Chapter 1: Building blocks

1. 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)
//No puede ser privada
B. public static final main(String[] args)
//Falta valor de retorno
C. public void main(String[] args)
//Es necesario utilizar static en el método principal
D. public static final void main(String[] args)
E. public static void main(String[] args)
F. public static main(String[] args)
//Falta valor de retorno
```

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

```
X: class Rabbit {}
Y: import java.util.*;
Z: package animals;

A. X, Y, Z
B. Y, Z, X
C. Z, Y, X
//Se utiliza primero el paquete donde se encuentra,
  seguido de las importaciones y finalmente la clase
D. Y, X
//Package no es necesario mientras las rutas de la
  carpeta del proyecto sea la misma donde se esta trabajando
E. Z, X
```

```
//No es necesario importar a menos que se requiera
F. X, Z
G. None of the above
```

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

```
public class Bunny {
    public static void main(String[] x) {
        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. The main() method doesn’t
run because the parameter name is incorrect.
```

4. Which of the following are valid Java identifiers? (Choose all that apply.)

```
A. _
//El guión bajo solo, no es reconocido como identificador
B. _helloWorld$
//Comienza con guión bajo
C. true
//Es palabra reservada en Java
D. java.lang
//No puede existir puntos dentro de los identificadores
E. Public
//Palabra reservada en Java
F. 1980_s
//Comienza con numeros, seguido de guión bajo y una letra
```

```
G. _Q2_
//Comienza con guión bajo y continua con letras
```

5. Which statements about the following program are correct? (Choose all that apply.)

```
2: public class Bear {
3:     private Bear pandaBear;
4:     private void roar(Bear b) {
5:         System.out.println("Roar!");
6:         pandaBear = b;
7:     }
8:     public static void main(String[] args) {
9:         Bear brownBear = new Bear();
10:        Bear polarBear = new Bear();
11:        brownBear.roar(polarBear);
12:        polarBear = null;
13:        brownBear = null;
14:        System.gc(); } }

A. The object created on line 9 is eligible for
    garbage collection after line 13.
B. The object created on line 9 is eligible for
    garbage collection after line 14.
C. The object created on line 10 is eligible for
    garbage collection after line 12.
D. The object created on line 10 is eligible for
    garbage collection after line 13.
E. Garbage collection is guaranteed to run.
F. Garbage collection might or might not run.
//Garbage collection puede o no puede correr,
    dependera de la JVM
G. The code does not compile.
```

6. Assuming the following class compiles, how many variables defined in the class or method are in scope on the line marked on line 14?

```
1: public class Camel {
2:     { int hairs = 3_000_0; }//Alcance limitado
3:     long water, air=2;
4:     boolean twoHumps = true;
5:     public void spit(float distance) {
6:         var path = "";
7:         { double teeth = 32 + distance++; }
                    //Alcance limitado
8:         while(water > 0) {
9:             int age = twoHumps ? 1 : 2;
10:            short i=-1;
11:            for(i=0; i<10; i++) {
12:                var Private = 2; //Alcance limitado
13:            }
14:            // SCOPE
15:        }
16:     }
17: }

A. 2
B. 3
C. 4
D. 5
E. 6
F. 7
G. None of the above
```

7. Which are true about this code? (Choose all that apply.)

```
public class KitchenSink {
    private int numForks;
    public static void main(String[] args) {
```

```
        int numKnives;
        System.out.print("""
            "# forks = " + numForks +
            " # knives = " + numKnives +
            # cups = 0""");
    }
}

A. The output includes: # forks = 0.
//No se utilizan las variables.
B. The output includes: # knives = 0.
//No se utilizan las variables.
C. The output includes: # cups = 0.
D. The output includes a blank line.
//No hay lineas en blanco dentro del código.
E. The output includes one or
    more lines that begin with whitespace.
//En el caso de " # knives" imprimira un espacio en blanco
    al inicio.
F. The code does not compile.
//Compilaria porque no se esta haciendo uso de las variables
```

8. Which of the following code snippets about var compile without issue when used in a method? (Choose all that apply.)

