温州肯恩大学
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CPS 2231 Computer Programming

Assignment

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I. Exceptions Management

1. What is the result of compiling and executing the following application?

```
package mind;
public class Remember {
public static void think() throws Exception { // k1
try {
  throw new Exception();
}
}
public static void main(String... ideas) throws Exception {
 think();
}
}
```

A. The code compiles and runs without printing anything. **B.** The code compiles but a stack trace is printed at runtime.

C. The code does not compile because of line k1. **D.** The code does not compile for another reason.

2. Choose the answer that lists the keywords in the order that they would be used together.

A. catch, try, finally **B.** try, catch, finally **C.** finally, catch, try **D.** try, finally, catch

3. Which of the following Throwable types is it recommended not to catch in a Java application?

A. Error **B.** CheckedException **C.** Exception **D.** RuntimeException

4. What is the output of the following application?

```
package game;
public class Baseball {
public static void main(String... teams) {
try {
int score = 1;
System.out.print(score++);
} catch (Throwable t) {
System.out.print(score++);
} finally {
System.out.print(score++);
}
System.out.print(score++);
}
}
```

A. 123 **B.** 124 **C.** 12 **D.** None of the above

5. Which of the following is a checked exception?

A. ClassCastException **B.** IOException **C.** ArrayIndexOutOfBoundsException **D.** IllegalArgumentException

6. Fill in the blanks: The ……keyword is used in method declarations, while the ……keyword is used to throw an exception to the surrounding process.

A. throws, throw **B.** catch, throw **C.** throw, throws **D.** throws, catch

7. If a try statement has catch blocks for both Exception and IOException, then which of the following statements is correct?

A. The catch block for Exception must appear before the catch block for IOException.

B. The catch block for IOException must appear before the catch block for Exception.

C. The catch blocks for these two exception types can be declared in any order.

D. A try statement cannot be declared with these two catch block types because they are incompatible.

8. What is the output of the following application?

```
package game;
public class Football {
public static void main(String officials[]) {
try {
System.out.print('A');
throw new RuntimeException("Out of bounds!");
} catch (ArrayIndexOutOfBoundsException aioobe) {
System.out.print('B');
throw t;
} finally {
System.out.print('C');
}
}}
```

A. ABC **B.** ABC, followed by a stack trace for a RuntimeException

C. AC, followed by a stack trace for a RuntimeException **D.** None of the above

9. What is the result of compiling and running the following application?

```
package castles;
public class Fortress {
public void openDrawbridge() throws Exception { // p1
try {
throw new Exception("Circle");
} catch (Exception e) {
System.out.print("Opening!");
} finally {
System.out.print("Walls"); // p2
}
}
public static void main(String[] moat) {
new Fortress().openDrawbridge(); // p3
} }
```

A. The code does not compile because of line p1. **B.** The code does not compile because of line p2.

C. The code does not compile because of line p3. **D.** The code compiles, but a stack trace is printed at runtime.

10. Which of the following exception types must be handled or declared by the method in which they are thrown?

A. NullPointerException **B.** Exception **C.** RuntimeException **D.** ArithmeticException

11. What is the output of the following application?

```
package game;
public class BasketBall {
public static void main(String[] dribble) {
try {
System.out.print(1);
throw new ClassCastException();
} catch (ArrayIndexOutOfBoundsException ex) {
System.out.print(2);
} catch (Throwable ex) {
System.out.print(3);
} finally {
System.out.print(4);
}
System.out.print(5);
}
}
```

A. 1345 **B.** 1235 **C.** The code does not compile. **D.** The code compiles but throws an exception at runtime.

12. Which of the following statements about a finally block is true?

A. Every line of the finally block is guaranteed to be executed. **B.** The finally block is executed only if the related catch block is also executed.

