Using Classes – MCQ Part A

This quiz has 15 questions.

1. A student has created a `Book` class. The class contains variables to represent the following.
   - An `int` variable called `pages` to represent the number of pages
   - A `boolean` variable called `isHardcover` to indicate whether or not the book is hardcover

   The object `story` will be declared as type `Book`. Which of the following descriptions is accurate?

   Ⓐ An instance of the `story` class is `Book`.

   Ⓑ An instance of the `Book` object is story.

   Ⓒ An attribute of the story object is `isHardcover`.

   Ⓓ An attribute of the `pages` object is `Book`.

   Ⓔ An attribute of the `Book` instance is story.

2. A school administrator has created a `Student` class. The class contains variables to represent the following.
   - An `int` variable called `studentID` to represent the student's ID number
   - A `String` variable called `studentName` to represent the student's name

   The school administrator has also created a `Parent` class. The class contains variables to represent the following.
   - A `String` variable called `parentName` to represent the parent's name
   - A `String` variable called `email` to represent the parent's e-mail address

   The object `penelope` will be declared as type `Student`. The object `mrsPatel` will be declared as type `Parent`.
   Which of the following descriptions is accurate?

   Ⓐ An attribute of the `penelope` object is `email`.

   Ⓑ An attribute of the `penelope` object is `Parent`.

   Ⓒ An attribute of the `penelope` object is `Student`.

   Ⓓ An attribute of the `mrsPatel` object is `studentName`.

   Ⓔ An attribute of the `mrsPatel` object is `email`.

3. A teacher has created a `Student` class. The class contains the following.
   - An `int` variable called `grade` to represent the student's grade level
   - A `String` variable called `name` to represent the student's name
   - A `double` variable called `average` to represent the student's grade-point average
   - A method called `updateAverage` that updates the student's average.

   The object `greg` will be declared as type `Student`. Which of the following descriptions is accurate?

   Ⓐ `greg` is an instance of the `Student` class.

   Ⓑ `greg` is an instance of the `updateAverage` method.

   Ⓒ `greg` is an instance of three attributes.

   Ⓓ `Student` is an instance of the `greg` object.

   Ⓔ `updateAverage` is an instance of the `Student` class.

4. Consider the following description of the `Thing` class which includes two constructors.
   - `public Thing()` – constructs a `Thing` object that uses a default value to represent a color
   - `public Thing(String setColor)` – constructs a `Thing` object that uses `setColor` to represent a color

   Which of the following code segments, when appearing in a class other than `Thing`, will create an instance variable of a `Thing` object with a value of `null`?

   Ⓐ
   ```
   private Thing something =
      new Thing("Green");
   ```

   Ⓑ
   ```
   private Thing something =
      new Thing("");
   ```

   Ⓒ
   ```
   private Thing something =
      new Thing();
   ```

   Ⓓ
   ```
   private Thing something;
   ```

   Ⓔ
   ```
   private Thing("Green");
   ```

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5. Consider the following description of the `VetRecord` class which includes two constructors.
   - `public VetRecord(String name, int age, int weight, boolean needsVac)` – constructs a `VetRecord` object that represents a vet record for a pet with name `name`, age `age`, weight `weight`, and whether they need to be vaccinated `needsVac`.
   - `public VetRecord(String name, int age, int weight)` – constructs a `VetRecord` object that represents a vet record for a pet with name `name`, age `age`, weight `weight`.

   A new constructor is to be added to the `VetRecord` class. Which of the following is NOT a possible header for the new constructor?

   Ⓐ `VetRecord(int age, int weight)`

   Ⓑ `VetRecord(int age, boolean needsVac)`

   Ⓒ `VetRecord(String name, int age)`

   Ⓓ `VetRecord(String name, boolean needsVac)`

   Ⓔ `VetRecord(String name, int weight, int age)`

6. Consider the following description of the `Vbox` class which includes two constructors.
   - `public Vbox(int w, int h, int d)` – constructs a `Vbox` object that represents a box with width `w`, height `h`, depth `d`.
   - `public Vbox(int leng)` – constructs a `Vbox` object that represents a box with width `len`, height `len`, depth `len`.

   Which of the following delclarations, appearing in a method in a class other than `Vbox`, will correctly instantiate a `Vbox` object?

   I. `Vbox b1 = new Vbox(4);`

   II. `Vbox b2 = new Vbox(3, 8, 4);`

   III. `Vbox B3 = new Vbox(4.0, 4.0, 4.0);`

   Ⓐ I only

   Ⓑ II only

   Ⓒ I and II only

   Ⓓ I and III only

   Ⓔ II and III only

7. Consider the following description of the `MagicNumber` class which includes one constructor and two methods.
   - `public MagicNumber()` – constructs a `MagicNumber` object that represents a number.
   - `public void displaynumber()` – displays the number to the screen.
   - `public void add_2()` – increases the number by 2.

   When located in a method in a class other than `MagicNumber`, which of the following code segments will compile without error?

   I.
   ```
   MagicNumber.add_2();
   MagicNumber.displayNumber();
   ```

   II.
   ```
   MagicNumber n1 = new MagicNumber();
   n1.add_2();
   n1.displayNumber();
   ```

   III.
   ```
   n2.add_2();
   n2.displayNumber();
   ```

   Ⓐ I only

   Ⓑ II only

   Ⓒ III only

   Ⓓ II and III only

   Ⓔ None of the code segments will compile.

