CSSE 220 – Object-Oriented Software Development
Rose-Hulman Institute of Technology

Worksheet 03

Name (Print):_____   Section:_____

1. **What is a 2D Array?**
   A 2D array stores values in *rows and columns.*
   Write one example of a 2D array: _____

2. **Two Dimensions**

   - The first dimension [ ] represents : _____
   - The second dimension [ ] represents: _____

3. **Declaring a 2D Array**. Complete the declaration of a 10x20 int array:

   ```
   int[][] arr = new int[_____][ _____ ];
   ```

4. **Accessing Elements**. Given the 2D array:

   ```
   int[][] arr = {
       {1, 2, 3},
       {4, 5, 6}
   };
   ```

   Fill in the expression to print the value 5:

   ```
   System.out.println( arr[ _____ ][ _____ ] );
   ```

5. **2D Array Lengths**

   - `arr.length` = number of _____
   - `arr[0].length` = number of _____

6. **Traversing a 2D Array**. Complete the nested loops used to print all values:

   ```
   for (int r = 0; r < arr._____ ; r++) {
       for (int c = 0; c < arr[r]._____ ; c++) {
           System.out.println( arr[ _____ ][ _____ ] );
       }
   }
   ```

7. **What is a HashMap?**
   A HashMap stores *key–value pairs.* Provide one real-world example from a key and a value
   pair: _____

8. **Core Rules (circle the correct statement)**

   - Keys must be unique.   (T / F)

   - Values may repeat.   (T / F)

   - HashMap is an ordered collection.   (T / F)

9. **Creating a HashMap**. Complete the examples shown in class:

   ```
   HashMap<_____> airportMap = new HashMap<_____>();

   HashMap<_____> capitalCities = new HashMap<_____>();
   ```

10. **Common HashMap Operations**. Fill in the missing method names:

    Put a value: map._____(key, value);

    Get a value: map._____(key);

    Check key: map._____(key);

    Remove entry: map._____(key);

11. **Iterating Through a HashMap**.

    ```
    // Loop over keys and print values:
    for (String k : map._____()) {
        System.out.println( k + " → " + map.get(_____) );
    }
    ```

12. **How to Check if a Key Exists**. Complete the example shown in lecture:

    ```
    // Does the map contain the key "Spain"?
    if (capCity._____("Spain")) {  };
    ```

13. **Before You Leave**
    Write one question you want reviewed next class:

    _____