Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

1. Which of the following correctly defines a queue?
   ☐ a list of elements with a first in last out order.
   ☐ a list of elements with a first in first out order. (*)
   ☐ something that enables you to create a generic class without specifying a type between angle brackets <>.
   ☐ it is a keyword in Java that restrict the use of the code to local users only.
   ❌ Incorrect. Refer to Section 3 Lesson 2.

2. A HashSet is a set that is similar to an ArrayList. A HashSet does not have any specific ordering.
   True or false?
   ☑ True (*)
   ☐ False
   ☑ Correct

3. Which of the following correctly initializes an object named cell of the class Telephones whose generic type is Cellular?
   ☐ Telephones cell = new Telephones(Cellular c);
   ☐ Telephones(Cellular) cell = new Telephones(Cellular);
   ☐ Telephones<> cell = new Telephones<>(Cellular c);
   ☐ Telephones cell = new Telephones(); (*)
   ☐ None of the above.
   ❌ Incorrect. Refer to Section 3 Lesson 2.

4. What is a set?
   ☐ something that enables you to create a generic class without specifying a type between angle brackets <>.
   ☐ a collection of elements that does not contain duplicates. (*)
   ☐ a keyword in Java that initializes an ArrayList.
   ☐ a collection of elements that contains duplicates.
   ❌ Incorrect. Refer to Section 3 Lesson 2.

5. A LinkedList is a list of elements that is dynamically stored.
   True or false?
   ☑ True (*)
   ☐ False
   ☑ Correct
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

6. When would an enum (or enumeration) be used?

- When you want to be able to create any number of objects of that class.
- When you wish to initialize a HashSet.
- When you wish to remove data from memory.
- When you already know all the possibilities for objects of that class. (*)

Incorrect. Refer to Section 3 Lesson 2.

7. Which scenario best describes a stack?

- A pile of pancakes with which you add some to the top and remove them one by one from the top to the bottom. (*)
- A row of books that you can take out of only the middle of the books first and work your way outward toward either edge.
- A line at the grocery store where the first person in the line is the first person to leave.
- All of the above describe a stack.

Incorrect. Refer to Section 3 Lesson 2.

8. Which of the following methods adds a Key-Value map to a HashMap?

- put(Key, Value) (*)
- add(Key, Value)
- get(Key, Value)
- remove(Key, Value)

Incorrect. Refer to Section 3 Lesson 2.

9. What are maps that link a Key to a Value?

- Arrays
- ArrayLists
- HashSets
- HashMaps (*)

Incorrect. Refer to Section 3 Lesson 2.

10. These are a list of elements that have a first in last out ordering.

- Arrays
- Stacks (*)
- HashMaps
- Enums

Correct
Section 3
(Answer all questions in this section)

11. Which of the following correctly initializes a generic class Telephones with one generic type Type1? 
   - public class Telephones(Type1 T){//code here}
   - public class Telephones { //code here}
   - public class Telephones { //code here}
   - public class Telephones(Type1) { //code here}
   - None of the above. (*)
   
   [X] Incorrect. Refer to Section 3 Lesson 2.

12. Why can a LinkList be considered a stack and a queue?
   (Choose all correct answers)
   - Because you can add elements to the end of it. (*)
   - Because you can add element to the beginning of it. (*)
   - Because you can remove elements from the end of it. (*)
   - Because you can remove elements from the beginning of it. (*)
   
   [X] Incorrect. Refer to Section 3 Lesson 2.

13. Which scenario best describes a queue?
   - A pile of pancakes with which you add some to the top and remove them one by one from the top to the bottom.
   - A row of books that you can take out of only the middle of the books first and work your way outward toward either edge.
   - A line at the grocery store where the first person in the line is the first person to leave. (*)
   - All of the above describe a queue.
   
   [X] Incorrect. Refer to Section 3 Lesson 2.

14. Classes define and implement what?
   - some methods with implementations
   - all methods with implementations
   - all method definitions without any implementations
   - variables and methods (*)
   - constants and all methods with implementations
   
   [X] Incorrect. Refer to Section 3 Lesson 1.

15. Abstract classes define what?
   - some methods with implementations (*)
   - all methods with implementations
   - all method definitions without any implementations
   - variables and methods
   - constants and all methods with implementations
   
   [X] Incorrect. Refer to Section 3 Lesson 1.
Section 3
(Answer all questions in this section)

16. Virtual method invocation occurs when you call a superclass method for a subclass with an overriding method of the same name. True or false?

- True (*)
- False

Correct

17. The instanceof operator only works with class instances. True or false?

- True (*)
- False

Correct

18. A downward cast of a subclass lets you access a subclass specialized method call. True or false?

- True (*)
- False

Correct

19. Classes can be made immutable by placing a final key word before all method implementations. True or false?

- True (*)
- False

Correct

20. Virtual method invocation occurs when you call a method from a superclass. True or false?

- True
- False (*)

Incorrect. Refer to Section 3 Lesson 1.
Section 3
(Answer all questions in this section)

21. The instanceof operator works with class instances and primitive data types. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.

22. A method with public access can be subclassed. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.

23. A method with public access level can be subclassed by?
   - Only a subclass in the same package
   - A subclass in any package
   - A static nested class
   - An instance nested class
   - None of the above. We cannot subclass a method in Java. (*)
   - Incorrect. Refer to Section 3 Lesson 1.

24. A upward cast means all instance variables of the subclass are permanently lost to the instance. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.

25. Modeling business problems requires understanding the interaction between interfaces, abstract and concrete classes, subclasses, and enum classes. True or false?
   - True (*)
   - False
   - Correct
Test: Java Programming Final Exam
Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

**Section 3**
(Answer all questions in this section)

26. Upward casting an object instance means you can't access subclass specific methods. True or false?
   - True (*)
   - False
   - Correct

27. The Files class provides an instance method that creates a new BufferedReader. True or false?
   - True (*)
   - False
   - Incorrect. Refer to Section 3 Lesson 5.

28. Serialized classes are less flexible to change than non-serialized classes. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 5.

29. The BufferedOutputStream is a direct subclass of what other class?
   - FilterOutputStream (*)
   - OutputStream
   - PrintStream
   - DigestOutputStream
   - ObjectOutputStream
   - Incorrect. Refer to Section 3 Lesson 5.

30. The System.in is what type of stream?
   - A BufferedWriter stream
   - A PrintStream
   - An InputStream (*)
   - A BufferedReader stream
   - A Reader stream
   - Correct
Section 3

(Answer all questions in this section)

31. The java.io package has problems with missing operations, like copy, move, and such. True or false?
   - True (*)
   - False
   - Correct

32. The serialize() method writes a serialized object. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 5.

33. The java.nio.file package has improved exception handling. True or false?
   - True (*)
   - False
   - Correct

34. The Files class performs which of the following?
   - navigate the file system
   - create files (*)
   - works with relative paths
   - works with absolute paths
   - works across disk volumes
   - Incorrect. Refer to Section 3 Lesson 5.

35. What symbol is used to separate multiple exceptions in one catch statement?
   - &&
   - == (equals equals)
   - None, multiple exceptions can't be handled in one catch statement.
   - A single bar: | (*)
   - Incorrect. Refer to Section 3 Lesson 4.
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

36. When do you use try-catch statements?
   - When you want to exit your code before an exception is caught.
   - If you want to switch different values for a certain variable.
   - When you want to handle an exception. (*)
   - Every time you would like to assign a new value to a variable that is being asserted.
   - Incorrect. Refer to Section 3 Lesson 4.

37. The finally clause only executes when an exception is not caught and thrown.
   True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 4.

38. Methods can not throw exceptions.
   True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 4.

39. Assertions are boolean statements to test and debug your programs.
   True or false?
   - True (*)
   - False
   - Correct

40. In what order do multiple catch statements execute?
   - The order they are declared in (most specific first) (*)
   - They all execute at the same time
   - They order they are declared in (most general first)
   - None of them execute since you can't have multiple catch statements.
   - Correct
**Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.**

### Section 3  
(Answer all questions in this section)

**41. When is the proper time to use exceptions?**
- When you want to print statements to the screen.
- When you want to efficiently and reliably debug your program. (*)
- If you purposefully put errors in your code you wish to handle.
- Every time a new method is called.

X Incorrect. Refer to Section 3 Lesson 4.

