

AP CS Unit 4: Classes and Objects

Exercises

Questions 1 to 14 can be answered after covering the first 2 pages of notes.

<p>1. Write what is displayed in the space provided.</p> <pre>public class Runner { public static void main(String[] args) { Thing w = new Thing(); w.set(3); int num = w.get(); System.out.println(num); Thing joe= new Thing(12); joe.set(-5); num = joe.get(); System.out.println(num); } }</pre> <p>_____</p> <p>_____</p> <p>_____</p>	<pre>public class Thing{ private int x; public Thing() { x = 5; } public Thing(int n) { x = n; } public int get() { return x; } public void set(int h) { x = x + h; } }</pre>
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<p>Given that the code to the right compiles,</p> <p>2. The first line of the Arg class constructor is:</p> <ol style="list-style-type: none"> public Arg() public void Arg(int a, int b); public Arg(int a, int b) <p>3. The first line of the avast method is:</p> <ol style="list-style-type: none"> public avast() public void avast() public void avast(int x) <p>4. The first line of the parrot method is:</p> <ol style="list-style-type: none"> public void parrot (double x) public double parrot () public void parrot (int x) public int parrot () <p>5. The first line of the ayeMatey method is:</p> <ol style="list-style-type: none"> public int ayeMatey(double x) public int ayeMatey() public int ayeMatey(int x) public void ayeMatey() 	<pre>public class PirateRunner { public static void main(String[] args) { Arg g = new Arg(5, 6); g.avast(); g.parrot(4.78); int x = g.ayeMatey(); System.out.println(x); } }</pre>
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<p>6. Write what is displayed in the space provided.</p> <pre>public class Bunny { public static void main(String[] args) { Rumpus roo = new Rumpus(3, 7); _____ System.out.println(n); _____ roo.roar(); n = roo.get(); _____ System.out.println(n); } }</pre> <p>7. In the Rumpus class, name all the: parameters: _____ instance variables : _____ local variables : _____</p>	<pre>public class Rumpus{ private int a, b; public Rumpus (int n1, int n2) { a = n1; b = n2; } public int clang(int k) { int n = a + b + k; return n; } public void roar() { int c = a; a = b; b = c; } public int get(){ return a; } }</pre>
<p>8. Assuming the code compiles, select the TRUE statement(s).</p> <p>_____ This is a method. _____ This is a constructor. _____ The name of the class is Superman. _____ There is not enough information to determine the name of the class.</p> <p>9. Name the following (if none, write “none”) The parameter(s). _____ The instance variables(s). _____ The local variable(s). _____</p>	<pre>public Superman(int x, int y) { double w = x + y; v = w; }</pre>
<p>10. The Apple class has at least how many different constructors? _____</p> <p>11. What does the spit method probably return? _____</p> <p>12. What does the eat method return? _____.</p> <p>13. In the last line, what does the mmm method return?</p>	<pre>// code inside the main method Apple core = new Apple(8); core.spit(); Apple sauce = new Apple(); int x = sauce.eat(71); System.out.println(core.mmm());</pre>

<p>14. In the main method below, do the following:</p> <ul style="list-style-type: none"> - create a Box object 2 ft wide by 6 ft long - call the getArea method and display the result - call the makeBigger method and double the dimensions of the box - call the getPerimeter method and display the result <pre>public class TestBoxes { public static void main(String[] args) { _____ _____ _____ _____ _____ _____ } }</pre>	<pre>public class Box { private double len, width; public Box(double ln, double w) { len = ln; width = w; } public double getArea() { return len * wid; } public double getPerimeter () { double p = 2.0*(len + width); return p; } public void makeBigger(double percent){ len = percent * len; width = percent * width; } }</pre>
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<p>15. What does this display?</p>	<pre>boolean b = false; for (int n = 1; n < 4; n++){ b = !b; System.out.print(b + " "); }</pre>
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<p>16. The Banana class has at least how many different constructors? _____</p> <p>17. What does the remove method return? _____</p> <p>18. Write the header for the eat method in the space below: public _____</p> <p>19. Write the header for the add method in the space below: public _____</p>	<pre>// code inside the main method Banana peel = new Banana(); Banana split = new Banana(); if (peel.remove()) peel.eat(32); split.add(peel);</pre>
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Note. Java uses “short circuit evaluation” (aka “minimal evaluation”) when evaluating compound boolean expressions. If the first part of an AND statement is false, java does not evaluate the second expression because it does not matter. Similarly, if the first part of an OR statement is true, then the second statement is ignored.

