Assessment Test

1. What is the result of the following class? (Choose all that apply)

```
1: public class _C {
2:  private static int $;
3:  public static void main(String[] main) {
4:    String a_b;
5:    System.out.print($);
6:    System.out.print(a_b);
7:  } }
```

A. Compiler error on line 1.

B. Compiler error on line 2.

C. Compiler error on line 4.

D. Compiler error on line 5.

E. Compiler error on line 6.

F. `0null`

G. `nullnull`

2. What is the result of the following code?

```
String s1 = "Java";
String s2 = "Java";
StringBuilder sb1 = new StringBuilder();
sb1.append("Ja").append("va");
System.out.println(s1 == s2);
System.out.println(s1.equals(s2));
System.out.println(sb1.toString() == s1);
System.out.println(sb1.toString().equals(s1));
```

A. `true` is printed out exactly once.

B. `true` is printed out exactly twice.

C. `true` is printed out exactly three times.

D. `true` is printed out exactly four times.

E. The code does not compile.

3. What is the output of the following code? (Choose all that apply)

```
1: interface HasTail { int getTailLength(); }
2: abstract class Puma implements HasTail {
3:   protected int getTailLength() {return 4;}
4: }
5: public class Cougar extends Puma {
```

```
6:    public static void main(String[] args) {
7:      Puma puma = new Puma();
8:      System.out.println(puma.getTailLength());
9:    }
10:
11:   public int getTailLength(int length) {return 2;}
12: }
```

A. 2

B. 4

C. The code will not compile because of line 3.

D. The code will not compile because of line 5.

E. The code will not compile because of line 7.

F. The code will not compile because of line 11.

G. The output cannot be determined from the code provided.

4. What is the output of the following program?

```
1: public class FeedingSchedule {
2:  public static void main(String[] args) {
3:    boolean keepGoing = true;
4:    int count = 0;
5:    int x = 3;
6:    while(count++ < 3) {
7:      int y = (1 + 2 * count) % 3;
8:      switch(y) {
9:         default:
10:          case 0: x -= 1; break;
11:          case 1: x += 5;
12:       }
13:     }
14:   System.out.println(x);
15: } }
```

A. 4

B. 5

C. 6

D. 7

E. 13

F. The code will not compile because of line 7.

5. What is the output of the following code snippet?

```
13: System.out.print("a");
14: try {
15:   System.out.print("b");
16:   throw new IllegalArgumentException();
17: } catch (RuntimeException e) {
18:   System.out.print("c");
19: } finally {
20:   System.out.print("d");
21: }
22: System.out.print("e");
```

A. `abe`

B. `abce`

C. `abde`

D. `abcde`

E. The code does not compile.

F. An uncaught exception is thrown.

6. What is the result of the following program?

```
1: public class MathFunctions {
2:   public static void addToInt(int x, int amountToAdd) {
3:     x = x + amountToAdd;
4:   }
5:   public static void main(String[] args) {
6:     int a = 15;
7:     int b = 10;
8:     MathFunctions.addToInt(a, b);
9:     System.out.println(a);   } }
```

A. `10`

B. `15`

C. `25`

D. Compiler error on line 3.

E. Compiler error on line 8.

F. None of the above.

7. What is the result of the following code?

```
int[] array = {6,9,8};
List<Integer> list = new ArrayList<>();
```

```
list.add(array[0]);
list.add(array[2]);
list.set(1, array[1]);
list.remove(0);
System.out.println(list);
```

A. `[8]`

B. `[9]`

C. Something like `[Ljava.lang.String;@160bc7c0`

D. An exception is thrown.

E. The code does not compile.

8. What is the output of the following code?

```
1: public class Deer {
2:  public Deer() { System.out.print("Deer"); }
3:  public Deer(int age) { System.out.print("DeerAge"); }
4:  private boolean hasHorns() { return false; }
5:  public static void main(String[] args) {
6:    Deer deer = new Reindeer(5);
7:    System.out.println(","+deer.hasHorns());
8:  }
9: }
10: class Reindeer extends Deer {
11:  public Reindeer(int age) { System.out.print("Reindeer"); }
12:  public boolean hasHorns() { return true; }
13: }
```

A. `DeerReindeer,false`

B. `DeerReindeer,true`

C. `ReindeerDeer,false`

D. `ReindeerDeer,true`

E. `DeerAgeReindeer,false`

F. `DeerAgeReindeer,true`

G. The code will not compile because of line 7.

H. The code will not compile because of line 12.

9. Which of the following statements are true? (Choose all that apply)

A. Checked exceptions are intended to be thrown by the JVM (and not the programmer).

B. Checked exceptions are required to be caught or declared.

C. Errors are intended to be thrown by the JVM (and not the programmer).

D. Errors are required to be caught or declared.

E. Runtime exceptions are intended to be thrown by the JVM (and not the programmer).

F. Runtime exceptions are required to be caught or declared.

10. Which are true of the following code? (Choose all that apply)

```
1:  import java.util.*;
2:  public class Grasshopper {
3:  public Grasshopper(String n) {
4:     name = n;
5:  }
6:  public static void main(String[] args) {
7:    Grasshopper one = new Grasshopper("g1");
8:    Grasshopper two = new Grasshopper("g2");
9:    one = two;
10:   two = null;
11:   one = null;
12: }
13:   private String name; }
```