```
A. var spring = null;
//Necesita un tipo de dato para inicializar
B. var fall = "leaves";
C. var evening = 2; evening = null;
//No se puede utilizar null
D. var night = Integer.valueOf(3);
E. var day = 1/0;
F. var winter = 12, cold;
G. var fall = 2, autumn = 2;
```

```
//No se puede utilizar var para asignar mutiples variables
H. var morning = ""; morning = null;
```

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

```
A. An instance variable of type
    float defaults to 0.
B. An instance variable of type char defaults to null.
C. A local variable of type double
    defaults to 0.0.
D. A local variable of type int defaults to null.
E. A class variable of type String defaults to null.
F. A class variable of type String defaults to
    the empty string "".
G. None of the above.
```

10. Which of the following expressions, when inserted independently into the blank line, allow the code to compile? (Choose all that apply.)

```
public void printMagicData() {
    var magic = ;
    System.out.println(magic);
}

//Se pueden usar guiones bajos, excepto al inicio
    o seguidos de un punto, y los guiones pueden estar juntos.
A. 3_1
B. 1_329_.0
C. 3_13.0_
D. 5_291._2
E. 2_234.0_0
F. 9___6
G. _1_3_5_0
```

11. Given the following two class files, what is the maximum number of imports that can be removed and have the code still compile?

```
// Water.java
package aquarium;
public class Water { }
// Tank.java
package aquarium;
import java.lang.*;
import java.lang.System;
//lang se importa automáticamente
import aquarium.Water;
import aquarium.*;
//Como ambos pertenecen al paquete aquarium
    no hay necesidad de importar

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
```

12. Which statements about the following class are correct? (Choose all that apply.)

```
1: public class ClownFish {
2:   int gills = 0, double weight=2;
3:   { int fins = gills; }
4:   void print(int length = 3) {
5:     System.out.println(gills);
```

```
6:     System.out.println(weight);
7:     System.out.println(fins);
8:     System.out.println(length);
9: } }

A. Line 2 generates a compiler error.
//Genera error porque las variables deben estar separadas.
B. Line 3 generates a compiler error.
C. Line 4 generates a compiler error.
D. Line 7 generates a compiler error.
//fins solamente se define en el bloque de la linea 3
E. The code prints 0.
F. The code prints 2.0.
G. The code prints 2.
H. The code prints 3.
```

13. Given the following classes, which of the following snippets can independently 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.*;
//Se obtendria un error porque importaria ambas clases Water
E. import aquarium.Water;
import aquarium.jellies.Water;
//Se obtendria un error porque importaria ambas clases Water
F. None of these imports can make the code compile.
```

14. Which of the following statements about the code snippet are true (Choose all that apply.)

```
3: short numPets = 5L;
4: int numGrains = 2.0;
5: String name = "Scruffy";
6: int d = numPets.length();
7: int e = numGrains.length;
8: int f = name.length();

A. Line 3 generates a compiler error.
//L se utiliza para los valores en formato Long
B. Line 4 generates a compiler error.
//Int se utiliza para enteros y no para float
C. Line 5 generates a compiler error.
D. Line 6 generates a compiler error.
//Los valores short no tienen propiedades length()
E. Line 7 generates a compiler error.
//Los valores int no tienen propiedades length()
F. Line 8 generates a compiler error.
```

15. Which of the following statements about garbage collection are correct? (Choose all that apply.)

```
A. Calling System.gc() is guaranteed
 to free up memory by destroying objects
 eligiblefor garbage collection.
//JVM decidira si el objeto es elegible para ser eliminado
B. Garbage collection runs on a set schedule.
C. Garbage collection allows the JVM to
    reclaim memory for other objects.
D. Garbage collection runs when your
    program has used up half the available memory.
E. An object may be eligible for garbage
    collection but never removed from the heap.
F. An object is eligible for garbage
    collection once no references to it
    are accessible in theprogram.
G. Marking a variable final means its
    associated object will never
    be garbage collected.
//Si el objeto ya no esta en uso sera elegible
para el garbage collector
```

16. Which are true about this code? (Choose all that apply.)

```
var blocky = """
    squirrel \s
    pigeon \
    termite""";
System.out.print(blocky);

A. It outputs two lines.
// El \ despues de pigeon anula el salto de linea.
B. It outputs three lines.
C. It outputs four lines.
D. There is one line with trailing whitespace.
E. There are two lines with trailing whitespace.
```

```
F. If we indented each line five characters,
    it would change the output.
```

