

TUTORIAL 2: Examining Java code

Question 1

Look at the following Java code fragment:

```
int[] x = {2, 1, 4, 5, 7};
int limit = 3;
int i = 0;
int sum = 0;

while ((sum<limit) && (i<x.length)){
    i++;
    sum = sum + x[i];
}
```

This code declares and initialises some **variables** which are all integers except `x`, which is an **array** of integers. The number of items in the array is given by `x.length`, which will be 5.

It then executes a **while** loop whose condition depends on the values of these variables. The loop will be executed if `sum` is less than `limit` AND `i` is less than `x.length`.

The code inside the loop **changes** the values of certain variables. After each time through the loop, the condition is then checked again, with the new values, to decide whether to continue looping.

Question: What are the values of `i` and `sum` after this code has executed?

To answer this you should trace what would happen as the code executes, writing down the initial values of the variables and then noting when these change. For example:

	x	x.length	limit	i	sum	condition	notes
checking while condition	{2, 1, 4, 5, 7}	5	3	0	0	true	
i++				1			
sum = sum + x[i]					1		i = 1, so x[i] is x[1], which is the <i>second</i> element of the array, = 1
checking while condition						?	
...

Copy and continue this table to find the values of **i** and **sum** after the loop has finished. Remember that array indexes start at 0!

Question 2

Look at the following code fragment.

```
int[] array1 = {2, 4, 1, 3};
int[] array2 = {0, 0, 0, 0};
int a = 0;

for (int i=1; i<array1.length; i++)
{
    if ( array1[i] >= 2 )
    {
        array2[a] = array1[i];
        a++;
    }
}
```

Question: What does array2 contain after this code has executed?

Use a similar strategy to question 1 to answer this question.