**42. When should you not use assertions?**

(Choose all correct answers)
- When you want your program to execute efficiently
- When you want to check the values of parameters. (*)
- When you call methods that may cause side effects in your assertion check. (*)
- When you believe you have no bugs in your code.

X Incorrect. Refer to Section 3 Lesson 4.

**43. Multiple exceptions can be caught in one catch statement.**  
True or false?
- True (*)
- False
- Correct

**44. What is the function of the asterisk (*) in regular expressions?**
- The asterisk has no function in regular expressions.
- Indicates that the preceding character may occur 1 or more times in a proper match.
- Indicates that the preceding character may occur 0 or 1 times in a proper match.
- Indicates that the preceding character may occur 0 or more times in a proper match. (*)

X Incorrect. Refer to Section 3 Lesson 3.

**45. Consider that you are writing a program for analyzing feedback on the video game you have developed. You have completed everything except the segment of code that checks that the user's input, String userI, is a valid rating. Note that a valid rating is a single digit between 1 and 5 inclusive. Which of the following segments of code returns true if the user's input is a valid rating?**

(Choose all correct answers)
- return userI.matches("[1-5]"); (*)
- return userI.matches("{1-5}");
- return userI.matches("[1-5].*");
- return userI.matches("[1-5]{1}"); (*)

X Incorrect. Refer to Section 3 Lesson 3.
**Test: Java Programming Final Exam**

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

**Section 3**

(Answer all questions in this section)

46. Matcher has a find method that checks if the specified pattern exists as a sub-string of the string being matched. True or false?
   - True (*)
   - False
   - Correct

47. Which of the following does not correctly match the regular expression symbol to its proper function?
   - 
   - "\{x\}" means there must be x occurrences of the preceding character in the string to be a match.
   - "?" means there may be zero or one occurrences of the preceding character in the string to be a match.
   - "+" means there may be zero or more occurrences of the preceding character in the string to be a match. (*)
   - "\{x,\}" means there may be x or more occurrences of the preceding character in the string to be a match.
   - "\{x,y\}" means there may be between x and y occurrences of the preceding character in the string to be a match.
   - Correct

48. Square brackets are a representation for any character in regular expressions "[ ]". True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 3.

49. The following code correctly initializes a pattern with the regular expression "[0-9]{2}/[0-9]{2}/[0-9]{2}".
   - Pattern dateP = Pattern.compile("[0-9]{2}/[0-9]{2}/[0-9]{2}");
   - True or false?
   - True (*)
   - False
   - Correct

50. What is the correct explanation of when this code will return true? return str.matches(".*[0-9]{6}.*");
   - Any time that str contains two dots.
   - Any time that str contains a sequence of 6 digits. (*)
   - Any time that str has between zero and nine characters followed by a 6.
   - Any time str contains a 6.
   - Always.
   - Incorrect. Refer to Section 3 Lesson 3.
Section 3
(Answer all questions in this section)

1. Which of the following methods for the String class take a regular expression as a parameter and returns true if the string matches the expression?
   - equals(String regex)
   - equalsIgnoreCase(String regex)
   - compareTo(String regex)
   - matches(String regex) (*)
   ✗ Incorrect. Refer to Section 3 Lesson 3.

2. Which of the following methods are specific to StringBuilders?
   - append
   - delete
   - insert
   - replace
   - All of the above. (*)
   ✔ Correct

3. Which of the following methods can be used to replace a segment in a string with a new string?
   - remove(String oldString, String newString)
   - replaceAll(String oldString, String newString) (*)
   - replaceAll(String newString)
   - substring(int start, int end, String newString)
   - None of the above. There is no replaceAll(String newString) method with one argument.
   ✔ Correct

4. Which of the following does not correctly match the regular expression symbol to its proper function?
   - "\{x\}" means there must be x occurrences of the preceding character in the string to be a match.
   - "?" means there may be zero or one occurrences of the preceding character in the string to be a match.
   - "\+\" means there may be zero or more occurrences of the preceding character in the string to be a match. (*)
   - "\{x,\}" means there may be x or more occurrences of the preceding character in the string to be a match.
   - "\{x,y\}" means there may be between x and y occurrences of the preceding character in the string to be a match.
   ✗ Incorrect. Refer to Section 3 Lesson 3.

5. split is a method for Strings that parses a string by a specified character, or, if unspecified, by spaces, and returns the parsed elements in an array of Strings. True or false?
   - True
   - False (*)
   ✗ Incorrect. Refer to Section 3 Lesson 3.
Section 3
(Answer all questions in this section)

6. Matcher has a find method that checks if the specified pattern exists as a sub-string of the string being matched.
   True or false?
   - True (*)
   - False
   Correct

7. Consider that you are making a calendar and decide to write a segment of code that returns true if the string month is April, May, June, or July. Which code segment correctly implements use of regular expressions to complete this task?
   - return month.matches("April|May|June|July"); (*)
   - return month.substring(0,3);
   - return month.compareTo("April, May, June, July");
   - return month.equals("April, May, June, July");
   - return month.matches("April"|"May"|"June"|"July");
   Incorrect. Refer to Section 3 Lesson 3.

8. The System.in is what type of stream?
   - A BufferedWriter stream
   - A PrintStream
   - An InputStream (*)
   - A BufferedReader stream
   - A Reader stream
   Correct

9. The System.out is what type of stream?
   - A BufferedWriter stream
   - A PrintStream (*)
   - A BufferedReader stream
   - An OutputStream
   - A Reader stream
   Correct

10. The Paths class provides a static get() method to find a valid Path. True or false?
    - True (*)
    - False
    Correct
Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

**Section 3**
(Answer all questions in this section)

11. The System.err writes standard output to the console.
   True or false?
   - True (*)
   - False
   - Correct

12. You can read input by character or line.
   True or false?
   - True (*)
   - False
   - Correct

13. The java.nio.file package has improved exception handling.
   True or false?
   - True (*)
   - False
   - Correct

14. The serialize() method writes a serialized object.
   True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 5.

15. The Files class performs which of the following?
   - navigate the file system
   - create files (*)
   - works with relative paths
   - works with absolute paths
   - works across disk volumes
   - Correct
Section 3
(Answer all questions in this section)

16. Which of the following correctly initializes an object named cell of the class Telephones whose generic type is Cellular?

- Telephones cell = new Telephones(Cellular c);
- Telephones(Cellular) cell = new Telephones(Cellular);
- Telephones<> cell = new Telephones<> (Cellular c);
- Telephones cell = new Telephones(); (*)
- None of the above.

**Incorrect. Refer to Section 3 Lesson 2.**

17. The local petting zoo is writing a program to be able to collect and group animals according to species to better keep track of what animals they have. Which of the following correctly defines a collection that may create these types of groupings for each species at the zoo?

- public class animalCollection {...} (*)
- public class animalCollection(AnimalType T) {...}
- public class animalCollection {...}
- public class animalCollection(animalType) {...}
- None of the above.

**Incorrect. Refer to Section 3 Lesson 2.**

18. What is a set?

- something that enables you to create a generic class without specifying a type between angle brackets < >.
- a collection of elements that does not contain duplicates. (*)
- a keyword in Java that initializes an ArrayList.
- a collection of elements that contains duplicates.

**Incorrect. Refer to Section 3 Lesson 2.**

19. These are a list of elements that have a first in last out ordering.

- Arrays
- Stacks (*)
- HashMaps
- Enums
- Correct

20. Which of the following correctly defines a queue?

- a list of elements with a first in last out order.
- a list of elements with a first in first out order. (*)
- something that enables you to create a generic class without specifying a type between angle brackets < >.
- it is a keyword in Java that restricts the use of the code to local users only.

**Incorrect. Refer to Section 3 Lesson 2.**
Section 3
(Answer all questions in this section)

21. When would an enum (or enumeration) be used?
   - When you want to be able to create any number of objects of that class.
   - When you wish to initialize a HashSet.
   - When you wish to remove data from memory.
   - When you already know all the possibilities for objects of that class. (*)
     - Incorrect. Refer to Section 3 Lesson 2.

22. A LinkedList is a list of elements that is dynamically stored. True or false?
   - True (*)
   - False
   - Correct

23. Which scenario best describes a stack?
   - A pile of pancakes with which you add some to the top and remove them one by one from the top to the bottom. (*)
   - A row of books that you can take out of only the middle of the books first and work your way outward toward either edge.
   - A line at the grocery store where the first person in the line is the first person to leave.
   - All of the above describe a stack.
     - Incorrect. Refer to Section 3 Lesson 2.

