# Task 4.1P Answer Sheet

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1. How many Counter objects were created?

There were 2 Counter objects produced in total.

## Variables declared in main() are different to the objects created when we call new. What is the relationship between the declared variables in main and the objects created?

The defined variables store object references. The objects themselves will be affected by changes made to variables defined outside of main(), not the objects themselves.

1. Resetting the counter in myCounters[2] also changes the value of the counter in myCounters[0]. Why causes this to happen?

Because the same object is referenced by both myCounters[2] and myCounters[1].

Any variable's reset counter will affect the object's counter value, therefore both variables will now have the same object value.

## The key difference between memory on the heap compared to the stack and the heap is that the heap holds dynamically allocated memory. What does this mean ?

Programmers can manage memory manually when it is dynamically allocated, but the compiler manages memory on a stack.

## On which are objects allocated (heap or stack)? On which are local variables allocated (heap or stack)?

Counter class objects are kept in a heap, whereas myCounters variables are kept on a stack.

1. What does the new() method do when called for a particular class What does it do and what does it return?

It begins by allocating memory for a fresh object. The constructor is then called in order to create a new object. It concludes by returning a reference to the item.

## Draw a diagram showing the locations of the variables and objects in main and their relationships to one another.

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