# Polymorphism & Composition Homework - Quiz

# Polymorphism

1. What does the ***word*** 'polymorphism' mean?

- Having multiple forms; in JAVA, it refers to the attribute of an item that allows it to be referred to by multiple names.

2. What does it mean when we apply polymorphism to OO design? Give a simple Java example.

- When polymorphism is applied to a single class, it keeps its original name and gets a secondary reference name from the interface or abstract class it morphs into - it will get their combined methods and attributes, however it will only be able to perform the ones that exist on both.

3. What can we use to implement polymorphism in Java?

- Interfaces or Abstract classes.

4. How many 'forms' can an object take when using polymorphism?

- As many as are listed in the implements declaration.

5. Give an example of when you could use polymorphism.

- If three separate classes require matching methods bases, an interface with that method can be created. This interface will only have a single line of code, and the individual classes would be able to expand on them depending on their specific attributes or aims.

# Composition

6. What do we mean by 'composition' in reference to object-oriented programming?

- Composition refers to a class or object that is composed of multiple different objects described outside the initial class or object.

7. When would you use composition? Provide a simple example in Java.

- In today's lab, the individual vehicles all contained engines, wheels and mirrors - the latter three composing the instantiated vehicle.

8. What is/are the advantage(s) of using composition?

- As opposed to inheritance, using composition to rely on subclass methods and attributes do not break hierarchy levels when scaled to a large number; it is also easier to trace back from either point.

9. When an object is destroyed, what happens to all the objects it is composed of?

- All subsequent objects, methods and attributes are destroyed as well.