24. Why can a LinkedList be considered a stack and a queue?
   (Choose all correct answers)
   - Because you can add elements to the end of it. (*)
   - Because you can add element to the beginning of it. (*)
   - Because you can remove elements from the end of it. (*)
   - Because you can remove elements from the beginning of it. (*)
     - Incorrect. Refer to Section 3 Lesson 2.

25. Which scenario best describes a queue?
   - A pile of pancakes with which you add some to the top and remove them one by one from the top to the bottom.
   - A row of books that you can take out of only the middle of the books first and work your way outward toward either edge.
   - A line at the grocery store where the first person in the line is the first person to leave. (*)
   - All of the above describe a queue.
     - Incorrect. Refer to Section 3 Lesson 2.
Section 3
(Answer all questions in this section)

26. A HashSet is a set that is similar to an ArrayList. A HashSet does not have any specific ordering. True or false?
   - True (*)
   - False
   - Correct

27. What is the correct way to initialize a HashSet?
   - ClassMates = public class
     HashSet();
   - String classMates = new
     String();
   - HashSet classMates =
     new HashSet(); (*)
   - classMates = new HashSet[String]();
   - Incorrect. Refer to Section 3 Lesson 2.

28. Which of the following correctly initializes a generic class Telephones with one generic type Type1?
   - public class Telephones(Type1 T){//code here}
   - public class Telephones {//code here}
   - public class Telephones {//code here}
   - public class Telephones(Type1) {//code here}
   - None of the above. (*)
   - Incorrect. Refer to Section 3 Lesson 2.

29. The finally clause only executes when an exception is not caught and thrown. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 4.

30. Methods can not throw exceptions. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 4.
Section 3
(Answer all questions in this section)

31. When should you not use assertions?

(Choose all correct answers)
- When you want your program to execute efficiently
- When you want to check the values of parameters. (*)
- When you call methods that may cause side effects in your assertion check. (*)
- When you believe you have no bugs in your code.

Incorrect. Refer to Section 3 Lesson 4.

32. Why should you not use assertions to check parameters?

- Assertions can be disabled at run time which may cause unexpected results in your assertions (*)
- Assertions do not work on parameters
- Not all methods have parameters, therefore assertions should never be used on parameters
- It is hard to assume expected values for parameters

Incorrect. Refer to Section 3 Lesson 4.

33. When do you use try-catch statements?

- When you want to exit your code before an exception is caught.
- If you want to switch different values for a certain variable.
- When you want to handle an exception. (*)
- Every time you would like to assign a new value to a variable that is being asserted.

Correct

34. When is the proper time to use exceptions?

- When you want to print statements to the screen.
- When you want to efficiently and reliably debug your program. (*)
- If you purposefully put errors in your code you wish to handle.
- Every time a new method is called.

Correct

35. Multiple exceptions can be caught in one catch statement. True or false?

- True (*)
- False

Correct
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

36. In what order do multiple catch statements execute?
   - The order they are declared in (most specific first) (*)
   - They all execute at the same time
   - They order they are declared in (most general first)
   - None of them execute since you can't have multiple catch statements.
   - Incorrect. Refer to Section 3 Lesson 4.

37. What symbol is used to separate multiple exceptions in one catch statement?
   - &&
   - (==) (equals equals)
   - None, multiple exceptions can't be handled in one catch statement.
   - A single bar: |
   - Incorrect. Refer to Section 3 Lesson 4.

38. Virtual method invocation requires that the superclass method is defined as which of the following.
   - A public static method.
   - A private final method.
   - A public method. (*)
   - A public final method.
   - A default final method.
   - Correct

39. Modeling business problems requires understanding the interaction between interfaces, abstract
    and concrete classes, subclasses, and enum classes. True or false?
   - True (*)
   - False
   - Correct

40. A method with default access can be subclassed. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.
Section 3
(Answer all questions in this section)

41. Calling a subclass method by referring to a superclass works because you have access to all specialized methods through virtual method invocation. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.

42. The instanceof operator works inside an if statement. True or false?
   - True (*)
   - False
   - Correct

43. Virtual method invocation occurs when you call a method from a superclass. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.

44. A upward cast means all instance variables of the subclass are permanently lost to the instance. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.

45. Classes define and implement what?
   - some methods with implementations
   - all methods with implementations
   - all method definitions without any implementations
   - variables and methods (*)
   - constants and all methods with implementations
   - Incorrect. Refer to Section 3 Lesson 1.
Section 3
(Answer all questions in this section)

46. A method with public access level can be subclassed by?

- Only a subclass in the same package
- A subclass in any package
- A static nested class
- An instance nested class
- None of the above. We cannot subclass a method in Java. (*)

   Incorrect. Refer to Section 3 Lesson 1.

47. The instanceof operator works with class instances and primitive data types.
   True or false?

- True
- False (*)

   Incorrect. Refer to Section 3 Lesson 1.

48. A downward cast of a subclass lets you access a subclass specialized method call.
   True or false?

- True (*)
- False

   Correct

49. Immutable classes can be subclassed.
   True or false?

- True
- False (*)

   Incorrect. Refer to Section 3 Lesson 1.

50. Abstract classes define what?

- some methods with implementations (*)
- all methods with implementations
- all method definitions without any implementations
- variables and methods
- constants and all methods with implementations

   Incorrect. Refer to Section 3 Lesson 1.
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

1. Assertions are boolean statements to test and debug your programs.
   True or false?
   - True (*)
   - False
   - Correct

2. Methods can not throw exceptions.
   True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 4.

3. When is the proper time to use exceptions?
   - When you want to print statements to the screen.
   - When you want to efficiently and reliably debug your program. (*)
   - If you purposefully put errors in your code you wish to handle.
   - Every time a new method is called.
   - Correct

4. When do errors occur in code?

   (Choose all correct answers)
   - When there is an error in your logic. (*)
   - When and exception is thrown (*)
   - When hardware issues occur (e.g., not enough memory). (*)
   - When files are not found or are unreadable. (*)
   - Incorrect. Refer to Section 3 Lesson 4.

5. In what order do multiple catch statements execute?

   - The order they are declared in (most specific first) (*)
   - They all execute at the same time
   - They order they are declared in (most general first)
   - None of them execute since you can't have multiple catch statements.
   - Incorrect. Refer to Section 3 Lesson 4.
**Test: Java Programming Final Exam**

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

**Section 3**  
(Answer all questions in this section)

6. What is an exception?

- A consistent way of handling various errors. (*)
- An error that occurs against the flow of your program.
- When a file fails to open.
- If your program exits before you expect it to.
  
  ✗ Incorrect. Refer to Section 3 Lesson 4.

7. The finally clause only executes when an exception is not caught and thrown. True or false?

- True
- False (*)
  
  ✗ Incorrect. Refer to Section 3 Lesson 4.

8. When do you use try-catch statements?

- When you want to exit your code before an exception is caught.
- If you want to switch different values for a certain variable.
- When you want to handle an exception. (*)
- Every time you would like to assign a new value to a variable that is being asserted.
  
  ✗ Incorrect. Refer to Section 3 Lesson 4.

9. What symbol is used to separate multiple exceptions in one catch statement?

- &&
- (==) (equals equals)
- None, multiple exceptions can't be handled in one catch statement.
- A single bar: | (*)
  
  ✗ Incorrect. Refer to Section 3 Lesson 4.

10. The local petting zoo is writing a program to be able to collect and be able to group animals according to species to better keep track of what animals they have. Which of the following correctly defines a collection that may create these types of groupings for each species at the zoo?

- public class animalCollection {...} (*)
- public class animalCollection(AnimalType T) {...}
- public class animalCollection {...}
- public class animalCollection(animalType) {...}
- None of the above.
  
  ✓ Correct
Section 3
(Answer all questions in this section)

11. When would an enum (or enumeration) be used?

- When you want to be able to create any number of objects of that class.
- When you wish to initialize a HashSet.
- When you wish to remove data from memory.
- When you already know all the possibilities for objects of that class. (*)

Incorrect. Refer to Section 3 Lesson 2.

12. What is a set?

- something that enables you to create a generic class without specifying a type between angle 
  brackets <>.
- a collection of elements that does not contain duplicates. (*)
- a keyword in Java that initializes an ArrayList.
- a collection of elements that contains duplicates.

