

Unless mentioned otherwise, all coding questions reference the Java 8 language.

1. In html or jsp files, the <input ... > element can have several attributes.

Which attribute should you use for JavaScript's getElementById(...) ID ?

Which attribute should you use for Java's request.getParameter(...) name ?

2. Name three types of Java comments and give syntax examples.

a. Javadoc /** */

b. single line //

c. block /* */

3. In Java, statements with what type of modifier(s) should have Javadoc comments coded? Public

4. Which of the following is not true regarding legal java identifiers?

☒ a. A java identifier can start with an underscore (_) -not ism-

☒ b. A java identifier can start with a currency character (\$) -not ism-

c. A java identifier can start with a number

☒ d. A java identifier can start with an uppercase letter -not ism

5. An object can be a person, Place, Thing, or Event.

6. In Java, can you have a final abstract class? Why or why not?

No, abstract means it cant be instantiated so final
is not applicable to a class w/o instances.

7. Methods which are marked protected can be accessed by classes in different packages.

a. True

☒ b. False

8. Methods that do not have any access modifier can be accessed by classes in other packages.

a. True

☒ b. False

9. According to BCBSSC standards, what javadoc annotation(s) should be coded before a method that returns a value? @return

10. According to BCBSSC standards, what annotation should be coded before a toString() method in a bean?

@Override

11. Making a member Private means that it is only visible to methods in the same class.

12. Methods that are marked as "private" can be accessed by the subclasses of that class.

a. True

☒ b. False

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13. Making a member static means that there is only one instance of that particular member variable.
14. Making a member final means that it can only be assigned once, making the compiler more optimized, since it knows the value of the variable will never change once assigned.

15. Giving the following line of code, where the parameter will never be changed within the method, add just one word that will make it more efficient: final

```
public String myMethod(BigDecimal cost) { . . . }
```

16. Given the following code:

```
private static final Person myPerson = new Person("John", "Smith", 1234, "May 3");
```

...where Person is a bean with the four attributes (firstName, lastName, bankBalance, and birthDate), and getters and setters, is it possible to change bankBalance for the instance named myPerson? Explain your answer.

a. Yes, The reference to myPerson is final not the values in the bean.

b. No, _____

17. Referencing the code in the previous question, create a JUnit test that will test the bankBalance in the Person class. Start your code with the appropriate JUnit annotation.

@Test

```
public void testGetBalance() {  
    Person person2 = new Person("John", "Smith", 1234, "May 3");  
    assertEquals("balance correct", Person.getPerson("John").getBankBalance(),  
        1234);  
}
```

18. Show the code for two constructors that illustrate "cascading" (aka "telescoping"). The first constructor receives two Strings and validates both. The second constructor only receives the first string, and validates it. Assume these two methods exist for validating these Strings: **validate1** and **validate2**. Your class name is MyBean.

```
public MyBean(String string1, String string2) {  
    this(string1);  
    validate2(string2);  
}  
  
public MyBean(String string1) {  
    validate1(string1);  
}
```

19. Code an enum that lists up to four URL pages that you have created so far. You should list the constant name as well as the associated value. Code the entire enum, including constructor, methods, and variables.

```
public enum SPURLEnums {  
    SIGN_ON("sign-on.jsp"),  
    MAIN("main-menu.jsp"),  
    INVALID_SALES("invalid-salesperson.jsp"),  
    PRIVACY("privacy-policy.jsp");  
  
    private String url;  
  
    private SPURLEnums(String url) {  
        this.url = url;  
    }  
  
    public String getURL() {  
        return url;  
    }  
}
```

20. Suppose you have an ArrayList named 'studentCount' that holds four Integer values. Write a line of code to create this ArrayList and a second line that changes the first element in the ArrayList to 10.

```
List<Integer> studentCount = new ArrayList<Integer>(4);  
studentCount.set(0, new Integer(10));
```

21. It is a best practice to follow what two rules in regards to naming a constant?

- a. Upper case
- b. Underscores

22. To create text strings that are mutable, you can use what two classes?

StringBuffer or StringBuilder

23. What does "mutable" mean?

The value stored in the string object CAN be changed
after creation.

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24. Class 'Baseball' extends class 'Ball'. The throwBall() method is coded in both, with the one in the Baseball overriding the one in the 'Ball' class. Which method gets invoked in the following code?

```
Ball sport = new Baseball();  
sport.throwBall();
```

- a. throwBall() in Ball
 - ☒ b. compiler error
 - c. runtime error
 - ☐ d. throwBall() in Baseball
25. In Java 7 and earlier, assume that class Sport implements the interface SportInterface, and that class Baseball extends Sport.