C. The finally statement requires brackets {}. **D.** The finally block cannot throw an exception.

13. Given that FileNotFoundException is a subclass of IOException, what is the output of the following application?

```
package office;
import java.io.*;
public class Printer {
public void print() {
try {
throw new FileNotFoundException();
} catch (IOException exception) {
System.out.print("Z");
} catch (FileNotFoundException enfe) {
System.out.print("X");
} finally {
System.out.print("Y");
}
}
public static void main(String... ink) {
new Printer().print();
}
}
```

A. XY **B.** ZY **C.** The code does not compile. **D.** The code compiles but a stack trace is printed at runtime.

14. Which keywords are required with a try statement?
I. catch **II.** finalize **III.** finally

A. I only **B.** II only **C.** I or III, or both **D.** None of these statements are required with a try statement.

15. Which statement about the role of exceptions in Java is incorrect?
A. Exceptions are often used when things "go wrong" or deviate from the expected path.

B. An application that throws an exception will terminate.

C. Some exceptions can be avoided programmatically.

D. An application that can properly handle its exception may recover from unexpected problems.

16. What is the output of the following application?

```
package harbor;
class CapsizedException extends Exception {}
class Transport {
public int travel() throws CapsizedException { return 2; };
}
public class Boat {
public int travel() throws Exception { return 4; }; // j1
public static void main(String... distance) throws Exception{
try {
System.out.print(new Boat().travel());
} catch (Exception e) (
System.out.print(8);
)
}}
```

A. 4 **B.** 8 **C.** The code does not compile due to line j1. **D.** The code does not compile for another reason.

17. **Which of following method signatures would not be allowed in a class implementing the Printer interface?**

```
class PrintException extends Exception {}
class PaperPrintException extends PrintException {}
public interface Printer {
abstract int printData() throws PrintException;
}
```

A. public int printData() throws PaperPrintException **B.** public int printData() throws Exception

C. public int printData() **D.** None of the above

18. **Which import statement is required to be declared in order to use the Exception, RuntimeException, and Throwable classes in an application?**

A. import java.exception.*; **B.** import java.util.exception.*; **C.** import java.lang.*; **D.** None of the above

19. **Which statement about the following classes is correct?**

```
class GasException extends Exception {}
class Element {
public int getSymbol() throws GasException { return -1; } // g1
}
public class Oxygen extends Element {
public int getSymbol() { return 1; } // g2
public void printData() {
try {
System.out.print(getSymbol());
} catch { // g3
System.out.print("Unable to read data");
}
}}
```

A. The code does not compile because of line g1. **B.** The code does not compile because of line g2.

C. The code does not compile because of line g3. **D.** None of the above

20. **Fill in the blanks: A program must handle or declare…….. but should never handle…… .**

A. java.lang.Error, unchecked exceptions **B.** checked exceptions, java.lang.Error

C. java.lang.Throwable, java.lang.Error **D.** unchecked exceptions, java.lang.Exception

II. JAVA API

1. **What is the best reason for using StringBuilder instead of String?**

A. StringBuilder adds support for multiple threads. **B.** StringBuilder can use == to compare values.

C. StringBuilder saves memory by reducing the number of objects created.

D. StringBuilder supports different languages and encodings.

2. **What is not true about a String?**

A. It can be created without coding a call to a constructor. **B.** It can be reused via the string pool.

C. It is final. **D.** It is mutable.

3. **Which of the following creates a StringBuilder with a different value than the other options?**

A. new StringBuilder().append("clown") **B.** new StringBuilder("clown") **C.** new StringBuilder("cl").insert(2, "own")

D. All of them create the same value.

4. **What is the output of the following?**

```
StringBuilder teams = new StringBuilder("333");
teams.append(" 806");
teams.append(" 1601");
System.out.print(teams);
```

A. 333 **B.** 333 806 1601 **C.** The code compiles but outputs something else. **D.** The code does not compile.

5. **How many of the types ArrayList, List, and Object can fill in the blank to produce code that compiles?**

```
List frisbees = new _____();
```

A. None **B.** One **C.** Two **D.** Three

6. **What is the output of the following?**

```
List<String> tools = new ArrayList<>();
tools.add("hammer");
tools.add("nail");
tools.add("hex key");
System.out.println(tools.get(1));
```