Correct

13. A List is an ordered Collection that may contain duplicate elements.

True or false?

- True (*)
- False

Correct

14. Which scenario best describes a queue?

- A pile of pancakes with which you add some to the top and remove them one by one from the 
  top to the bottom.
- A row of books that you can take out of only the middle of the books first and work your way 
  outward toward either edge.
- A line at the grocery store where the first person in the line is the first person to 
  leave. (*)
- All of the above describe a queue.

Incorrect. Refer to Section 3 Lesson 2.

15. Which of the following correctly adds "Cabbage" to the ArrayList vegetables?

- vegetables += "Cabbage";
- vegetables.get("Cabbage");
- vegetables[0] = "Cabbage";
- vegetables.add("Cabbage"); (*)

Incorrect. Refer to Section 3 Lesson 2.
Section 3
(Answer all questions in this section)

16. Which of the following correctly defines a queue?

- a list of elements with a first in last out order.
- a list of elements with a first in first out order. (*)
- something that enables you to create a generic class without specifying a type between angle brackets <>.
- it is a keyword in Java that restrict the use of the code to local users only.

Correct

17. Which of the following correctly initializes a generic class Telephones with one generic type Type1?

- public class Telephones<Type1 T> {//code here}
- public class Telephones {//code here}
- public class Telephones {//code here}
- public class Telephones(Type1) {//code here}
- None of the above. (*)

Incorrect. Refer to Section 3 Lesson 2.

18. A HashSet is a set that is similar to an ArrayList. A HashSet does not have any specific ordering. True or false?

- True (*)
- False

Correct

19. What is the correct way to initialize a HashSet?

- ClassMates = public class
  HashSet();
- String classMates = new
  String();
- HashSet classMates =
  new HashSet(); (*)
- classMates = new HashSet[String]();

Incorrect. Refer to Section 3 Lesson 2.

20. These are a list of elements that have a first in last out ordering.

- Arrays
- Stacks (*)
- HashMaps
- Enums

Correct
Section 3
(Answer all questions in this section)

21. What is wrong with the following declaration of the ArrayList of strings arr?

```java
ArrayList<String> arr = new ArrayList<String>();
```

(Choose all correct answers)

- Only the 1st occurrence of "(String)" should be replaced with ""
- The angled brackets "<>" need to be replaced with parenthesis "()" and parenthesis "()" need to be replaced by "<>" (*)
- Both occurrences of "(String)" should be replaced with "" (*)
- Nothing, this declaration is correct.

Correct

22. A LinkedList is a list of elements that is dynamically stored.
True or false?

- True (*)
- False

Correct

23. Which of the following methods for the String class take a regular expression as a parameter and returns true if the string matches the expression?

- equals(String regex)
- equalsIgnoreCase(String regex)
- compareTo(String regex)
- matches(String regex) (*)

Incorrect. Refer to Section 3 Lesson 3.

24. Which of the following are true about the method split?

(Choose all correct answers)

- It can be used with a string as a parameter. (*)
- It's default, with no specified parameter, is parsing by spaces.
- It returns an array of strings. (*)
- It can be used with a regular expression as a parameter. (*)

Incorrect. Refer to Section 3 Lesson 3.

25. Which of the following correctly defines Matcher?

- a regular expression symbol that represents any character.
- a method of dividing a string into a set of sub-strings.
- a class in the java.util.regex package that stores the matches between a pattern and a string. (*)
- a class in the java.util.regex package that stores the format of a regular expression.

Incorrect. Refer to Section 3 Lesson 3.
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

26. Square brackets are a representation for any character in regular expressions ":[ ]". True or false?
   - True
   - False (*)
   ✗ Incorrect. Refer to Section 3 Lesson 3.

27. Consider that you are writing a program for analyzing feedback on the video game you have developed. You have completed everything except the segment of code that checks that the user's input, String userI, is a valid rating. Note that a valid rating is a single digit between 1 and 5 inclusive. Which of the following segments of code returns true if the user's input is a valid rating?

   (Choose all correct answers)
   - return userI.matches("[1-5]"); (*)
   - return userI.matches("{1-5}");
   - return userI.matches("[1-5].*");
   - return userI.matches("[1-5]{1}"); (*)
   ✗ Incorrect. Refer to Section 3 Lesson 3.

28. What is the correct explanation of when this code will return true? return str.matches(".*[0-9]{6}.*");

   - Any time that str contains two dots.
   - Any time that str contains a sequence of 6 digits. (*)
   - Any time that str has between zero and nine characters followed by a 6.
   - Any time str contains a 6.
   - Always.
   ✅ Correct

29. Which of the following does not correctly match the regular expression symbol to its proper function?

   - "\{x\}" means there must be x occurrences of the preceding character in the string to be a match.
   - "?" means there may be zero or one occurrences of the preceding character in the string to be a match.
   - "+" means there may be zero or more occurrences of the preceding character in the string to be a match. (*)
   - "\{x,\}" means there may be x or more occurrences of the preceding character in the string to be a match.
   - "\{x,y\}" means there may be between x and y occurrences of the preceding character in the string to be a match.
   ✅ Correct

30. Which of the following is an absolute Windows path?

   - /home/user/username
   - /
   - \Users\UserName\data
   - C:\Users\UserName\data (*)
   - data
   ✗ Incorrect. Refer to Section 3 Lesson 5.
Section 3
(Answer all questions in this section)

31. The java.io package has problems with missing operations, like copy, move, and such. True or false?
   - True (*)
   - False
   - Correct

32. The deSerialize() method writes a serialized object. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 5.

33. Encoding an object into a stream is serialization. True or false?
   - True (*)
   - False
   - Correct

34. The java.nio.file package has improved exception handling. True or false?
   - True (*)
   - False
   - Correct

35. The System.out is what type of stream?
   - A BufferedWriter stream
   - A PrintStream (*)
   - A BufferedReader stream
   - An OutputStream
   - A Reader stream
   - Correct
Section 3
(Answer all questions in this section)

36. The serialize() method writes a serialized object. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 5.

37. The BufferedInputStream is a direct subclass of what other class?
   - InputStream
   - FilterInputStream (*)
   - InputStream
   - FileInputStream
   - PipedInputStream
   - Correct

38. Modeling business problems requires understanding the interaction between interfaces, abstract and concrete classes, subclasses, and enum classes. True or false?
   - True (*)
   - False
   - Correct

39. Immutable classes do allow instance variables to be changed by overriding methods. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.

40. The instanceof operator works with class instances and primitive data types. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.
Section 3
(Answer all questions in this section)

41. A method with public access can be subclassed.
   True or false?
   - True
   - False (*)
   Incorrect. Refer to Section 3 Lesson 1.

42. Classes define and implement what?
   - some methods with implementations
   - all methods with implementations
   - all method definitions without any implementations
   - variables and methods (*)
   - constants and all methods with implementations
   Incorrect. Refer to Section 3 Lesson 1.

43. Classes can be made immutable by placing a final key word before all method implementations.
   True or false?
   - True (*)
   - False
   Correct

44. Abstract classes define what?
   - some methods with implementations (*)
   - all methods with implementations
   - all method definitions without any implementations
   - variables and methods
   - constants and all methods with implementations
   Incorrect. Refer to Section 3 Lesson 1.

45. Interfaces define what?
   - some methods with implementations
   - all methods with implementations
   - all method definitions without any implementations (*)
   - variables and methods
   - constants and all methods with implementations
   Correct
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

46. Virtual method invocation requires that the superclass method is defined as which of the following.
   - A public static method.
   - A private final method.
   - A public method. (*)
   - A public final method.
   - A default final method.
   - Correct

47. Virtual method invocation occurs when you call a superclass method for a subclass with an overriding method of the same name.
   True or false?
   - True (*)
   - False
   - Correct

48. Immutable classes can be subclassed.
   True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.

49. A method with public access level can be subclassed by?
   - Only a subclass in the same package
   - A subclass in any package
   - A static nested class
   - An instance nested class
   - None of the above. We cannot subclass a method in Java. (*)
   - Incorrect. Refer to Section 3 Lesson 1.