- ☒ a. 'Sport' must contain concrete methods for all methods in SportInterface ✓
- b. 'Baseball' must contain concrete methods for all methods in SportInterface ✗
- c. Baseball must contain concrete methods for the methods that have not been coded in as concrete (not abstract) in Sport.

26. A final method can be overridden.

- a. True
- ☒ b. False

27. Code a ternary operator in Java to make the word "ducks" singular or plural, based on the value in the int countOfDucks. This should work for zero, one, two, minus one, etc.

countOfDucks > 1 ? "ducks" : "duck" ;

28. You can use the increment and decrement operators with the byte type.

- ☒ a. True
- b. False

29. Which of the following is true regarding constructors in Java?

- a. They are called to initialize an object when the object is instantiated
- b. They must have the same name as the name of the class they're in ✓
- c. They have no return type, including 'void' ✓
- ☒ d. All of the above

30. A constructor is used to create a/an Instance of the class.

31. In Java, will the following statement compare as true or false?

```
String stringA = new String("Hello World! ");  
String stringB = new String("Hello World! ");  
if (stringA == stringB) . . .
```

a. True

☒ b. False

32. In Java, will the following statement usually compare as true or false?

```
String stringA = "Hello World! ";  
String stringB = "Hello World! ";  
if (stringA == stringB) . . .
```

☒ a. True

b. False

33. What are the values of *x* and *y* after executing the following statements?

```
int myIntA;  
int myIntB;  
myIntA = 3;  
myIntB = myIntA++;
```

a. myIntA = 3, myIntB = 3

b. myIntA = 4, myIntB = 4

☒ c. myIntA = 4, myIntB = 3

d. myIntA = 3, myIntB = 4

34. Which of the following statements is true about exceptions?

☒ a. All exceptions must be caught or handled in your Java program

b. Only unchecked exceptions must be caught or handled in your Java program

c. Only checked exceptions must be caught or handled in your Java program

d. All of the above

e. None of the above

35. Which of the following is illegal when defining a class in Java?

a. class ClassA implements ClassB, ClassC...

b. class ClassA extends ClassB...

☒ c. class ClassA extends ClassB, ClassC...

d. class ClassA extends ClassB, implements ClassC

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36. When is it permitted to code the following?

```
ClassA obj = new ClassB();
```

- a. When ClassA is a subclass of ClassB
- ☒ b. When ClassB is a subclass of ClassA
- c. When ClassA and ClassB are both subclasses of the same superclass
- d. The statement is never legal

37. If a class is declared final, then:

- a. You cannot instantiate it
- b. You cannot extend it
- ☒ c. You cannot implement it
- d. "final" is invalid for a class

38. instanceof is a(n):

- ☒ a. Operator
- b. Method of an object
- c. Variable

39. Is it legal to access a static method using an instance of the class?

- ~~a. Yes. It is the best way to access such a method.~~
- ☒ b. Yes, but it is strongly discouraged.
- c. No

40. What is the primary difference between a hash map and a tree map?

HashMap is not sorted treemap is sorted

41. In an ArrayList, if you don't specify the initial capacity, what will the default capacity be set to? 10

42. Can a subclass access the private member variables of its own superclass?

- a. Yes
- ☒ b. No

43. How do you code a comment in HTML?

- a. <- comment >
- b. <-- comment -->
- ☒ c. <!-- comment -->
- d. <comment />

44. What is the recommended way to code a comment in a JSP? <%-- comment --%>

45. The HTML `<form>` element is a block level element, so browsers create a line break before and after the form.

- a. True
- b. False

46. List three different uses of the `<meta>` tag in an HTML page.

- a. define the charset
- b. specify key words for SEO
- c. specify the author

47. Given the HTML code below, fill in the missing CSS so that the text 'My Link' is assigned the color red.

Assume there are other unordered lists in the webpage, and you want just this link in this list to be red.

css:

```
ul #list2 {  
    color: red;  
}
```

html:

```
<ul id="list2">  
    <li><a href=" . . . ">My Link</a></li>  
</ul>
```

