

AP Computer Science A

Unit 3. Boolean Expressions. Exercises

Assume that all code compiles and runs unless otherwise suggested.

<p>1. What is printed?</p> <p>20</p>	<pre>int n = 20; // n += 3; comment System.out.println(n);</pre>
<p>2. What is printed?</p> <p>44.0</p>	<pre>double a = 44.0; /* a = a + 5.6; a = 32.8; */ block comment System.out.println(a);</pre>
<p>3. What is printed?</p> <p>False</p>	<pre>System.out.println(10 > 90);</pre>
<p>4. What are the possible values of n?</p> <p>0 or 1</p> <p>5. What might/will be printed?</p> <p>true or false</p>	<pre>int n = (int)(2 * Math.random()); boolean b = n == 1; System.out.println(b);</pre> <p>assign is n equal to 1 do this first</p>
<p>6. If the user enters 82, what is displayed?</p> <p>C</p> <p>7. If the user enters 2, what is displayed?</p> <p>AB</p> <p>8. If the curly braces are removed, there would be a compiler error.</p> <p>True False</p>	<pre>Scanner get = new Scanner(System.in); System.out.print("Enter a number: "); int x = get.nextInt(); x 182 if (x < 7) { System.out.print("A"); // not println System.out.print("B"); } else System.out.print("C");</pre>
<p>9. If the user enters 10, what is displayed?</p> <p>10. If the user enters 12, what is displayed?</p> <p>AA BB CC</p> <p>11. Are the curly braces required in this code?</p> <p>NO</p> <p>12. If the Boolean expression was changed to $x \leq 11$ then the results would change.</p> <p>True False</p>	<pre>Scanner get = new Scanner(System.in); System.out.print("Enter a number: "); int x = get.nextInt(); System.out.print("AA"); if (11 >= x) { System.out.print("BB"); } System.out.print("CC");</pre>

objects

bob sue

boolean b = bob.getGPAC() > sue.getGPAC();

String a = "abc"
String b = "Abc"
boolean b = a.equals(b)

ints
a == b

<p>13. If the user enters 10, what is displayed? 22 $x \boxed{10}$ 22</p> <p>14. If the user enters 4, what is displayed? 6 $x \boxed{4}$ 7 6</p> <p>15. If the user enters 2, what is displayed?</p> <p>16. If the user enters 12.8, then a) there will be a compiler error. b) there will be a runtime error. c) there will be a logic error. d) there will be no error. 27.8 will be printed.</p>	<pre>Scanner get = new Scanner(System.in); System.out.print("Enter a number: "); int x = get.nextInt(); if (x != 10) // any # but 10 x = x + 3; if (x > 7) x = x + 12; else x = x - 1; // x ≤ 7 System.out.println(x);</pre>
<p>17. How many assignments are in this snippet? 3</p> <p>18. How many boolean expressions are there? 2</p> <p>19. If a has an initial value of 30, what is its final value? 61 $a \boxed{30}$ 60 61</p>	<pre>if (a == 20) a = 99; else a = 2*a; if (a >= 50) a = a + 1;</pre>

<p>20. If the user enters 38, what is displayed? XXWW num $\boxed{38}$</p> <p>21. If the user enters -4, what is displayed? ZZWW</p> <p>22. If the user enters 99, what is displayed? WW</p>	<pre>Scanner read; read = new Scanner(System.in); System.out.print("Enter a number: "); int num = read.nextInt(); if (num < 13) { System.out.print("ZZ"); } else if (num < 20) { System.out.print("YY"); } else if (num < 40) { System.out.print("XX"); } System.out.print("WW"); // outside if block all print this</pre>
<p>23. If k has an initial value of 13, what is its final value? 19 $k \boxed{13}$ 19</p> <p>24. If k has an initial value of 22, what is its final value? 22</p> <p>25. If k has an initial value of 4, what is its final value? 6 $k \boxed{4}$ 6</p>	<pre>// k is declared and assigned a value if (k < 5) // -∞ to 4 k += 2; // option one else if (k < 10) // 6-9 k += 5; // option 2 else if (k < 20) // 11-19 k += 6; // option 3</pre>

<p>26. If k has an initial value of 10, what is its final value? 12 K $\boxed{10}$ \rightarrow 12</p> <p>27. If k has an initial value of 30, what is its final value? 29 K $\boxed{30}$ \rightarrow 29</p> <p>28. Lines 7 and 8 can be deleted without changing how the code runs. <u>TRUE</u> FALSE</p>	<pre> 1 // k is declared and assigned a value 2 if (k < 11) 3 k += 4; 4 else if (k < 40) 5 k++; 6 if (k > 11) 7 k = k - 2; 8 else if (k > 22) 9 k -= 4; </pre>
<p>29. If x has an initial value of 8, what is its final value? 16 X $\boxed{8}$ \rightarrow 16</p> <p>30. If x has an initial value of 11, what is its final value? 26 X $\boxed{11}$ \rightarrow 26</p> <p>31. If x has an initial value of 19, what is its final value? 22 X $\boxed{19}$ \rightarrow 22</p>	<pre> // x is declared and assigned a value if (x > 10) x = x + 2; else if (x < 5) x++; if (x <= 20) x = 2*x; else if (x > 5) x++; </pre>
<p>32. Name a string that will cause GH to be printed? "he" has an 'e' <= 4 long</p>	<pre> Scanner sc = new Scanner(System.in); System.out.println("String?"); String s = sc.nextLine(); if (s.length() <= 4) System.out.print("G"); if (s.indexOf("e") != - 1) System.out.print("H"); </pre> <p style="text-align: right;">0..99 (100)</p>
<p>33. What is the likelihood of T being printed? 50% 0 - 49% is 50</p>	<pre> if (Math.random() < 0.5) System.out.print("T"); else System.out.print("O"); </pre>