50. Virtual method invocation is:
   - Not part of polymorphism.
   - When the method of a superclass is used on a superclass reference.
   - When the method of a subclass is used on a superclass reference. (*)
   - When the method of a subclass is used on a subclass reference.
   - Incorrect. Refer to Section 3 Lesson 1.
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

1. The `BufferedOutputStream` is a direct subclass of what other class?
   - FilterOutputStream (*)
   - OutputStream
   - PrintStream
   - DigestOutputStream
   - ObjectOutputStream
   
   Correct

2. The `Files` class performs which of the following?
   - navigate the file system
   - create files (*)
   - works with relative paths
   - works with absolute paths
   - works across disk volumes
   
   Correct

3. Serialized classes are less flexible to change than non-serialized classes.
   True or false?
   - True
   - False (*)
   
   Incorrect. Refer to Section 3 Lesson 5.

4. Encoding an object into a stream is serialization.
   True or false?
   - True (*)
   - False
   
   Correct

5. The `System.in` is what type of stream?
   - A BufferedWriter stream
   - A PrintStream
   - An InputStream (*)
   - A BufferedReader stream
   - A Reader stream
   
   Correct
Section 3
(Answer all questions in this section)

6. The Files class provides an instance method that creates a new BufferedReader. True or false?
   - True (*)
   - False
   - Correct

7. The System.err writes standard output to the console. True or false?
   - True (*)
   - False
   - Correct

8. The Paths class provides a static get() method to find a valid Path. True or false?
   - True (*)
   - False
   - Correct

9. Which of the following correctly defines a repetition operator?
   - a symbol that represents any character in regular expressions.
   - a method that returns the number of occurrences of the specified character.
   - any symbol in regular expressions that indicates the number of occurrences a specified character appears in a matching string. (*)
   - None of the above.
   - Incorrect. Refer to Section 3 Lesson 3.

10. Which of the following methods can be used to replace a segment in a string with a new string?
    - remove(String oldString, String newString)
    - replaceAll(String oldString, String newString) (*)
    - replaceAll(String newString)
    - substring(int start, int end, String newString)
    - None of the above. There is no replaceAll(String newString) method with one argument.
    - Correct
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

11. Split is a method for Strings that parses a string by a specified character, or, if unspecified, by spaces, and returns the parsed elements in an array of Strings. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 3.

12. Which of the following are true about the method split?
   - It can be used with a string as a parameter. (*)
   - It's default, with no specified parameter, is parsing by spaces.
   - It returns an array of strings. (*)
   - It can be used with a regular expression as a parameter. (*)
   - Incorrect. Refer to Section 3 Lesson 3.

13. Consider that you are making a calendar and decide to write a segment of code that returns true if the string month is April, May, June, or July. Which code segment correctly implements use of regular expressions to complete this task?
   - return month.matches("April|May|June|July"); (*)
   - return month.substring(0,3);
   - return month.compareTo("April, May, June, July");
   - return month.equals("April, May, June, July");
   - return month.matches("April"|"May"|"June"|"July");
   - Incorrect. Refer to Section 3 Lesson 3.

14. What is the function of the asterisk (*) in regular expressions?
   - The asterisk has no function in regular expressions.
   - Indicates that the preceding character may occur 1 or more times in a proper match.
   - Indicates that the preceding character may occur 0 or 1 times in a proper match.
   - Indicates that the preceding character may occur 0 or more times in a proper match. (*)
   - Incorrect. Refer to Section 3 Lesson 3.

15. Which of the following methods for the String class take a regular expression as a parameter and returns true if the string matches the expression?
   - equals(String regex)
   - equalsIgnoreCase(String regex)
   - compareTo(String regex)
   - matches(String regex) (*)
   - Incorrect. Refer to Section 3 Lesson 3.
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

16. Which scenario best describes a queue?

- A pile of pancakes with which you add some to the top and remove them one by one from the bottom.
- A row of books that you can take out of only the middle of the books first and work your way outward toward either edge.
- A line at the grocery store where the first person in the line is the first person to leave. (*)
- All of the above describe a queue.

Correct

17. Which of the following correctly adds "Cabbage" to the ArrayList vegetables?

- vegetables += "Cabbage";
- vegetables.get("Cabbage");
- vegetables[0] = "Cabbage";
- vegetables.add("Cabbage"); (*)

Incorrect. Refer to Section 3 Lesson 2.

18. What are maps that link a Key to a Value?

- Arrays
- ArrayLists
- HashSets
- HashMaps (*)

Incorrect. Refer to Section 3 Lesson 2.

19. Why can a LinkedList be considered a stack and a queue?

(Choose all correct answers)

- Because you can add elements to the end of it. (*)
- Because you can add element to the beginning of it. (*)
- Because you can remove elements from the end of it. (*)
- Because you can remove elements from the beginning of it. (*)

Incorrect. Refer to Section 3 Lesson 2.

20. Which of the following correctly initializes an object named cell of the class Telephones whose generic type is Cellular?

- Telephones cell = new Telephones(Cellular c);
- Telephones(Cellular) cell = new Telephones(Cellular);
- Telephones<> cell = new Telephones<> (Cellular c);
- Telephones cell = new Telephones(); (*)
- None of the above.

Incorrect. Refer to Section 3 Lesson 2.
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

21. Which scenario best describes a stack?
   - A pile of pancakes with which you add some to the top and remove them one by one from the top to the bottom. (*)
   - A row of books that you can take out of only the middle of the books first and work your way outward toward either edge.
   - A line at the grocery store where the first person in the line is the first person to leave.
   - All of the above describe a stack.
   - Incorrect. Refer to Section 3 Lesson 2.

22. Which of the following methods adds a Key-Value map to a HashMap?
   - put(Key, Value) (*)
   - add(Key, Value)
   - get(Key, Value)
   - remove(Key, Value)
   - Incorrect. Refer to Section 3 Lesson 2.

23. Which of the following correctly defines a queue?
   - a list of elements with a first in last out order.
   - a list of elements with a first in first out order. (*)
   - something that enables you to create a generic class without specifying a type between angle brackets <>.
   - it is a keyword in Java that restrict the use of the code to local users only.
   - Correct

24. Define a Collection
   - It enables you to create a generic class without specifying a type between angle brackets <>
   - It is a special type of class that is associated with one or more non-specified Java type.
   - It is an interface in the java.util package that is used to define a group of objects (*)
   - It is a subclass of List
   - Correct

25. What is wrong with the following declaration of the ArrayList of strings arr?
   ArrayList(String) arr = new ArrayList<String>();
   - Only the 1st occurrence of "(String)* should be replaced with "
   - The angled brackets "<>" need to be replaced with parenthesis "()" and parenthesis "()" need to be replaced by "<>" (*)
   - Both occurrences of "(String)* should be replaced with " (*)
   - Nothing, this declaration is correct.
   - Correct
Section 3
(Answer all questions in this section)

26. A List is an ordered Collection that may contain duplicate elements. True or false?
   - True (*)
   - False
   - Correct

27. Which of the following correctly initializes a generic class Telephones with one generic type Type1?
   - public class Telephones(Type1 T){//code here}
   - public class Telephones{//code here}
   - public class Telephones{//code here}
   - public class Telephones(Type1) {//code here}
   - None of the above. (*)
   - Incorrect. Refer to Section 3 Lesson 2.

28. Nodes are components of LinkedLists that are like maps because they identify where the next and previous nodes are. True or false?
   - True (*)
   - False
   - Correct

29. A method with public access level can be subclassed by?
   - Only a subclass in the same package
   - A subclass in any package
   - A static nested class
   - An instance nested class
   - None of the above. We cannot subclass a method in Java. (*)
   - Incorrect. Refer to Section 3 Lesson 1.

30. The instanceof operator only works with class instances. True or false?
   - True (*)
   - False
   - Correct
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

31. The instanceof operator finds subclasses when they are passed as a superclass. True or false?
   - True (*)
   - False
   ✓ Correct

32. Upward casting an object instance means you can't access subclass specific methods. True or false?
   - True (*)
   - False
   ✓ Correct

33. Abstract classes define what?
   - some methods with implementations (*)
   - all methods with implementations
   - all method definitions without any implementations
   - variables and methods
   - constants and all methods with implementations
   ✗ Incorrect. Refer to Section 3 Lesson 1.

34. Classes define and implement what?
   - some methods with implementations
   - all methods with implementations
   - all method definitions without any implementations
   - variables and methods (*)
   - constants and all methods with implementations
   ✗ Incorrect. Refer to Section 3 Lesson 1.

35. A downward cast of a subclass lets you access a subclass specialized method call. True or false?
   - True (*)
   - False
   ✓ Correct
Section 3
(Answer all questions in this section)

36. The instanceof operator works with class instances and primitive data types.
   True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.

