4.1

Fill in the blanks in each of the following statements:

a) All programs can be written in terms of three types of control structures: Sequential, iterative and selective.

b) The if...else statement is used to execute one action when a condition is true and another when that condition is false.

c) Repeating a set of instructions a specific number of times is called counter controlled iteration.

d) When it’s not known in advance how many times a set of statements will be repeated, a(n) sentinel value can be used to terminate the iteration.

e) The sequential structure is built into Java; by default, statements execute in the order

they appear.

f) Instance variables of types char, byte, short, int, long, float and double are all given the value null by default.

g) If the increment operator is prefixed to a variable, first the variable is incremented by 1, then its new value is used in the expression.

h) When the declaration int y = 5; is followed by the assignment y += 3.3; the value of y is 8.

4.2

State whether each of the following is true or false. If false, explain why.

a) An algorithm is a procedure for solving a problem in terms of the actions to execute and the order in which they execute. True

b) A set of statements contained within a pair of parentheses is called a block. False. Those are called parameters.

c) A selection statement repeats an action while a condition remains true. False, that is an iteration statement.

d) A nested control statement appears in the body of another control statement. True

e) Java provides the arithmetic compound assignment operators +=, -=, \*=, /= and %= for abbreviating assignment expressions. True

f) The primitive types (boolean, char, byte, short, int, long, float and double) are portable across only Windows platforms. False

g) Specifying the order in which statements execute in a program is called program control. True

h) The unary cast operator (double) creates a temporary integer copy of its operand. False

i) Instance variables of type boolean are given the value true by default. False, they are given the value false

j) Pseudocode helps you think out a program before attempting to write it in a programming language. True

4.3

++x;

4 x++;

x = x + 1;

2 x += 1;

4.4

z = x++ + y;

if (count > 10) {

System.out.println("Count is greater than 10");

}

total -= --x;

q %= divisor;

q = q % divisor;

4.5

4.10

The if single selection statement and while iteration statements would only run if the condition stated within them are true. The difference is that for if statements the task runs just once but for while statements, the tasks runs until the condition is met.

4.11

When an integer is divided by another and there is a remainder, the fractional part is truncated so the output would be a whole number. To prevent this one of the operands must be a floating-point type

4.12

⦁ Nesting control statements: When one control statement is placed inside another

⦁ Combining control statements: Writing multiple statements one after another

4.13

a) Sentinel controlled loop

b)A counter controlled loop

c)

4.14

For x = y++;

x = 3, y = 4

For x = ++y;

x = 5, y = 5

4.15

A.

1. The semicolon after the first if statement ends the statement immediately so the print statement wont run

2. The quotation marks aren't placed properly in the first print statement

B

1. The == isn't the right operator to use in this

2.

4.16

Y is : 0 and total is 0

Y is : 1 and total is 1

Y is : 2 and total is 3

Y is : 3 and total is 6

Y is : 4 and total is 10

Y is : 5 and total is 15

Y is : 6 and total is 21

Y is : 7 and total is 28

Y is : 8 and total is 36

Y is : 9 and total is 45

Y is : 10 and total is 55

Y is : 11 and total is 66

Y is : 12 and total is 78