Review Questions

1. Which of the following are valid Java identifiers? (Choose all that apply)
   - A. `A$B`
   - B. `_helloWorld`
   - C. `true`
   - D. `java.lang`
   - E. `Public`
   - F. `1980_s`

2. What is the output of the following program?

```
1: public class WaterBottle {
2: private String brand;
3: private boolean empty;
4: public static void main(String[] args) {
5:   WaterBottle wb = new WaterBottle();
6:   System.out.print("Empty = " + wb.empty);
7:   System.out.print(", Brand = " + wb.brand);
8: } }
```

   - A. Line 6 generates a compiler error.
   - B. Line 7 generates a compiler error.
   - C. There is no output.
   - D. `Empty = false, Brand = null`
   - E. `Empty = false, Brand =`
   - F. `Empty = null, Brand = null`

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

```
4: short numPets = 5;
5: int numGrains = 5.6;
6: String name = "Scruffy";
7: numPets.length();
8: numGrains.length();
9: name.length();
```

   - A. Line 4 generates a compiler error.
   - B. Line 5 generates a compiler error.
   - C. Line 6 generates a compiler error.
   - D. Line 7 generates a compiler error.
   - E. Line 8 generates a compiler error.
   - F. Line 9 generates a compiler error.
   - G. The code compiles as is.

4. Given the following class, which of the following is true? (Choose all that apply)

```
1: public class Snake {
2:
3:  public void shed(boolean time) {
4:
5:    if (time) {
6:
7:    }
8:    System.out.println(result);
9:
10:  }
11: }
```

   - A. If `String result = "done";` is inserted on line 2, the code will compile.
   - B. If `String result = "done";` is inserted on line 4, the code will compile.
   - C. If `String result = "done";` is inserted on line 6, the code will compile.
   - D. If `String result = "done";` is inserted on line 9, the code will compile.
   - E. None of the above changes will make the code compile.

5. Given the following classes, which of the following can independently replace `INSERT IMPORTS HERE` to make the code compile? (Choose all that apply)

```
package aquarium;
public class Tank { }

package aquarium.jellies;
public class Jelly { }

package visitor;
INSERT IMPORTS HERE
public class AquariumVisitor {
  public void admire(Jelly jelly) { } }
```

   - A. `import aquarium.*;`
   - B. `import aquarium.*.Jelly;`
   - C. `import aquarium.jellies.Jelly;`
   - D. `import aquarium.jellies.*;`
   - E. `import aquarium.jellies.Jelly.*;`
   - F. None of these can make the code compile.

6. Given the following classes, what is the maximum number of imports that can be removed and have the code still compile?

```
package aquarium; public class Water { }

package aquarium;
import java.lang.*;
import java.lang.System;
import aquarium.Water;
import aquarium.*;
public class Tank {
  public void print(Water water) {
   System.out.println(water); } }
```

A. 0
B. 1
C. 2
D. 3
E. 4
F. Does not compile.

7. Given the following classes, which of the following snippets can be inserted in place of `INSERT IMPORTS HERE` and have the code compile? (Choose all that apply)

```
package aquarium;
public class Water {
  boolean salty = false;
}
package aquarium.jellies;
public class Water {
  boolean salty = true;
}
package employee;
 INSERT IMPORTS HERE
public class WaterFiller {
  Water water;
}
```

A. `import aquarium.*;`
B. `import aquarium.Water;`
   `import aquarium.jellies.*;`
C. `import aquarium.*;`
   `import aquarium.jellies.Water;`
D. `import aquarium.*;`
   `import aquarium.jellies.*;`
E. `import aquarium.Water;`
   `import aquarium.jellies.Water;`
F. None of these imports can make the code compile.

8. Given the following class, which of the following calls print out `Blue Jay`? (Choose all that apply)

```
public class BirdDisplay {
  public static void main(String[] name) {
    System.out.println(name[1]);
} }
```

A. `java BirdDisplay Sparrow Blue Jay`
B. `java BirdDisplay Sparrow "Blue Jay"`
C. `java BirdDisplay Blue Jay Sparrow`
D. `java BirdDisplay "Blue Jay" Sparrow`
E. `java BirdDisplay.class Sparrow "Blue Jay"`
F. `java BirdDisplay.class "Blue Jay" Sparrow`
G. Does not compile.

9. Which of the following legally fill in the blank so you can run the `main()` method from the command line? (Choose all that apply)

```
public static void main(_____)
```

A. `String[] _names`
B. `String[] 123`
C. `String abc[]`
D. `String _Names[]`
E. `String... $n`
F. `String names`
G. None of the above.

10. Which of the following are legal entry point methods that can be run from the command line? (Choose all that apply)

A. `private static void main(String[] args)`
B. `public static final main(String[] args)`
C. `public void main(String[] args)`
D. `public static void test(String[] args)`
E. `public static void main(String[] args)`
F. `public static main(String[] args)`
G. None of the above.

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

- **A.** An instance variable of type `double` defaults to `null`.
- **B.** An instance variable of type `int` defaults to `null`.
- **C.** An instance variable of type `String` defaults to `null`.
- **D.** An instance variable of type `double` defaults to `0.0`.
- **E.** An instance variable of type `int` defaults to `0.0`.
- **F.** An instance variable of type `String` defaults to `0.0`.
- **G.** None of the above.