37. Interfaces define what?
   - some methods with implementations
   - all methods with implementations
   - all method definitions without any implementations (*)
   - variables and methods
   - constants and all methods with implementations
   - Correct

38. Immutable classes do allow instance variables to be changed by overriding methods.
   True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.

39. Modeling business problems requires understanding the interaction between interfaces, abstract
    and concrete classes, subclasses, and enum classes.
    True or false?
    - True (*)
    - False
    - Correct

40. Classes can be made immutable by placing a final key word before all method implementations.
    True or false?
    - True (*)
    - False
    - Correct
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

41. A method with default access level can be subclassed by?
   - Only a subclass in the same package
   - A subclass in any package
   - A static nested class
   - An instance nested class
   - None of the above. We cannot subclass a method in Java. (*)
   ✗ Incorrect. Refer to Section 3 Lesson 1.

42. When should you not use assertions?
   (Choose all correct answers)
   - When you want your program to execute efficiently
   - When you want to check the values of parameters. (*)
   - When you call methods that may cause side effects in your assertion check. (*)
   - When you believe you have no bugs in your code.
   ✗ Incorrect. Refer to Section 3 Lesson 4.

43. When do errors occur in code?
   (Choose all correct answers)
   - When there is an error in your logic. (*)
   - When and exception is thrown (*)
   - When hardware issues occur (e.g., not enough memory). (*)
   - When files are not found or are unreadable. (*)
   ✗ Incorrect. Refer to Section 3 Lesson 4.

44. Why should you not use assertions to check parameters?
   - Assertions can be disabled at run time which may cause unexpected results in your assertions. (*)
   - Assertions do not work on parameters
   - Not all methods have parameters, therefore assertions should never be used on parameters
   - It is hard to assume expected values for parameters
   ✗ Incorrect. Refer to Section 3 Lesson 4.

45. What is an exception?
   - A consistent way of handling various errors. (*)
   - An error that occurs against the flow of your program.
   - When a file fails to open.
   - If your program exits before you expect it to.
   ✗ Incorrect. Refer to Section 3 Lesson 4.
Section 3
(Answer all questions in this section)

46. When do you use try-catch statements?
   - When you want to exit your code before an exception is caught.
   - If you want to switch different values for a certain variable.
   - When you want to handle an exception. (*)
   - Every time you would like to assign a new value to a variable that is being asserted.
   - Incorrect. Refer to Section 3 Lesson 4.

47. Methods can not throw exceptions.
   True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 4.

48. In what order do multiple catch statements execute?
   - The order they are declared in (most specific first) (*)
   - They all execute at the same time
   - They order they are declared in (most general first)
   - None of them execute since you can't have multiple catch statements.
   - Incorrect. Refer to Section 3 Lesson 4.

49. Multiple exceptions can be caught in one catch statement.
   True or false?
   - True (*)
   - False
   - Correct

50. The finally clause only executes when an exception is not caught and thrown.
   True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 4.
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

1. Assertions are boolean statements to test and debug your programs. True or false?
   - True (*)
   - False
   - Correct

2. In what order do multiple catch statements execute?
   - The order they are declared in (most specific first) (*)
   - They all execute at the same time
   - They order they are declared in (most general first)
   - None of them execute since you can't have multiple catch statements.
   - Incorrect. Refer to Section 3 Lesson 4.

3. When do you use try-catch statements?
   - When you want to exit your code before an exception is caught.
   - If you want to switch different values for a certain variable.
   - When you want to handle an exception. (*)
   - Every time you would like to assign a new value to a variable that is being asserted.
   - Incorrect. Refer to Section 3 Lesson 4.

4. The finally clause only executes when an exception is not caught and thrown. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 4.

5. When do errors occur in code?
   - (Choose all correct answers)
     - □ When there is an error in your logic. (*)
     - □ When an exception is thrown (*)
     - □ When hardware issues occur (e.g., not enough memory). (*)
     - □ When files are not found or are unreadable. (*)
     - Incorrect. Refer to Section 3 Lesson 4.
### Section 3
(Answer all questions in this section)

6. What is an exception?

- A consistent way of handling various errors. (*)
- An error that occurs against the flow of your program.
- When a file fails to open.
- If your program exits before you expect it to.

Incorrect. Refer to Section 3 Lesson 4.

7. Why should you not use assertions to check parameters?

- Assertions can be disabled at run time which may cause unexpected results in your assertions (*)
- Assertions do not work on parameters
- Not all methods have parameters, therefore assertions should never be used on parameters
- It is hard to assume expected values for parameters

Incorrect. Refer to Section 3 Lesson 4.

8. When is the proper time to use exceptions?

- When you want to print statements to the screen.
- When you want to efficiently and reliably debug your program. (*)
- If you purposefully put errors in your code you wish to handle.
- Every time a new method is called.

Correct

9. When should you not use assertions?

(Choose all correct answers)

- When you want your program to execute efficiently
- When you want to check the values of parameters. (*)
- When you call methods that may cause side effects in your assertion check. (*)
- When you believe you have no bugs in your code.

Incorrect. Refer to Section 3 Lesson 4.

10. The Files class provides a instance method that creates a new BufferedReader. True or false?

- True (*)
- False

Correct
Section 3
(Answer all questions in this section)

11. The java.io package has problems with missing operations, like copy, move, and such. True or false?
   - True (*)
   - False
   - Correct

12. Serialized classes are less flexible to change than non-serialized classes. True or false?
    - True
    - False (*)
    - Incorrect. Refer to Section 3 Lesson 5.

13. Encoding an object into a stream is serialization. True or false?
    - True (*)
    - False
    - Correct

14. Which of the following is an absolute Windows path?
    - /home/user/username
    - /
    - \Users\UserName\data
    - C:\Users\UserName\data (*)
    - data
    - Incorrect. Refer to Section 3 Lesson 5.

15. The System.in is what type of stream?
    - A BufferedWriter stream
    - A PrintStream
    - An InputStream (*)
    - A BufferedReader stream
    - A Reader stream
    - Incorrect. Refer to Section 3 Lesson 5.
Section 3
(Answer all questions in this section)

16. The System.err writes standard output to the console. True or false?
   - True (*)
   - False
   - Correct

17. The Files class performs which of the following?
   - navigate the file system
   - create files (*)
   - works with relative paths
   - works with absolute paths
   - works across disk volumes
   - Incorrect. Refer to Section 3 Lesson 5.

18. Which of the following methods adds a Key-Value map to a HashMap?
   - put(Key, Value) (*)
   - add(Key, Value)
   - get(Key, Value)
   - remove(Key, Value)
   - Correct

19. Define a Collection
   - It enables you to create a generic class without specifying a type between angle brackets <>
   - It is a special type of class that is associated with one or more non-specified Java type.
   - It is an interface in the java.util package that is used to define a group of objects (*)
   - It is a subclass of List
   - Incorrect. Refer to Section 3 Lesson 2.

20. Nodes are components of LinkedLists that are like maps because they identify where the next and previous nodes are. True or false?
   - True (*)
   - False
   - Correct
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

21. What is the correct way to initialize a HashSet?

- ClassMates = public class
  HashSet();
- String classMates = new
  String();
- HashSet classMates =
  new HashSet(); (*)
- classMates = new HashSet[String]();

Incorrect. Refer to Section 3 Lesson 2.

22. Which of the following correctly defines a queue?

- a list of elements with a first in last out order.
- a list of elements with a first in first out order. (*)
- something that enables you to create a generic class without specifying a type between angle brackets <>.
- it is a keyword in Java that restrict the use of the code to local users only.

Incorrect. Refer to Section 3 Lesson 2.

23. Which of the following correctly initializes a generic class Telephones with one generic type Type1?

- public class Telephones(Type1 T) {//code here}
- public class Telephones {//code here}
- public class Telephones {//code here}
- public class Telephones(Type1) {//code here}
- None of the above. (*)

Incorrect. Refer to Section 3 Lesson 2.

24. What are maps that link a Key to a Value?

- Arrays
- ArrayLists
- HashSets
- HashMaps (*)

Incorrect. Refer to Section 3 Lesson 2.

25. Which of the following correctly initializes an object named cell of the class Telephones whose generic type is Cellular?

- Telephones(cell = new Telephones<Cellular c>);
- Telephones<Cellular> cell = new Telephones<Cellular>;
- Telephones<> cell = new Telephones<>(Cellular c);
- Telephones cell = new Telephones(); (*)
- None of the above.

