Team Application Exercises (tAPP-7)

`Instructions`: Work on `problem 1` on your own for 5 minutes. Then discuss your code with your team members and present one solution as a team (5 minutes). Follow the same process for all the tasks. Swap your solutions with another team for peer evaluation (15 minutes).

Problem 1: The following method is intended to find and return the minimum value from a list of numbers. Identify the bug in the method and indicate how it could be fixed.

```
public int findMinValue(int[] ints) {
    int min = 0;
    for (int i : ints) {
        if (i < min) {
            min = i;
        }
    }
    return min;
}
```

This code will not work properly on an array that consists only of negative numbers – it will always return 0 on such a list.

One way to fix this code is to initialise **min** to **ints[0]** instead of to 0. You will also need to check in this case that the array is non-empty, and possibly throw an exception if it is empty.

Problem 2:

Consider the following Java method:

```
public static void main(String[] args) {
    System.out.println("Hello world");
}
```

Answer the following questions in the context of the above method signature:

1. What is special about a method with the given signature?
    - *If a class has a method with this precise signature, then the class can be run as a Java application.*
2. What effect does the **public** keyword have on this method? What would be the difference if it were removed?
    - ***public** means that the method is visible to any other Java code in any class or package. No modifier (i.e., "default" or "package-private" visibility) means that it is visible only to other classes in the same package.*
3. What effect does the **static** keyword have on this method? What would be the difference if it were removed?
    - **static** means that this method can be called without needing to create an instance of the enclosing class. With no such modifier, the method could only be called on an instance.
4. What is the meaning of **void** in the method signature? What would be the effect if it were removed?
    - **void** represents the return value of the method – in this case, it indicates that the method does not return a value. If it were removed the code would not compile because all methods need a return type.
5. What data type is **String[] args**? What is another way that same data type could have been written?
    - It is an array of strings. Alternative syntax options include the C-style **String args[]** and the varargs version **String... args**.

Problem 3: Fill in the most appropriate Java code into the blank spaces in the following list of class declarations. (There may be different possible answers for some blanks – this may provoke useful discussions within your team!)

// file animals/Animal.java

```
package animals;

public abstract class Animal {

	protected String name;

	public Animal(String name) {
		this.name = name;
	}
	public abstract void move();
}
```

// file dogs/Dog.java

```
package dogs;
import animals.Animal;

public class Dog extends Animal {

	public Dog(String name) {
		super(name);
	}

	public void move() {
		System.out.println("Dogs can run");
	}

}
```