48. If you want to preserve the spacing in your HTML code, what tag could you use? <pre>

49. If you want three spaces between two values in your JSP, what entity can you code? nbsp;

50. Referencing the following CSS code, fill in the blanks with either 5px, 25px, or 40px.

```
border-width: 25px 5px 40px;
```

- a. Left-border 5px
- b. Bottom-border 40px
- c. Top-border 25px
- d. Right-border 5px

51. One em is equal to the current font size (specify the CSS measurement value).

52. In JavaScript, what is the value of 'myVariable' in the following code? true

```
var myVariable = !isNaN("12.345");
```

53. Given a Date object named dueDate, which statement(s) set(s) the month to February?

- a. dueDate.setMonth(1);
- b. dueDate.setMonth(2);
- c. dueDate.setMonth("Feb");
- d. dueDate.setMonth("February");
- e. dueDate.setMonth(Calendar.FEBRUARY);

54. What are the three primitive data types in JavaScript (code the correct upper/lower case)?

- a. string
- b. number
- c. boolean

55. Show an example to create an insurancePolicy using JavaScript in a JSP file.

```
function insurancePolicy ("type") {  
    this.type = type;  
}
```

56. Show the code to place the cursor in an input text field with id=price.

```
<input type="text" id="price" autofocus>
```

57. According to the BCBSSC standards, which is the valid way to access a form in your JavaScript?

- a. document.forms[0]
- b. document.formname

58. Given the HTML code below, write the JavaScript function so that if the checkbox isn't checked, an alert will prompt the user to make a selection. If the checkbox is checked, an alert will let the user know that their order will be processed. Follow BCBSSC standards.

```
<form name="orderForm">  
    <input type="checkbox" name="processOrder">Process my order...  
    <input type="button" value="Click to continue" onClick="goProcess();">  
</form>
```

```
<script>  
function goProcess() {  
    if (!document.getElementById("processOrder").checked) {  
        alert("you must make a selection");  
    } else {  
        alert("your order is being processed");  
    }  
}
```

59. When should you use JavaScript validation, and when should you use server validation?

You should always use server validation when processing on the server. JavaScript validation is useful when checking completion of all required elements on the site or when the user shouldn't have to wait on a response from the server.

60. Assume you are in the doPost method of a servlet. Write the code to forward a URL request to a JSP page, named mainmenu.jsp that is in a folder named jsp, where both are in the context named web5.

```
request.getRequestDispatcher("/web5/jsp/mainmenu.jsp").forward(
    request, response);
```

61. One of the advantages of the post method over the get method is that it is easier to bookmark.

a. True

☒ b. False

62. What is wrong with the following JSP footer code?

```
<% page import="java.util.*" %>
```

```
<%
```

```
    Calendar currentDate = new GregorianCalendar( );
```

```
    int currentYear = currentDate.get(Calendar.YEAR);
```

```
%>
```

```
GregorianCalendar currentDate = new GregorianCalendar();
```

63. Which of the following JSP expressions is valid?

a. `<%= request.getParameter("occupation"); %>`

☒ b. `<%= request.getParameter("occupation") %>`

c. `<%= String occupation = request.getParameter("occupation"); %>`

d. `<%= String occupation = request.getParameter("occupation") %>`

e. none of the above

64. Which of the following JSP expression(s) is equivalent to

```
<jsp: getProperty name="book" property="title" />
```

☒ a. `<%= book.getTitle() %>`

b. `<%= bean.getBook("title") %>`

c. `<%= bean.getTitle("book") %>`

d. `<%= book.getBook() %>`

65. Write the EL code for accessing the 'time' property in a session attribute named 'clock'.

```
$sessionScope.clock.time
```

66. Write the EL code for accessing the 'time' property in an attribute named 'clock' of the request object (explicitly specify the scope).

```
$requestScope.clock.time
```

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67. To get the effect of a Java nested if/else-if/else-if or switch, code this JSTL tag in your JSP:

<c:choose> .