Incorrect. Refer to Section 3 Lesson 2.
Section 3
(Answer all questions in this section)

26. The local petting zoo is writing a program to be able to collect animals according to species to better keep track of what animals they have. Which of the following correctly defines a collection that may create these types of groupings for each species at the zoo?

- public class animalCollection {...} (*)
- public class animalCollection(AnimalType T) {...}
- public class animalCollection {...}
- public class animalCollection(animalType) {...}
- None of the above.

Correct

27. Which scenario best describes a stack?

- A pile of pancakes with which you add some to the top and remove them one by one from the top to the bottom. (*)
- A row of books that you can take out of only the middle of the books first and work your way outward toward either edge.
- A line at the grocery store where the first person in the line is the first person to leave.
- All of the above describe a stack.

Incorrect. Refer to Section 3 Lesson 2.

28. What is wrong with the following declaration of the ArrayList of strings arr?

ArrayList(String) arr = new ArrayList(String)<>;

(Choose all correct answers)

- Only the 1st occurrence of "(String)" should be replaced with ""
- The angled brackets "<>" need to be replaced with parenthesis "()" and parenthesis "()" need to be replaced by "<>" (*)
- Both occurrences of "(String)" should be replaced with "" (*)
- Nothing, this declaration is correct.

Incorrect. Refer to Section 3 Lesson 2.

29. Why can a LinkList be considered a stack and a queue?

(Choose all correct answers)

- Because you can add elements to the end of it. (*)
- Because you can add element to the beginning of it. (*)
- Because you can remove elements from the end of it. (*)
- Because you can remove elements from the beginning of it. (*)

Incorrect. Refer to Section 3 Lesson 2.

30. Which of the following correctly adds "Cabbage" to the ArrayList vegetables?

- vegetables += "Cabbage";
- vegetables.get("Cabbage");
- vegetables[0] = "Cabbage";

Incorrect. Refer to Section 3 Lesson 2.
vegetables.add("Cabbage"); (*)

Incorrect. Refer to Section 3 Lesson 2.
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

31. What is the function of the asterisk (*) in regular expressions?

- The asterisk has no function in regular expressions.
- Indicates that the preceding character may occur 1 or more times in a proper match.
- Indicates that the preceding character may occur 0 or 1 times in a proper match.
- Indicates that the preceding character may occur 0 or more times in a proper match. (*)

Incorrect. Refer to Section 3 Lesson 3.

32. What is the correct explanation of when this code will return true? return str.matches(".*[0-9]{6}.*");

- Any time that str contains two dots.
- Any time that str contains a sequence of 6 digits. (*)
- Any time that str has between zero and nine characters followed by a 6.
- Any time str contains a 6.
- Always.

Correct

33. Which of the following does not correctly match the regular expression symbol to its proper function?

- ";\{x\}\" means there must be x occurrences of the preceding character in the string to be a match.
- "?\" means there may be zero or one occurrences of the preceding character in the string to be a match.
- "+\" means there may be zero or more occurrences of the preceding character in the string to be a match. (*)
- ";\{x,\}\" means there may be x or more occurrences of the preceding character in the string to be a match.
- ";\{x,y\}\" means there may be between x and y occurrences of the preceding character in the string to be a match.

Correct

34. Regular Expressions are a part of the java.util.regex package, thus java.util.regex must be imported for any programs containing regular expressions. True or false?

- True (*)
- False

Correct

35. Which of the following correctly defines a repetition operator?

- A symbol that represents any character in regular expressions.
- A method that returns the number of occurrences of the specified character.
- Any symbol in regular expressions that indicates the number of occurrences a specified character appears in a matching string. (*)
- None of the above.

Incorrect. Refer to Section 3 Lesson 3.
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

36. Consider that you are writing a program for analyzing feedback on the video game you have developed. You have completed everything except the segment of code that checks that the user's input, String userI, is a valid rating. Note that a valid rating is a single digit between 1 and 5 inclusive. Which of the following segments of code returns true if the user's input is a valid rating?

(Choose all correct answers)

- return userI.matches("[1-5]"); (*)
- return userI.matches("{1-5}");
- return userI.matches("[1-5].*");
- return userI.matches("[1-5]{1}"); (*)

Incorrect. Refer to Section 3 Lesson 3.

37. Which of the following methods for the String class take a regular expression as a parameter and returns true if the string matches the expression?

- equals(String regex)
- equalsIgnoreCase(String regex)
- compareTo(String regex)
- matches(String regex) (*)

Incorrect. Refer to Section 3 Lesson 3.

38. Classes can be made immutable by placing a final key word before all method implementations. True or false?

- True (*)
- False

Correct

39. A method with default access level can be subclassed by?

- Only a subclass in the same package
- A subclass in any package
- A static nested class
- An instance nested class
- None of the above. We cannot subclass a method in Java. (*)

Incorrect. Refer to Section 3 Lesson 1.

40. The instanceof operator works with class instances and primitive data types. True or false?

- True
- False (*)

Incorrect. Refer to Section 3 Lesson 1.
Section 3
(Answer all questions in this section)

41. Virtual method invocation is:
   - Not part of polymorphism.
   - When the method of a superclass is used on a superclass reference.
   - When the method of a subclass is used on a superclass reference. (*)
   - When the method of a subclass is used on a subclass reference.
   - Correct

42. Virtual method invocation occurs when you call a method from a superclass.
   True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.

43. Interfaces define what?
   - some methods with implementations
   - all methods with implementations
   - all method definitions without any implementations (*)
   - variables and methods
   - constants and all methods with implementations
   - Incorrect. Refer to Section 3 Lesson 1.

44. A method with public access level can be subclassed by?
   - Only a subclass in the same package
   - A subclass in any package
   - A static nested class
   - An instance nested class
   - None of the above. We cannot subclass a method in Java. (*)
   - Incorrect. Refer to Section 3 Lesson 1.

45. Upward casting an object instance means you can't access subclass specific methods.
   True or false?
   - True (*)
   - False
   - Correct
Test: Java Programming Final Exam
Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

1. Immutable classes can be subclassed.
   True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.

2. Calling a subclass method by referring to a superclass works because you have access to all specialized methods through virtual method invocation.
   True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.

3. The instanceof operator works inside an if statement.
   True or false?
   - True (*)
   - False
   - Correct

4. A upward cast means all instance variables of the subclass are permanently lost to the instance.
   True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.

5. Upward casting an object instance means you can't access subclass specific methods.
   True or false?
   - True (*)
   - False
   - Correct
**Test: Java Programming Final Exam**

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

**Section 3**
(Answer all questions in this section)

6. Virtual method invocation occurs when you call a superclass method for a subclass with an overriding method of the same name.
   True or false?
   - True (*)
   - False
   - Correct

7. Virtual method invocation requires that the superclass method is defined as which of the following.
   - A public static method.
   - A private final method.
   - A public method. (*)
   - A public final method.
   - A default final method.
   - Correct

8. Immutable classes do allow instance variables to be changed by overriding methods.
   True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 1.

9. Classes can be made immutable by placing a final key word before all method implementations.
   True or false?
   - True (*)
   - False
   - Correct

10. The instanceof operator only works with class instances.
    True or false?
    - True (*)
    - False
    - Correct
Test: Java Programming Final Exam

Section 3
(Answer all questions in this section)

11. A method with public access level can be subclassed by?

- Only a subclass in the same package
- A subclass in any package
- A static nested class
- An instance nested class
- None of the above. We cannot subclass a method in Java. (*)

Incorrect. Refer to Section 3 Lesson 1.

12. A downward cast of a subclass lets you access a subclass specialized method call. True or false?

- True (*)
- False

Correct

13. Virtual method invocation occurs when you call a method from a superclass. True or false?

- True
- False (*)

Incorrect. Refer to Section 3 Lesson 1.

14. Multiple exceptions can be caught in one catch statement. True or false?

- True (*)
- False

Correct

15. When should you not use assertions?

(Choose all correct answers)

- When you want your program to execute efficiently
- When you want to check the values of parameters. (*)
- When you call methods that may cause side effects in your assertion check. (*)
- When you believe you have no bugs in your code.

Incorrect. Refer to Section 3 Lesson 4.
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

16. What is an exception?

- A consistent way of handling various errors. (*)
- An error that occurs against the flow of your program.
- When a file fails to open.
- If your program exits before you expect it to.

