Task 4.1P Answer Sheet

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1. How many Counter objects were created?

There were 3 created objects

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?

The created objects are contained by the declared variables

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

Because they are containing the same references. For clarification, there are some identical reference when compare myCounters[2] to myCounters[0].

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 ?

As soon as a function is called and returned, memory on the stack is immediately created and deallocated. For allocating static memory, the stack is employed. Dynamically allocated memory on the heap must be manually deallocated when it is no further required within running. The heap is utilized for dynamic memory assignment. The application must maintain the record of memory placed on the heap for the purpose to enable deallocation of that memory when it is no longer required. If not done correctly, this may result in memory leaks.

For summarizing, the heap stores dynamically allocated memory, which must be manually deallocated when it is no longer required, which is the main distinction between memory on the stack and the heap.

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

When a function is called, the memory for the function is allocated on the stack. This memory is freed when the function returns. Local variables are also allocated on the stack. These variables are also freed when the function returns. The stack is used for static memory allocation.

On the other hand, memory on the heap is allocated dynamically at runtime and must be manually deallocated when it is no longer needed. When memory is allocated on the heap, the

program must keep track of the memory to ensure that it can be deallocated when it is no longer needed. This can lead to memory leaks if not done properly.

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

When we create an object of a class, we are creating an instance of that class. This means that we are creating a specific copy of the class that has its own set of values for the properties defined in the class.

The new() operator is used to create an instance of a class. When we use the new() operator, we are telling C# to create a new instance of the class and return a reference to that instance. This reference can then be used to access the properties and methods of the object.

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