A. hammer **B.** hex key **C.** nail **D.** None of the above

7. **What is the result of the following code?**

```
StringBuilder sb = new StringBuilder("radical")
   .insert(sb.length(), "robots");
System.out.println(sb);
```

A. radicarobots **B.** radicalrobots **C.** The code does not compile.

D. The code compiles but throws an exception at runtime.

8. **What is the output of the following?**

```
List<String> museums = new ArrayList<>(1);
museums.add("Natural History");
museums.add("Science");
museums.add("Art");
museums.remove(2);
System.out.println(museums);
```

A. [Natural History, Science] **B.** [Natural History, Art, Science]

C. The code does not compile. **D.** The code compiles but throws an exception at runtime.

9. What is the output of the following?

```
StringBuilder b = new StringBuilder("12");
b = b.append("3");
b.reverse();
System.out.println(b.toString());
```

A. 12 **B.** 123 **C.** 321 **D.** The code does not compile.

10. What is the main benefit of a lambda expression?

A. It allows you to convert a primitive to a wrapper class.

B. It allows you to change the bytecode while the application is running.

C. It allows you to inherit from multiple classes.

D. It allows you to write code that has the execution deferred.

11. What is the output of the following?

```
StringBuilder line = new StringBuilder("-");
StringBuilder anotherLine = line.append("-");
System.out.print(line == anotherLine);
System.out.print(" ");
System.out.print(line.length());
```

A. false 1 **B.** false 2 **C.** true 1 **D.** true 2

12. The author of this method forgot to include the data type. Which of the following reference types can fill in the blank to complete this method?

```
public static void secret(_____ mystery) {
  mystery.add("metal");
  String str = mystery.get(0);
  int num = mystery.length();
}
```

A. ArrayList **B.** ArrayList<String> **C.** StringBuilder **D.** None of the above

13. Which portion of code can be removed so that this line of code continues to compile?

Predicate<StringBuilder> p = (StringBuilder b) -> {return true;};

A. Remove StringBuilder b **B.** Remove -> **C.** Remove { and ;} **D.** Remove { return and ;}

14. What is the output of the following?

```
List<Character> chars = new ArrayList<>();
chars.add('a');
chars.add('b');
chars.set(1, 'c');
chars.remove(0);
System.out.print(chars.size() + " " + chars.contains('b'));
```

A. 1 false **B.** 1 true **C.** 2 false **D.** 2 true

15. What is the output of the following?

```
String b = "12";
b += "3";
b.reverse();
System.out.println(b.toString());
```

A. 12 **B.** 123 **C.** 321 **D.** The code does not compile.

16. How many of these lines fail to compile?

```
Predicate<String> pred1 = s -> false;
Predicate<String> pred2 = (s) -> false;
Predicate<String> pred3 = String s -> false;
Predicate<String> pred4 = (String s) -> false;
```

A. One **B.** Two **C.** Three **D.** Four

17. What does the following do?

```
public class Shoot {
interface Target {
boolean needToAim(double angle);
}
static void prepare(double angle, Target t) {
boolean ready = t.needToAim(angle); // k1
System.out.println(ready);
}
public static void main(String[] args) {
prepare(45, d -> d > 5 || d < -5); // k2
}
}
```

A. It prints true. **B.** It prints false.

C. It doesn't compile due to line k1. **D.** It doesn't compile due to line k2.

18. What is the output of the following?

```
String teams = new String("694");
teams.concat(" 1155");
teams.concat(" 2265");
teams.concat(" 2869");
System.out.println(teams);
```

A. 694 **B.** 694 1155 2265 2869 **C.** The code compiles but outputs something else.

D. The code does not compile.

19. Which of these classes are in the java.util package?

I. ArrayList **II.** LocalDate **III.** String

A. I only **B.** II only **C.** I and II **D.** I, II, and III

20. What is the output of the following?

```
String[] array = {"Natural History", "Science"};
List<String> museums = Arrays.asList(array);
museums.set(0, "Art");
System.out.println(museums.contains("Art"));
```

A. true **B.** false **C.** The code does not compile. **D.** The code compiles but throws an exception at runtime.