Incorrect. Refer to Section 3 Lesson 4.

17. Assertions are boolean statements to test and debug your programs.
True or false?

- True (*)
- False

Correct

18. In what order do multiple catch statements execute?

- The order they are declared in (most specific first) (*)
- They all execute at the same time
- They order they are declared in (most general first)
- None of them execute since you can't have multiple catch statements.

Incorrect. Refer to Section 3 Lesson 4.

19. When is the proper time to use exceptions?

- When you want to print statements to the screen.
- When you want to efficiently and reliably debug your program. (*)
- If you purposefully put errors in your code you wish to handle.
- Every time a new method is called.

Correct

20. What symbol is used to separate multiple exceptions in one catch statement?

- &&
- ==(equals equals)
- None, multiple exceptions can't be handled in one catch statement.
- A single bar: | (*)

Correct
Section 3
(Answer all questions in this section)

21. When do you use try-catch statements?

- When you want to exit your code before an exception is caught.
- If you want to switch different values for a certain variable.
- When you want to handle an exception. (*)
- Every time you would like to assign a new value to a variable that is being asserted.

Incorrect. Refer to Section 3 Lesson 4.

22. Methods can not throw exceptions.

True or false?

- True
- False (*)

Correct

23. The java.nio.file package has improved exception handling.

True or false?

- True (*)
- False

Correct

24. The System.in is what type of stream?

- A BufferedWriter stream
- A PrintStream
- An InputStream (*)
- A BufferedReader stream
- A Reader stream

Incorrect. Refer to Section 3 Lesson 5.

25. The java.io package has problems with missing operations, like copy, move, and such.

True or false?

- True (*)
- False

Correct
Test: Java Programming Final Exam

Section 3
(Answer all questions in this section)

26. Encoding an object into a stream is serialization.
   True or false?
   - True (*)
   - False
   - Correct

27. The BufferedInputStream is a direct subclass of what other class?
   - InputStream
   - FilterInputStream (*)
   - InputStream
   - FileInputStream
   - PipedInputStream
   - Correct

28. The System.err writes standard output to the console.
   True or false?
   - True (*)
   - False
   - Correct

29. Which of the following is an absolute Windows path?
   - /home/user/username
   - /
   - \Users\UserName\data
   - C:\Users\UserName\data (*)
   - data
   - Incorrect. Refer to Section 3 Lesson 5.

30. The BufferedOutputStream is a direct subclass of what other class?
   - FilterOutputStream (*)
   - OutputStream
   - PrintStream
   - DigestOutputStream
   - ObjectOutputStream
   - Correct
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

31. Split is a method for Strings that parses a string by a specified character, or, if unspecified, by spaces, and returns the parsed elements in an array of Strings. True or false?
   - True
   - False (*)
   - Incorrect. Refer to Section 3 Lesson 3.

32. Which of the following methods for the String class take a regular expression as a parameter and returns true if the string matches the expression?
   - equals(String regex)
   - equalsIgnoreCase(String regex)
   - compareTo(String regex)
   - matches(String regex) (*)
   - Incorrect. Refer to Section 3 Lesson 3.

33. Which of the following methods are specific to StringBuilders?
   - append
   - delete
   - insert
   - replace
   - All of the above. (*)
   - Incorrect. Refer to Section 3 Lesson 3.

34. Which of the following correctly initializes a StringBuilder?
   - StringBuilder sb = "This is my String Builder";
   - StringBuilder sb = StringBuilder(500);
   - StringBuilder sb = new StringBuilder(); (*)
   - None of the above.
   - Incorrect. Refer to Section 3 Lesson 3.

35. Consider that you are writing a program for analyzing feedback on the video game you have developed. You have completed everything except the segment of code that checks that the user's input, String userI, is a valid rating. Note that a valid rating is a single digit between 1 and 5 inclusive. Which of the following segments of code returns true if the user's input is a valid rating?
   (Choose all correct answers)
   - return userI.matches("[1-5]"); (*)
   - return userI.matches("{1-5}");
   - return userI.matches("[1-5]+")
   - return userI.matches("[1-5]{1}"); (*)
   - Incorrect. Refer to Section 3 Lesson 3.
Test: Java Programming Final Exam

Review your answers, feedback, and question scores below. An asterisk (*) indicates a correct answer.

Section 3
(Answer all questions in this section)

36. Which of the following does not correctly match the regular expression symbol to its proper function?

- "{x}" means there must be x occurrences of the preceding character in the string to be a match.
- "?" means there may be zero or one occurrences of the preceding character in the string to be a match.
- "+" means there may be zero or more occurrences of the preceding character in the string to be a match. (*)
- "{x,}" means there may be x or more occurrences of the preceding character in the string to be a match.
- "{x,y}" means there may be between x and y occurrences of the preceding character in the string to be a match.

Correct

37. Which of the following correctly defines Matcher?

- a regular expression symbol that represents any character.
- a method of dividing a string into a set of sub-strings.
- a class in the java.util.regex package that stores the matches between a pattern and a string. (*)
- a class in the java.util.regex package that stores the format of a regular expression.

Correct

38. Which of the following methods adds a Key-Value map to a HashMap?

- put(Key, Value) (*)
- add(Key, Value)
- get(Key, Value)
- remove(Key, Value)

Correct

39. Which of the following correctly adds "Cabbage" to the ArrayList vegetables?

- vegetables += "Cabbage";
- vegetables.get("Cabbage");
- vegetables[0] = "Cabbage";
- vegetables.add("Cabbage"); (*)

Incorrect. Refer to Section 3 Lesson 2.

40. A List is an ordered Collection that may contain duplicate elements.

True or false?

- True (*)
- False

Correct
Section 3

(Answer all questions in this section)

41. The local petting zoo is writing a program to be able to collect and group animals according to species to better keep track of what animals they have. Which of the following correctly defines a collection that may create these types of groupings for each species at the zoo?

- public class animalCollection {...} (*)
- public class animalCollection(AnimalType T) {...}
- public class animalCollection {...}
- public class animalCollection(AnimalType) {...}
- None of the above.

Correct

42. A HashSet is a set that is similar to an ArrayList. A HashSet does not have any specific ordering.

True or false?

- True (*)
- False

Correct

43. Why can a LinkedList be considered a stack and a queue?

(Choose all correct answers)

- Because you can add elements to the end of it. (*)
- Because you can add element to the beginning of it. (*)
- Because you can remove elements from the end of it. (*)
- Because you can remove elements from the beginning of it. (*)

Incorrect. Refer to Section 3 Lesson 2.

44. These are a list of elements that have a first in last out ordering.

- Arrays
- Stacks (*)
- HashMaps
- Enums

Correct

45. Which scenario best describes a stack?

- A pile of pancakes with which you add some to the top and remove them one by one from the top to the bottom. (*)
- A row of books that you can take out of only the middle of the books first and work your way outward toward either edge.
- A line at the grocery store where the first person in the line is the first person to leave.
- All of the above describe a stack.

Incorrect. Refer to Section 3 Lesson 2.
Section 3
(Answer all questions in this section)

46. What are maps that link a Key to a Value?

- Arrays
- ArrayLists
- HashSets
- HashMaps (*)

Incorrect. Refer to Section 3 Lesson 2.

47. Nodes are components of LinkedLists that are like maps because they identify where the next and previous nodes are.

- True (*)
- False

Correct

48. What is wrong with the following declaration of the ArrayList of strings arr?

ArrayList<String> arr = new ArrayList<String>();

- Only the 1st occurrence of "(String)" should be replaced with ":" (*)
- The angled brackets "<>" need to be replaced with parenthesis "()" and parenthesis "(" need to be replaced by "<>" (*)
- Both occurrences of "(String)" should be replaced with "=" (*)
- Nothing, this declaration is correct.

Incorrect. Refer to Section 3 Lesson 2.

49. Which of the following correctly defines a queue?

- a list of elements with a first in last out order.
- a list of elements with a first in first out order. (*)
- something that enables you to create a generic class without specifying a type between angle brackets <>. (*)
- it is a keyword in Java that restrict the use of the code to local users only.

Correct

50. What is a set?

- something that enables you to create a generic class without specifying a type between angle brackets <>. (*)
- a collection of elements that does not contain duplicates. (*)
- a keyword in Java that initializes an ArrayList.
- a collection of elements that contains duplicates.

Correct