```
12          System.out.println("to format your programs."
13  );    }
14    }
```

32. The following program is legal under Java's syntax rules, but it is difficult to read because of its layout and lack of comments. Reformat it using the rules given in this chapter, and add a comment header at the top of the program.

```
1  public
2  class Messy{public
3  static void main(String[]args){message ()
4    ;System.out.println()    ; message ( );}   public static void
5  message() { System.out.println(
6      "I really wish that"
7      );System.out.println
8  ("I had formatted my source")
9  ;System.out.println("code correctly!");}}
```

Exercises

1. Write a complete Java program called `Stewie` that prints the following output:

```
//////////////////////
|| Victory is mine! ||
\\\\\\\\\\\\\\\\\\\\\\
```

2. Write a complete Java program called `Spikey` that prints the following output:

```
  \/
 \\//
\\\//
///\\\
 //\\
  /\
```

3. Write a complete Java program called `WellFormed` that prints the following output:

```
A well-formed Java program has
a main method with { and }
braces.

A System.out.println statement
has ( and ) and usually a
String that starts and ends
with a " character.
(But we type \" instead!)
```

4. Write a complete Java program called `Difference` that prints the following output:

```
What is the difference between
a ' and a "? Or between a " and a \"?

One is what we see when we're typing our program.
The other is what appears on the "console."
```

5. Write a complete Java program called `MuchBetter` that prints the following output:

```
A "quoted" String is
'much' better if you learn
the rules of "escape sequences."
Also, "" represents an empty String.
Don't forget: use \" instead of " !
'' is not the same as "
```

6. Write a complete Java program called `Meta` whose output is the text that would be the source code of a Java program that prints "Hello, world!" as its output.

7. Write a complete Java program called `Mantra` that prints the following output. Use at least one static method besides `main`.

```
There's one thing every coder must understand:
The System.out.println command.

There's one thing every coder must understand:
The System.out.println command.
```

8. Write a complete Java program called `Stewie2` that prints the following output. Use at least one static method besides `main`.

```
//////////////////////
|| Victory is mine! ||
\\\\\\\\\\\\\\\\\\\\\\
|| Victory is mine! ||
\\\\\\\\\\\\\\\\\\\\\\
|| Victory is mine! ||
\\\\\\\\\\\\\\\\\\\\\\
|| Victory is mine! ||
\\\\\\\\\\\\\\\\\\\\\\
|| Victory is mine! ||
\\\\\\\\\\\\\\\\\\\\\\
```

9. Write a program called `Egg` that displays the following output:

```
  _______
 /       \
/         \
-"-'-"-'-"-
\         /
 \_______/
```

10. Modify the program from the previous exercise to become a new program `Egg2` that displays the following output. Use static methods as appropriate.

```
  _______
 /       \
/         \
\         /
 \_______/

-"-'-"-'-"-

  _______
 /       \
/         \
\         /
 \_______/
```

```
-"-'-"-'-"-
\         /
 \_______/

  _______
 /       \
/         \
-"-'-"-'-"-
\         /
 \_______/
```

11. Write a Java program called `TwoRockets` that generates the following output. Use static methods to show structure and eliminate redundancy in your solution. Note that there are two rocket ships next to each other. What redundancy can you eliminate using static methods? What redundancy cannot be eliminated?

```
   /\       /\
  /  \     /  \
 /    \   /    \
+------+ +------+
|      | |      |
|      | |      |
+------+ +------+
|United| |United|
|States| |States|
+------+ +------+
|      | |      |
|      | |      |
+------+ +------+
   /\       /\
  /  \     /  \
 /    \   /    \
```

12. Write a program called `FightSong` that produces this output. Use at least two static methods to show structure and eliminate redundancy in your solution.

```
Go, team, go!
You can do it.

Go, team, go!
You can do it.
You're the best,
In the West.
Go, team, go!
You can do it.

Go, team, go!
You can do it.
You're the best,
in the West.
Go, team, go!
You can do it.

Go, team, go!
You can do it.
```

13. Write a Java program called `StarFigures` that generates the following output. Use static methods to show structure and eliminate redundancy in your solution.

```
*****
*****
 * *
  *
 * *

*****
*****
 * *
  *
 * *
*****
*****

  *
  *
  *
*****
*****
 * *
  *
 * *
```

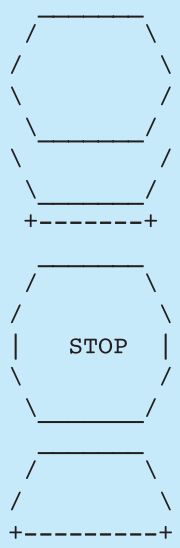
14. Write a Java program called `Lanterns` that generates the following output. Use static methods to show structure and eliminate redundancy in your solution.

```
    *****
  *********
*************

    *****
  *********
*************
* | | | | | *
*************
    *****
  *********
*************

    *****
  *********
*************
    *****
* | | | | | *
* | | | | | *
    *****
    *****
```

15. Write a Java program called `EggStop` that generates the following output. Use static methods to show structure and eliminate redundancy in your solution.



16. Write a program called `Shining` that prints the following line of output 1000 times:

```
All work and no play makes Jack a dull boy.
```

You should not write a program that uses 1000 lines of source code; use methods to shorten the program. What is the shortest program you can write that will produce the 1000 lines of output, using only the material from this chapter?

Programming Projects

1. Write a program to spell out MISSISSIPPI using block letters like the following (one per line):

```
M     M    IIIII     SSSSS     PPPPPP
MM   MM      I      S     S    P     P
M M M M      I      S          P     P
M  M  M      I       SSSSS     PPPPPP
M     M      I            S    P
M     M      I      S     S    P
M     M    IIIII     SSSSS     P
```

2. Sometimes we write similar letters to different people. For example, you might write to your parents to tell them about your classes and your friends and to ask for money; you might write to a friend about your love life, your classes, and your hobbies; and you might write to your brother about your hobbies and your friends and to ask for money. Write a program that prints similar letters such as these to three people of your choice. Each letter should have at least one paragraph in common with each of the other letters. Your main program should have three method calls, one for each of the people to whom you are writing. Try to isolate repeated tasks into methods.

3. Write a program that produces as output the lyrics of the song, "There Was an Old Lady Who Swallowed a Fly," by Simms Taback. Use methods for each verse and the refrain. Here are the song's complete lyrics:

```
There was an old lady who swallowed a fly
I don't know why she swallowed the fly
Perhaps she'll die
But it's only a fly
I think I'll cry
```