

```

/*
*****
* Notes:
* This is only a first draft, and I'm putting it out there
* so that you have something to go on. I'll likely add
* more in the future, or take stuff away, so just remember
* while you code to keep the style goals in mind more than
* the details. Fundamentally, your style should portray
* how much you care about the code, and how much time
* you spent making it elegant and beautiful.
*
* Also, some of the instructions in this are specific
* to this class, and would not necessarily constitute
* good style outside of it. For this class we are looking
* for your stylistic effort, and understanding of the code
* as well as actual style. Your code should also be
* written with the goal of being printed out and read in
* mind, as well as being graded- something that might not
* be important for your future coding.
*
* Furthermore, this is simply a guide to help you write
* beautiful, elegant, maintainable, and readable code.
* If you do decide to sway from instruction, please
* supply a good reason in comments.
*
* While I will not take points off for not conforming to it
* necessarily the official java style guide is at:
* http://java.sun.com/docs/codeconv/html/CodeConvTOC.doc.html
* You should conform to this outline.
*****
* Style Goals:
* Make your code easy to read / understand.
* Make your code easy to write.
* Make your code easy to print.
* Make your code easy to view.
* Convey how much you love your code - You love it.
* Make your code look exactly how you designed it to look
* from any reasonable editor
* (emacs, vim, eclipse, Dr. Java, notepad...)
* Make your code fast.
* Make your code easy to debug.
* Remove redundancies.
* Protect code from bad programming.
* Conform to agreed standards.
* Make it easy for other people to write using your code.
* Make it easy for other people to extend your code.
* Convince others your code is good.
* Be consistent. (Consistency reduces confusion and error)
*****
* Do not use whitespace (more than one new line)
* to keep code clean.
*
* Use organized, formatted comments.
*
* Use comments to organize code.
*
* It is more important that you keep the width
* of comments and lines of code short,
* then have line breaks be logical.
* (about the width of the longest line here)
*
* I will not take points off for spelling.
* In general though, people might get annoyed
* if your spelling is bad.
*****
* when writing comments:
* use /*
* *
* *
* for javadoc comments that can be read outside the source,
* such as what something does and how to use it.
* You don't need to use javadoc annotations or HTML-
* just good formatting principles
*****
* use /*
* *
* *
* for developer comments that can only be read within the source:
* algorithm descriptions
* data descriptions
* notes and clarifications
* discussion about how to write more code
* things that need work (TODO)
*****
* use //
* for single line note comments.
* It is usually not permissible to include this
* type of comment on the same line as code
* Except when you have a very short line of type declaration.
* Ex:
*   int x=5; //x is not an index, but 5 is a pretty number.
*/

/*
* If you import more than 3 or 4 classes from the
* same class I recommend you use .*
*/
import java.util.*;

/**
* A general description of:
* What the class is,
* What it should/can be used for,
* How it should be used.
*
* A more detailed description of:
* How it should be used,
* How the algorithms work.
*
* Notes:
* Precautions,
* depreciations,
* things that need work (TODO)
*
* @author Matthew B. Mirman ( mmirman@andrew.cmu.edu )
* @version 1
* @date (last edited date)
*/
public class Style {

    /*
    * On curly brackets:
    * It does not matter if you put
    * your curly brackets on a new line
    *
    *   ex:
    *   if (i<3)
    *   {
    *       ..do something..
    *   }
    *   else
    *   {
    *       ..do something else..
    *   }
    *
    * or if you put your curly brackets
    * on the same line
    *
    *   ex:
    *   if (i<3) {
    *       ..do something..
    *   }else{
    *       ..do something else..
    *   }
    *
    * as long as you are consistent.
    *
    * The only things that should ever come after
    * a curly bracket on the same line are "else ... "
    * or "catch ...". Not comments or other type
    * of code though. If you think of something else
    * that I am forgetting, tell me.
    *
    * If you decide not to use curly brackets for a
    * block, I recommend you put the code in a block
    * on a new line after an indentation.
    *
    *   ex:
    *   if (i<3)
    *       i++;
    *****
    * Indentations:
    * It does not matter whether you use 4 space or tab,
    * as long as you are very very consistent.
    * Both have advantages and disadvantages.
    *
    * 4 space:
    * advantages:
    * -super consistent. It looks the
    *   same on every text editor.
    * -Easier to format code how you want.
    * You can also use 1,2,3,4,5... spaces if
    * you so wish.
    * disadvantages:
    * -can take longer to write.
    * -fewer editors have support
    *   for auto-formatting using 4 spaces.
    *
    * Tabs:
    * advantages:
    * -very quick to type.
    * -more auto-formatters
    *   have support for them
    * -can have size altered depending on editor.
    * disadvantages:
    * -They look different depending on editor.
    * -They encourage formatting laziness.
    * -can not be mixed with 4-space.
    */

    /*
    ***** Data *****
    */
    // Try to make data private and use getters and setters
    public double x;

    /*
    ***** Getters and Setters *****
    * Place just below data *
    *****
    */

    /**
    * @return double x
    */
    public double getX() {
        return x;
    }

    /**
    * @param x
    */
    public void setX(final double x) {
        this.x = x;
    }

    /*
    * Equals, hashCode, toString *
    * Try to always implement these *
    * Note: These have been *
    * autogenerated by eclipse */
    *****

    /*
    * Overridden methods do not necessarily need
    * javadoc comments.