68. If the following code is used to parse an attribute named 'emailAddress' that contains a value of 'jjones@net@asset.com', what is displayed in the browser?

```
<p>
  <c:forEach var="part" items="{emailAddress}" delims="@">
    ${part}<br>
  </c:forEach>
</p>
```

- a. jjones
net
asset
com
- b. jjones
net
asset.com
- c. jjones
net@asset
com
- d. jjones
net@asset.com

69. Another name for web.xml is deployment Descriptor.

70. Identify five items in the code below that break Java coding convention standards at BCBSSC.

```
package com.bcbssc.eltp.dbconn;  
  
public class TestStuff {  
    public static void main (String args[])  
    {  
        int count1, count2;  
        count1 = 10;  
        count2 = 5;  
        if(count1 != count2)  
            System.out.println("Count's don't equal!");  
    }  
}
```

- Class name does not give information
- Two lines of code when instantiating int count1 int count2
- When there is an if statement there should be an accompanying else
- Package name not descriptive
- count1, count2 is not descriptive

71. Given these values for a Java array {3,8,12,5,9,21,6,10}, write a loop that will display just the odd numbers.

```
for (int i = 0; i < array.length; i++) {  
    if (array[i] % 2 != 0) {  
        System.out.println(array[i]);  
    }  
}
```

72. What is the Singleton design pattern?

A design pattern that restricts the instantiation of a class to one object.

73. Give an advantage to using BigDecimal over float or double

BigDecimal has increased precision

74. Give a disadvantage to using BigDecimal over float or double (other than that it is more difficult to code).

BigDecimal is slower than float or double.

75. On which lines does autoboxing/unboxing occur in the following code?

```
1 Integer count = 5;
2 count++;
3 if (count.equals(6)) {
4     System.out.println(count + " is equal to 6");
5 }
```

lines 1 + 3

76. What is an advantage to using a factory?

Makes the code more robust by controlling instantiation.

77. What is another advantage to using a factory?

Helps encourage the practice of coding to the interface rather than implementation.

78. In Java, name 4 ways to loop thru lines of code in Java?

while
do while
iterative for
for each

79. In Java, name 3 ways to code conditional processing, other than the conditions on loops?

switch
ternary if
if / else if / else

NOTE: The following may have multiple answers

80. In Java, is **Employee** a variable, constructor, class, interface, or method? Class, Interface

81. In Java, is **employee** a variable, constructor, class, interface, or method? variable

82. In Java, is **employee()** a variable, constructor, class, interface, or method? method

83. In Java, is **Employee()** a variable, constructor, class, interface, or method? Constructor

84. In Java, Contrast a primitive and an object. Give at least three differences.

- Primitive stores 0's object stores null
- primitive stores values object stores references
- Primitives only have 8 types, objects have thousands

85. In Java, what is a null?

There is no reference

86. What type of variables can have null values in Java

Any non primitive variable

87. What is the difference between a static variable and a static final variable?

a static variable only occurs once but can still be changed. a static final cannot be changed on that one occurrence

88. What is a static method?

A method that only occurs once. For example sys.o or methods in factories. Can be used as many times as desired.

89. What is the difference between a static method and a static final method ?

A static method can be overridden as another static method.
A static final method cannot be overridden.

90. What restriction does "final" place on a method?

Final methods cannot be changed (overridden) once created.

91. What is a method signature?

The name of the method and the parameter types in order.

92. What is method overloading?

Overloading is methods with the same name but different parameter list.

93. What is method overriding?

The method signatures match and return type and throws are compatible

94. A primitive array holds values while an array of objects holds references.

95. What is an advantage to using an interface?

Allows polymorphism w/out a superclass

96. What is another advantage to using an interface?

Ensures encapsulated code

97. What is a third advantage to using an interface?

give availability to specific methods for the interface type.

98. Name three places where css can be coded for an html or JSP file

External style sheet link rel...
inline style=" "
style tag

99. Name three places where JavaScript can be coded for an html or JSP file.

External source <script src=...
embedded
script tag in head/body

100. What is the DOM?

Document object Model. represents the page. more of a containment hierarchy w/ nodes

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101. Name three events that you can use to trigger a JavaScript function?

onClick
onLoad
onHover

102. Describe the MVC design pattern?

spell 2.
An architecture that encourages separations of concerns.
The model is the logic (POJO/Bean classes) the view is the output (HTML/JSP)
The controller is the manager (main/Driver).

103. JSPs look like HTML. What are two huge differences between a JSP and HTML?

JSP are dynamic pages while html is static.

JSP is a server side scripting language while html is a client side scripting language.

104. (6 points) What is the non-host equivalent of each of the following host terms:

- a. Dataset → Library
- b. JCL → Programs
- c. Compiler → build
- d. Endeavor → Github
- e. Abend → exception
- f. PERFORM → calling a method

105. What is your favorite thing that you have learned and/or accomplished so far in the ELTP-Java class?

Servlets and JSP's were really cool and I felt accomplished when I finally got the hang of them.

