Task 4.1P Answer Sheet

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1. How many Counter objects were created?

A total of <insert how many>

2. 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?

Variables contain references to objects.

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

Because myCounter[2] and myCounter[0] contain references to the same object.

4. 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 ?

When a new object is formed in C#, the computer allocates memory on the heap at runtime. This is known as dynamic memory allocation. Every time an object is created, it is given a special memory address, which is then stored in a variable containing the reference to that object. This enables us to use the variable's associated memory address to access the object's values, methods, and properties.

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

Objects are allocated on the heap, references to objects on the stack.
Local variables are allocated on the stack, contain of references to other dynamic objects.

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

When `new()` is called on a class in C#, it dynamically allocates memory in RAM, initializes it using the constructor, and returns a unique memory address as a reference to the object.

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