

Midterm Review

Chapter 1

1. What are the three criteria an algorithm must satisfy?
2. What is JVM (Java Virtual Machine)?

Chapter 2

1. Indicate the class hierarchy in the program in FIGURE 2-9, p. 46.

Chapter 3

1. What are the two attributes that define a data type?
2. What are the three important attributes of a variable?
3. Indicate the values and types of the following expressions:
 - a) $2 + 3$
 - b) $19 / 5$
 - c) $19.0 / 5$
 - d) $3 * 6.0$
 - e) $19 \% 5$
 - f) $2 \% 7$
4. By applying the appropriate precedence rules, calculate the result of each of the following expressions:
 - a) $6 + 5 / 4 - 3$
 - b) $10 + 9 * ((8 + 7) \% 6) + 5 * 4 \% 3 * 2 + 1$
5. If the variable `k` is declared to be of type `int`, what value does `k` contain after the program executes the assignment statement
`k = (int) 3.14159;`
What value `k` contain after the assignment state
`k = (int) 2.71828`
6. Write the truth table for the `&&` (and) operator.
7. Write the truth table for the `||` (or) operator.
8. Write the truth table for the `!` (not) operator.
9. What is De Morgan's law?
10. How would you write a Boolean expression to test whether the value of the integer variable `n` was in the range 0 to 9, inclusive?

11. Describe in English what the following conditional expression means:
`(x != 4) || (x != 17)`
For what values of `x` is this condition true?
12. In the program in FIGURE 3-5, p. 87, how are the named constants defined? How does the program center the figure?

Chapter 4

1. What `for` loop control line would you use in each of the following situations:
 - a) Counting from 1 to 100.
 - b) Counting by sevens starting at 0 until the number has more than two digits.
 - c) Counting backward by twos from 100 to 0.
2. In the program in FIGURE 4-2, p. 104, how does the program add a list of integers using a sentinel?