<p>34. If x has a value of -5 and y has a value of 63, what is displayed? GHK X $\boxed{-5}$ y $\boxed{63}$</p> <p>35. If x has a value of 47 and y has a value of 47, what is displayed? GH X $\boxed{47}$ y $\boxed{47}$</p> <p>36. Select the TRUE statement. a) H is never printed. b) H is always printed. c) H is only printed sometimes.</p>	<pre> // x and y are declared and initialized if (x > 30 y >= 60) System.out.print("G"); if (x < 100 x > 40) // x ∈ Z System.out.print("H"); if (y < 10 y > 50) // true 'or' expression System.out.print("K"); </pre>
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37. If x has an initial value of 33, what is its final value? x <u>33</u> 43 39	// x is declared and assigned a value if (x > 30 && x <= 50) x = x + 10;
38. If x has an initial value of 62, what is its final value? x <u>58</u>	x = x - 4; if (x < 40 && x > 60) never happened! x = x + 2;

Version A	Version B
if (x > 10 && x < 20) System.out.print("G"); else if (x > 5 && x < 25) System.out.print("H"); else if (x > 10) System.out.print("K");	if (x > 10 && x < 20) System.out.print("G"); if (x > 5 && x < 25) System.out.print("H"); if (x > 10) System.out.print("K");

Problems 39 to 43 refer to the above code snippets.

39. In version A, if x equals 18, what is displayed? G
40. In version B, if x equals 18, what is displayed? GHK
41. In version A, if x equals 26, what is displayed? K
42. In version B, if x equals 26, what is displayed? K

44. What is the value of bob? <u>false</u>	boolean bob = !(10 > 5); ! T
45. What is printed? <u>true</u>	boolean betty = false; <u>betty</u> <u>! T</u> betty = !betty; true betty = !betty; false betty = !betty; true System.out.print(betty);

if (x > 5) { if (x < 10) System.out.println("OK"); }	if (x > 5 && x < 10) <u>6 7 8 9</u> System.out.println("OK");
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46. Do the two above code snippets always produce the same results? yes
- If they do not, what value of x will cause different results? _____

<pre> if (x > 5) System.out.println("NO"); else if (x < 2) System.out.println("NO"); else System.out.println("MAYBE"); </pre>	<pre> if (x < 2 x > 5) System.out.println("NO"); else System.out.println("MAYBE"); </pre>
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47. Do the above two code snippets always produce the same results? YES

If they do not, what value of x will cause different results? _____

<pre> if (x > 20) { if (x < 50) System.out.println("ONE"); else System.out.println("TWO"); } </pre> <p><i>x > 20</i></p>	<pre> if (x > 20 && x < 50) System.out.println("ONE"); else System.out.println("TWO"); </pre>
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48. Do the above two code snippets always produce the same results? no

If they do not, what value of x will cause different results? 100 TWO ✓

5 left no print right two

<p>49. What is printed?</p> <p><i>music</i></p>	<pre> String s1 = "music"; <i>larger</i> String s2 = "band"; <i>smaller</i> if (s1.compareTo(s2) > 0) System.out.print(s1); else System.out.print(s2); </pre>
<p>50. Why does line 4 NOT cause a compiler error?</p> <p><i>the coder used equals</i></p>	<pre> Scanner sc = new Scanner(System.in); System.out.println("String?"); String s = sc.nextLine(); if (s.equals("ok")) System.out.print("Y"); else System.out.print("Z"); </pre>
<p>51. If the user enters 34 then</p> <p>a) a compiler error occurs.</p> <p>b) a runtime error occurs.</p> <p>c) Z is printed.</p>	<pre> if (s.equals("ok")) System.out.print("Y"); else System.out.print("Z"); </pre> <p><i>"34".compareTo("ok");</i></p>
<p>52. What could <i>str</i> be for A to be printed?</p> <p><i>anything other than Y</i></p>	<pre> String str; // str is assigned some value if (!s.equals("Y")) System.out.print("A"); else System.out.print("B"); </pre>
<p>53. What could <i>str</i> be for B to be printed?</p> <p><i>Y</i></p>	<pre> String str; // str is assigned some value if (!s.equals("Y")) System.out.print("A"); else System.out.print("B"); </pre>
<p>54. What could <i>s2</i> be for X to be printed?</p> <p><i>anything greater llama</i></p>	<pre> String s1 = "llama"; String s2; // s2 is assigned some value if (s1.compareTo(s2) > 0) System.out.print("X"); else System.out.print("Y"); </pre>
<p>55. What could <i>s2</i> be for Y to be printed?</p> <p><i>less than llama</i></p>	<pre> String s1 = "llama"; String s2; // s2 is assigned some value if (s1.compareTo(s2) > 0) System.out.print("X"); else System.out.print("Y"); </pre>