<p>20. This compiles and runs. What is displayed.</p>	<pre>boolean b = !(10 > 15 && 8 < 12); boolean c = 66 != 88 -5 <= -3; System.out.print(b && !c);</pre>
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Note. The following generates a run-time error

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int a = 6;
int b = a / 0;           // java.lang.ArithmeticException: division by zero
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Though this code runs:

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double a = 6;
double b = a / 0.0;
System.out.print( b );    // prints Infinity
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We will not discuss why dividing a double by 0.0 yields Infinity.

<p>21. If x = 0 and y = 6, what is displayed?</p> <p>22. If x = 0 and y = -3, what is displayed?</p> <p>23. If x = -4 and y = 8</p>	<pre>int x, y; // x and y are assigned values if (y < x && 10 / x > 0) System.out.println("A"); else if (Math.sqrt(x) < 1 y > 5) System.out.println("B"); else System.out.println("C");</pre>
<p>24. What is displayed?</p>	<pre>String s = "ok go!"; // one space between words System.out.println(s.length());</pre>
<p>25. What is displayed?</p>	<pre>System.out.println("animal".indexOf("a"));</pre>
<p>26. What is displayed?</p>	<pre>System.out.println("animal".indexOf("a", 1));</pre>
<p>27. What is displayed?</p>	<pre>String s = "Havana"; System.out.println(s.indexOf("a", 3));</pre>
<p>28. What is displayed?</p>	<pre>String s = "floor"; for (int n = 0; n < s.length(); n++) System.out.print(s.indexOf("o", n));</pre>
<p>29. What is displayed?</p>	<pre>String s = "The theater is the best."; System.out.println(s.indexOf("the"));</pre>
<p>30. What is displayed?</p>	<pre>String s = "The theater is there"; int n = 0, loc = 0; do { loc = s.indexOf("e", loc); if (loc >= 0) { loc++; n++; } } while (loc != -1 && loc < s.length()); System.out.println(n);</pre>

31. What is displayed?	<pre>String s = "doorway".substring(3); System.out.println(s);</pre>
32. What is displayed?	<pre>String s1 = "apple"; s1 = s1.substring(2); System.out.println(s1);</pre>
33. What is displayed?	<pre>String s1 = "apple"; s1.substring(2); System.out.println(s1);</pre>
34. What is displayed?	<pre>String s = "soda"; for (int n = 0; n <= 2; n++) System.out.println(s.substring(n, n + 2));</pre>
35. What is displayed?	<pre>String s = "ape"; for (int n = 2; n >= 0; n--) System.out.print(s.substring(n));</pre>
36. What is displayed? a) gr8 b) GR8 c) Gr8 d) GR*	<pre>String s1 = "gr8"; s1.toUpperCase(); System.out.println(s1);</pre>
37. In the string literal, there are 2 spaces before the first word, one space between the words, and 2 spaces after the second word. What is displayed?	<pre>String s1 = " one dog "; String s2 = s1.trim(); System.out.println(s1.length()); System.out.println(s2.length());</pre>
38. What is displayed?	<pre>String s1 = ""; int n = s1.length(); System.out.println(n);</pre>
39. What is displayed?	<pre>String s1 = null; int n = s1.length(); System.out.println(n);</pre>
40. This compiles and runs but if the user enters <i>hi</i> , the response is ? What is wrong with the if statement?	<pre>import java.util.Scanner; public class Problem { public static void main(String[] args) { String s = "hi"; Scanner sara = new Scanner(System.in); System.out.println("Say something."); String answer = sara.nextLine(); if (answer == s) System.out.println("You said hi!"); else System.out.println("?"); } }</pre>

