .isUpperCase(ch)	.toLowerCase(ch), .toUpperCase(ch)

ArrayList Methods



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Page 1 of 3.

create	<code>ArrayList<type> name = new ArrayList<type>();</code>
access element	<code>list.get(i)</code>
update element	<code>list.set(i, e)</code>
return size	<code>list.size()</code>
add element	<code>list.add((i), e)</code>
remove element	<code>list.remove(i or e)</code>

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ArrayList Methods (cont)

remove all elements list.clear()

import java.util.ArrayList;

Important methods

modifier returnType methodName(p-
arams){

public Class ClassName{
 public static void main (String[] args)

Scanner input= new Scanner(System.in)
System.out.println(line);

public static type name (type param){
 return type; }

public boolean equals (Object o){
 if (o instanceof Person){
 Person p= (Person) o;
 return this.name.equals(p.getName());
 }else{
 return false;
 }
}

public String toString(){
 return "String";}

to use a method from a different class:
Class.method(var);

Array methods

java.util.Arrays.sort(array) .length

java.util.Arrays.equal(a1, a2) *if corres-
ponding
elements
are the
same*

Arrays.toString(array) .reverse()

array[i] array[i]=e

import java.util.Arrays;
int[] values= new int[10]
default values: 0, /u0000, or false
printing gives reference
methods can modify arrays
import java.util.Arrays;
multi-dimensional arrays: arrays of arrays.
elementType [rows] [columns] a
rrayVar

Vocabulary

composition information belongs to one
object

association/-
segregation information can belong to
many objects

public
visibility can be seen anywhere in
any package

private
visibility can be seen within class

protected
visibility in package and subclasses
of this in any package

runtime error crash

compile error doesn't run

final static constant modifier

byte 8 bits*

block /* ... */

comment

line //

comment

javadoc /** ... */

comments

break; breaks out of a loop

continue; stays in loop

variable
declaration creating a variable with its
type

static shared by all instances of a
class

relational
operator <, <=, ==, !=, >, >=

logical
operator !, &&, || (*inclusive*), ^
(*exclusive*)

Numeric
Types (in
order) byte, short, int, long, float,
double

Variable
Scope variables only exist within {}

assignment
operators =, +=, -=, *=, /=, %=

operators +, -, %, / (*truncates for int*)

Vocabulary (cont)

increment/ ++, --
decrement
operators

instance
method a method that can only be
invoked from a specific object

local
variable within a method

instance
variable dependent on the specific
instance (class)

overlo-
ading
methods methods can have the same
name as long as their method
signatures are different

binary operators are left-associative,
assignment operators are right associative