17. What lines are printed by the following program? (Choose all that apply.)

```
1: public class WaterBottle {
2:    private String brand;
3:    private boolean empty;
4:    public static float code;
5:    public static void main(String[] args) {
6:       WaterBottle wb = new WaterBottle();
7:       System.out.println("Empty = " + wb.empty);
8:       System.out.println("Brand = " + wb.brand);
9:       System.out.println("Code = " + code);
10: } }

A. Line 8 generates a compiler error.
B. Line 9 generates a compiler error.
C. Empty =
D. Empty = false
E. Brand =
F. Brand = null
G. Code = 0.0
H. Code = 0f
//Se genera el objeto y se inicializan valores por default.
```

18. Which of the following statements about var are true? (Choose all that apply.)

```
A. A var can be used as a constructor parameter.
B. The type of a var is known at compile time.
//El tipo de variable se conocera dependiendo el valor asignado
C. A var cannot be used as an instance variable.
D. A var can be used in a multiple
    variable assignment statement.
E. The value of a var cannot change at runtime.
```

```
F. The type of a var cannot change at runtime.
G. The word var is a reserved word in Java.
```

19. Which are true about the following code? (Choose all that apply.)

```
var num1 = Long.parseLong("100");
var num2 = Long.valueOf("100");
System.out.println(Long.max(num1, num2));

A. The output is 100.
//La salida es 100 porque selecciona el valor mayor.
B. The output is 200.
C. The code does not compile.
D. num1 is a primitive.
E. num2 is a primitive.
//Se crea un objeto
```

20. Which statements about the following class are correct? (Choose all that apply.)

```
1: public class PoliceBox {
2:    String color;
3:    long age;
4:    public void PoliceBox() {
5:       color = "blue";
6:       age = 1200;
7: }
8: public static void main(String []time) {
9:     var p = new PoliceBox();
10:    var q = new PoliceBox();
11:    p.color = "green";
12:    p.age = 1400;
13:    p = q;
14:    System.out.println("Q1="+q.color);
15:    System.out.println("Q2="+q.age);
```

```
16:    System.out.println("P1="+p.color);
17:    System.out.println("P2="+p.age);
18: } }

A. It prints Q1=blue.
B. It prints Q2=1200.
C. It prints P1=null.
//Es null porque toma valores default
    por la creación del objeto pero sin
    la asignación de valores.
D. It prints P2=1400.
E. Line 4 does not compile.
F. Line 12 does not compile.
G. Line 13 does not compile.
H. None of the above.
```

21. What is the output of executing the following class?

```
1: public class Salmon {
2:    int count;
3:    { System.out.print(count+"-"); } //2 (El valor default es
4:    { count++; }
5:    public Salmon() {
6:       count = 4;
7:       System.out.print(2+"-"); //3
8:       }
9: public static void main(String[] args) {
10:    System.out.print(7+"-"); //1
11:    var s = new Salmon();
12:    System.out.print(s.count+"-"); } } //4 El valor es 4

A. 7-0-2-1-
B. 7-0-1-
C. 0-7-2-1-
D. 7-0-2-4-
```

```
E. 0-7-1-
F. The class does not compile because of line 3.
G. The class does not compile because of line 4.
H. None of the above.
```

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

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

A. int Amount = 0b11;
B. int amount = 9L;
C. int amount = 0xE;
D. int amount = 1_2.0;
E. double amount = 1_0_.0;
F. int amount = 0b101;
G. double amount = 9_2.1_2;
//Es un valor double, que tiene la sintaxis permitida.
H. double amount = 1_2_.0_0;
```

23. Which statements about the following class are true? (Choose all that apply.)

```
1: public class River {
2:    int Depth = 1;
3:    float temp = 50.0;
4:    public void flow() {
5:       for (int i = 0; i < 1; i++) {
6:          int depth = 2;
7:          depth++;
8:          temp--;
```

```
9:       }
10:    System.out.println(depth);
11:    System.out.println(temp); }
12: public static void main(String... s) {
13:    new River().flow();
14: } }
```

A. Line 3 generates a compiler error.
//Necesita tener el inficativo F.
B. Line 6 generates a compiler error.
C. Line 7 generates a compiler error.
D. Line 10 generates a compiler error.
//El alcance de depth solo esta dentro del ciclo for.
E. The program prints 3 on line 10.
F. The program prints 4 on line 10.
G. The program prints 50.0 on line 11.
H. The program prints 49.0 on line 11.