8. Consider the following description of the `Purchase` class which includes one constructor and one method.
   - `public Purchase( double purchaseAmt, double taxAmt)` – constructs a `Purchase` object that represents a single purchase with purchase amount `purchaseAmt` and tax `taxAmt`.
   - `public void totalAmount()` – Displays the sum of the purchase amount and the tax.

   Assume that a `Purchase` object `p` has been properly declared and initialized. Which of the following code segments will successfully print the total purchase amount associated with `p`?

   Ⓐ `Purchase.totalAmount();`

   Ⓑ `System.out.print(p);`

   Ⓒ `totalAmount(p);`

   Ⓓ `System.out.print(p.totalAmount());`

   Ⓔ `p.totalAmount();`

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9. Consider the following description of the `AnimalPrinter` class which includes two methods.
   - `public void printDog()` – displays the word "`dog`" and then moves the cursor to a new line.
   - `public void printCat()` – displays the word "`cat`" and then moves the cursor to a new line.

   The method myMethod appears in a class other than AnimalPrinter. The method is intended to produce the following output.

   ```
   dog
   cat
   ```

   Assume that an `AnimalPrinter` object `myPrinter` has been properly declared and initialized inside `myMethod`. Which of the following code segments, if located in `myMethod`, will produce the intended output?

   Ⓐ
   ```
   printDog();
   printCat();
   ```
   Ⓑ
   ```
   printDog(AnimalPrinter);
   printDog(AnimalPrinter);
   ```
   Ⓒ
   ```
   AnimalPrinter.printDog();
   AnimalPrinter.printCat();
   ```
   Ⓓ
   ```
   printDog(myPrinter);
   printCat(myPrinter);
   ```
   Ⓔ
   ```
   myPrinter.printDog();
   myPrinter.printCat();
   ```

10. Consider the following descriptions of two methods, which appear in the same class.
    - `public void methodA(int arg)` – calls `methodB` with the value of `arg * 10`.
    - `public void methodB(int arg)` – displays the value of `arg + 10`.

    Consider the call `methodA(4)`, which appears in a method in the same class. What, if anything, is printed as a result of the call `methodA(4)`?

    Ⓐ `14`

    Ⓑ `40`

    Ⓒ `50`

    Ⓓ `140`

    Ⓔ Nothing is printed.

11. Consider the following description method `adjust`.
    - `public void adjust(double max, double min, double total, double n)` – displays the value of `(total - max-min) / (n - 2.0)`

    Consider the call `adjust(25.0, 5.0, 60.0, 5.0)`, which appears in a method in the same class. What is printed as a result of the method call?

    Ⓐ `6.0`

    Ⓑ `10.0`

    Ⓒ `12.0`

    Ⓓ `15.0`

    Ⓔ `20.0`

12. Consider the following description method `printSomething`.
    - `public void printSomething( int num, boolean val)` – displays the value of `val` immediately followed by the value of `num - 1`.

    Consider the following code segment, which appears in a method in the same class as `printSomething`.

    ```
    printSomething(1, true);
    printSomething(2, true);
    ```

    What is printed as a result of executing the code segment?

    Ⓐ `0true1true`

    Ⓑ `1true2true`

    Ⓒ `true0true1`

    Ⓓ `true1true0`

    Ⓔ `true1true2`

13. Consider the following `secret` method.
    - `public double secret( int x, double y)` – Which of the following lines of code, if located in a method in the same class as `secret`, will compile without error?

    Ⓐ
    ```
    int result = secret(4,4);
    ```
    Ⓑ
    ```
    int result = secret(4,4.0);
    ```
    Ⓒ
    ```
    double result = secret(4,4.0);
    ```
    Ⓓ
    ```
    double result = secret(4.0,4);
    ```
    Ⓔ
    ```
    double result = secret(4.0,4.0)
    ```

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14. Consider the following description of method `min`.
    - `public int min(int first, int second)` – returns the lesser of its two parameters.

    Assume that each of the following expressions appears in a method in the same class as the method `min`. Assume also that the `int` variables `p`, `q`, and `r` have been properly declared and initialized. Which of the following expressions evaluates to the minimum value among `p`, `q`, and `r`?

    I. `min(min(p,q), r)`

    II. `min(p, min(q, r))`

    III. `min(min(p, q), p)`

    Ⓐ I only

    Ⓑ II only

    Ⓒ III only

    Ⓓ I and II only

    Ⓔ I, II and III only

15. Consider the following description of method `fahrenheitToCelsius`.
    - `public double fahrenheitToCelsius(double f)` – takes as input a temperature in degrees Fahrenheit and returns the corresponding temperature in degrees Celcius.

    Assume that each of the following code segments appears in a method in the same class as `fahrenheitToCelsius`. Which of the following code segments prints the temperature in degrees Celsius that corresponds to 32 degrees Fahrenheit?

    Ⓐ
    ```
    double f = 32.0;
    fahrenheitToCelsius();
    System.out.println(f);
    ```

    Ⓑ
    ```
    double f = 32.0;
    f = fahrenheitToCelsius();
    System.out.println(f);
    ```

    Ⓒ
    ```
    double f = 32.0;
    fahrenheitToCelsius(f);
    System.out.println(f);
    ```

    Ⓓ
    ```
    double f = 32.0;
    double c = fahrenheitToCelsius();
    System.out.println(c);
    ```

    Ⓔ
    ```
    double f = 32.0;
    double c = fahrenheitToCelsius(f);
    System.out.println(c);
    ```