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

- **A.** A local variable of type `boolean` defaults to `null`.
- **B.** A local variable of type `float` defaults to `0`.
- **C.** A local variable of type `Object` defaults to `null`.
- **D.** A local variable of type `boolean` defaults to `false`.
- **E.** A local variable of type `boolean` defaults to `true`.
- **F.** A local variable of type `float` defaults to `0.0`.
- **G.** None of the above.

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

- **A.** An instance variable of type `boolean` defaults to `false`.
- **B.** An instance variable of type `boolean` defaults to `true`.
- **C.** An instance variable of type `boolean` defaults to `null`.
- **D.** An instance variable of type `int` defaults to `0`.
- **E.** An instance variable of type `int` defaults to `0.0`.
- **F.** An instance variable of type `int` defaults to `null`.
- **G.** None of the above.

14. Given the following class in the file `/my/directory/named/A/Bird.java`:

```
INSERT CODE HERE
public class Bird { }
```

Which of the following replaces `INSERT CODE HERE` if we compile from `/my/directory`? (Choose all that apply)

- **A.** `package my.directory.named.a;`
- **B.** `package my.directory.named.A;`
- **C.** `package named.a;`
- **D.** `package named.A;`
- **E.** `package a;`
- **F.** `package A;`
- **G.** Does not compile.

15. Which of the following lines of code compile? (Choose all that apply)

- **A.** `int i1 = 1_234;`
- **B.** `double d1 = 1_234_.0;`
- **C.** `double d2 = 1_234._0;`
- **D.** `double d3 = 1_234.0_;`
- **E.** `double d4 = 1_234.0;`
- **F.** None of the above.

16. Given the following class, which of the following lines of code can replace `INSERT CODE HERE` to make the code compile? (Choose all that apply)

```
public class Price {
      public void admission() {
                INSERT CODE HERE
            System.out.println(amount);
      } }
```

- **A.** `int amount = 9L;`
- **B.** `int amount = 0b101;`
- **C.** `int amount = 0xE;`
- **D.** `double amount = 0xE;`
- **E.** `double amount = 1_2_.0_0;`
- **F.** `int amount = 1_2_;`
- **G.** None of the above.

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

```
public class Bunny {
       public static void main(String[] args) {
            Bunny bun = new Bunny();
} }
```

- **A.** `Bunny` is a class.
- **B.** `bun` is a class.
- **C.** `main` is a class.
- **D.** `Bunny` is a reference to an object.
- **E.** `bun` is a reference to an object.
- **F.** `main` is a reference to an object.
- **G.** None of the above.

18. Which represent the order in which the following statements can be assembled into a program that will compile successfully? (Choose all that apply)

```
A: class Rabbit {}
B: import java.util.*;
C: package animals;
```

A. A, B, C
B. B, C, A
C. C, B, A
D. B, A
E. C, A
F. A, C
G. A, B

19. Suppose we have a class named `Rabbit`. Which of the following statements are true? (Choose all that apply)

```
1:  public class Rabbit {
2:   public static void main(String[] args) {
3:     Rabbit one = new Rabbit();
4:     Rabbit two = new Rabbit();
5:     Rabbit three = one;
6:     one = null;
7:     Rabbit four = one;
8:     three = null;
9:     two = null;
10:    two = new Rabbit();
11:    System.gc();
12: } }
```

A. The `Rabbit` object from line 3 is first eligible for garbage collection immediately following line 6.
B. The `Rabbit` object from line 3 is first eligible for garbage collection immediately following line 8.
C. The `Rabbit` object from line 3 is first eligible for garbage collection immediately following line 12.
D. The `Rabbit` object from line 4 is first eligible for garbage collection immediately following line 9.
E. The `Rabbit` object from line 4 is first eligible for garbage collection immediately following line 11.
F. The `Rabbit` object from line 4 is first eligible for garbage collection immediately following line 12.

20. What is true about the following code? (Choose all that apply)

```
public class Bear {
  protected void finalize() {
    System.out.println("Roar!");
}
public static void main(String[] args) {
  Bear bear = new Bear();
  bear = null;
  System.gc();
} }
```

A. `finalize()` is guaranteed to be called.
B. `finalize()` might or might not be called
C. `finalize()` is guaranteed not to be called.
D. Garbage collection is guaranteed to run.
E. Garbage collection might or might not run.
F. Garbage collection is guaranteed not to run.
G. The code does not compile.

21. What does the following code output?

```
1: public class Salmon {
2:  int count;
3:  public void Salmon() {
4:    count = 4;
5:  }
6: public static void main(String[] args) {
7:  Salmon s = new Salmon();
8:  System.out.println(s.count);
9: } }
```

A. 0
B. 4
C. Compilation fails on line 3.
D. Compilation fails on line 4.
E. Compilation fails on line 7.
F. Compilation fails on line 8.

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

A. Java allows operator overloading.
B. Java code compiled on Windows can run on Linux.
C. Java has pointers to specific locations in memory.
D. Java is a procedural language.
E. Java is an object-oriented language.
F. Java is a functional programming language.