A. Immediately after line 9, no grasshopper objects are eligible for garbage collection.

B. Immediately after line 10, no grasshopper objects are eligible for garbage collection.

C. Immediately after line 9, only one grasshopper object is eligible for garbage collection.

D. Immediately after line 10, only one grasshopper object is eligible for garbage collection.

E. Immediately after line 11, only one grasshopper object is eligible for garbage collection.

F. The code compiles.

G. The code does not compile.

11. What is the output of the following program?

```
1: public class FeedingSchedule {
2:  public static void main(String[] args) {
3:    int x = 5, j = 0;
4:    OUTER: for(int i=0; i<3; )
5:      INNER: do {
6:        i++; x++;
7:        if(x > 10) break INNER;
8:        x += 4;
9:        j++;
10:      } while(j <= 2);
11:    System.out.println(x);
12: } }
```

A. `10`

B. `12`

C. `13`

D. `17`

E. The code will not compile because of line 4.

F. The code will not compile because of line 6.

12. What is the result of the following program?

```
1: public class Egret {
2:   private String color;
3:   public Egret() {
4:     this("white");
5:   }
6:   public Egret(String color) {
7:     color = color;
8:   }
9:   public static void main(String[] args) {
10:    Egret e = new Egret();
11:    System.out.println("Color:" + e.color);
12:   }
13: }
```

A. `Color:`

B. `Color:null`

C. `Color:White`

D. Compiler error on line 4.

E. Compiler error on line 10.

F. Compiler error on line 11.

13. What is the output of the following program?

```
1: public class BearOrShark {
2:   public static void main(String[] args) {
3:     int luck = 10;
4:     if((luck>10 ? luck++: --luck)<10) {
5:       System.out.print("Bear");
6:     } if(luck<10) System.out.print("Shark");
7: } }
```

A. `Bear`

B. `Shark`

C. `BearShark`

D. The code will not compile because of line 4.

E. The code will not compile because of line 6.

F. The code compiles without issue but does not produce any output.

14. Assuming we have a valid, non-`null` `HenHouse` object whose value is initialized by the blank line shown here, which of the following are possible outputs of this application? (Choose all that apply)

```
1: class Chicken {}
2: interface HenHouse { public java.util.List<Chicken> getChickens(); }
3: public class ChickenSong {
```

```
4:   public static void main(String[] args) {
5:     HenHouse house = ______________
6:     Chicken chicken = house.getChickens().get(0);
7:     for(int i=0; i<house.getChickens().size();
8:       chicken = house.getChickens().get(i++)) {
9:       System.out.println("Cluck");
10: } } }
```

A. The code will not compile because of line 6.

B. The code will not compile because of lines 7–8.

C. The application will compile but not produce any output.

D. The application will output `Cluck` exactly once.

E. The application will output `Cluck` more than once.

F. The application will compile but produce an exception at runtime.

15. Which of the following statements can be inserted in the blank line so that the code will compile successfully? (Choose all that apply)

```
public interface CanSwim {}
public class Amphibian implements CanSwim {}
class Tadpole extends Amphibian {}
public class FindAllTadPole {
  public static void main(String[] args) {
    List<Tadpole> tadpoles = new ArrayList<Tadpole>();
    for(Amphibian amphibian : tadpoles) {
      ___________ tadpole = amphibian;
} } }
```

A. `CanSwim`

B. `Long`

C. `Amphibian`

D. `Tadpole`

E. `Object`

16. What individual changes, if any, would allow the following code to compile? (Choose all that apply)

```
1: public interface Animal { public default String getName() { return null; } }
2: interface Mammal { public default String getName() { return null; } }
3: abstract class Otter implements Mammal, Animal {}
```

A. The code compiles without issue.

B. Remove the `default` method modifier and method implementation on line 1.

C. Remove the `default` method modifier and method implementation on line 2.

D. Remove the `default` method modifier and method implementation on lines 1 and 2.

E. Change the return value on line 1 from `null` to `"Animal"`.

- **F.** Override the `getName()` method with an `abstract` method in the `Otter` class.
- **G.** Override the `getName()` method with a concrete method in the `Otter` class.

17. Which of the following lines can be inserted at line 11 to print `true`? (Choose all that apply)

```
10: public static void main(String[] args) {
11:   // INSERT CODE HERE
12: }
13: private static boolean test(Predicate<Integer> p) {
14:   return p.test(5);
15: }
```

- **A.** `System.out.println(test(i -> i == 5));`
- **B.** `System.out.println(test(i -> {i == 5;}));`
- **C.** `System.out.println(test((i) -> i == 5));`
- **D.** `System.out.println(test((int i) -> i == 5);`
- **E.** `System.out.println(test((int i) -> {return i == 5;}));`
- **F.** `System.out.println(test((i) -> {return i == 5;}));`

18. Which of the following print out a date representing April 1, 2015? (Choose all that apply)

- **A.** `System.out.println(LocalDate.of(2015, Calendar.APRIL, 1));`
- **B.** `System.out.println(LocalDate.of(2015, Month.APRIL, 1));`
- **C.** `System.out.println(LocalDate.of(2015, 3, 1));`
- **D.** `System.out.println(LocalDate.of(2015, 4, 1));`
- **E.** `System.out.println(new LocalDate(2015, 3, 1));`
- **F.** `System.out.println(new LocalDate(2015, 4, 1));`

19. Bytecode is in a file with which extension?

- **A.** `.bytecode`
- **B.** `.bytes`
- **C.** `.class`
- **D.** `.exe`
- **E.** `.javac`
- **F.** `.java`

20. Which of the following are checked exceptions? (Choose all that apply)

- **A.** `Exception`
- **B.** `IllegalArgumentException`
- **C.** `IOException`
- **D.** `NullPointerException`
- **E.** `NumberFormatException`
- **F.** `StackOverflowError`