    * (non-javadoc)
    * @see java.lang.Object#equals(java.lang.Object)
    */
    @Override
    public String toString() {
        return "Style [x=" + x + "]";
    }

    @Override
    public int hashCode() {
        final int prime = 31;
        final long temp = Double.doubleToLongBits(x);
        return prime + (int) (temp ^ (temp >> 32));
    }

    @Override
    public boolean equals(final Object obj) {
        if (this == obj) {
            return true;
        }
        if (obj == null) {
            return false;
        }
        if (!(obj instanceof Style)) {
            return false;
        }
        final Style other = (Style) obj;
        return this.x==other.x;
    }

    /*
    ***** Constructors *****
    */

    /*
    * If you have more than one constructor that
    * does mostly the same thing but with different
    * combinations of arguments, it might be helpful
    * to create an initialization method,
    * with all possible arguments, and simply call that
    * from each different constructor. The initializer
    * should be placed at the beginning or end of
    * the constructors.
    */
    /*
    */

    /**
    * Always include the empty constructor.
    * If you want there to be no empty constructor
    * make one that is private.
    */
    public Style() {
        setX(0);
    }

    /**
    * This constructor simply sets the only data
    * member, x, to what we expect it to be set as.
    * @param x
    */
    public Style(final double x){
        setX(x);
    }

    /**
    * This is a copy constructor. For data based
    * classes it is very nice to have.
    */
    public Style(final Style other){

        /*
        * Note that I do not use setX or getX here
        * because I want this Style to be an exact
        * copy of other Style, not whatever getX
        * and setX might change x to.
        * Be careful when setting references to objects
        * if those objects have copy constructors,
        * use them. Think about memory, and write
        * comments explaining how memory is handled.
        */
        this.x=other.x;
    }

    /*
    ***** Methods *****
    */

    /*
    * Methods should be organized by what they do.
    */
    /*
    */

    /**
    * Here we return a new style object so that you can
    * call add within lines of equations, use that value
    * but not effect any of the original values.
    * ex: suppose we had a Vec3D class with add, cross
    * scale, and dot that all behaved this way.
    * we could then write
    * Vec3D angle=a.add(b).cross(c).scale(b.dot(c));
    * which translates easily into math, as opposed to
    * Vec3D composite=new Vec3D(a);
    * composite.add(b);
    * composite.cross(c);
    * composite.scale(Vec3D.dot(b,c));
    * @param b
    * @return the sum of this's "x" value and b's "x" value.
    * @throws NullPointerException if b is null
    */
    public Style add(final Style b){

        /*
        * Note that here we throw a null pointer exception
        * within the method, but we don't have
        * "throws NullPointerException" in the method name.
        * While if a programmer is stupid and puts a null into this method
        * it shouldn't continue blindly computing stuff
        * (more of an issue with more code), we don't want the programmer
        * to have to surround this method with a try/catch every time he
        * wants to call it. We do declare that it is possible for
        * this method to throw a NullPointerException in the method description
        * though, because it makes using it a bit easier.
        */
        if (b==null)
            throw new NullPointerException();

        //create a new style object with the sum of this.getX() and b.getX()
        return new Style(this.getX() +b.getX());
    }

    /*
    * Here, we used getX() because either if some time in the future
    * the programmer should decide either to extend style such that
    * x is really a function of x, or change that here.
    * It is much easier to do if you only ever use getX and setX.
    * There are cases where this isn't necessary
    */
    }

    /**
    * This method is just an example of using holder variables
    * so that repeated operations only need to happen once.
    * Not doing this can vastly increase the time complexity.
    * You should try to reduce the number of divides,
    * Math.sqrt and Math.pow as much as possible, because these
    * are really slow. But optimize smart. If removing a sqrt
    * means you have to put in 15 other lines of code,
    * it is probably not more efficient, and much uglier.
    * Readability usually takes precedence over efficiency,
    * but something like
    * for(int i=0;i<Math.sqrt(n-1);i++){
    * could easily be changed to
    * for(int i=0;i*i<n;i++){
    * without effecting readability.
    *
    * @param c is the square route of the number
    * of times x should be squared.
    */
    public void power(final int c){
        int c_squared=c*c;
        for (int i=0;i<c_squared;i++){
            //getX could be very slow, we use a holder variable.
            final double x_hold = this.getX();
            setX(x_hold*x_hold);
        }
    }

    /**
    * If you ever use the same math/code twice or more,
    * and that code is more than 3- 5 operations or calls
    * long or is unexplained,
    * don't hesitate to write a helper method.
    *
    * You should do this to
    * -Eliminate code redundancy (even preemptively)
    * -Reduce amount of code that needs to be changed
    * in the case of a bug
    * -Make code easier to read by giving sequences of
    * operations descriptive names
    *
    * In general, these make the most sense
    * as private or protected.
    *
    * @param i is the row number
    * @param j is the column number
    * @return the index into
    * @throws ArrayIndexOutOfBoundsException
    * if i or j are smaller than zero
    */
    private int getIndexHelper(final int i, final int j){
        if (i<0 || j<0)
            throw new ArrayIndexOutOfBoundsException();
        return (int)Math.floor(1*x+j);
    }
}

/*
* Using final:
* if a variable isn't changed within a method,
* don't hesitate to use final, but try to anticipate
* it not being changed. Do hesitate to make class
* data final, methods final, and classes final.
* Making things final helps keep you from accidentally
* changing a variable, then trying to access it's original
* value after it has been changed.
*
* If you don't know what final is, don't worry about it,
* and don't use it.
*/

```