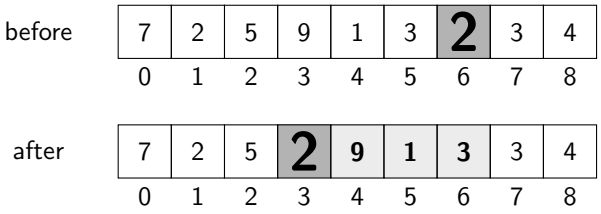
Lab #1
Addressing Modes and Arrays

Both parts of this exercise will count towards your final coursework mark for CS1022. Submit your solutions (only .s files) using Blackboard no later than 23:59pm on Monday 30th January 2017.

1 Array Move

Write an ARM Assembly Language program that will move an array element from an old index to a new index in an array of word-size values.

The figure below illustrates an array in which an element is moved from old index 6 to new index 3. **Note how the elements between the old and new indices have been moved to fill the "gap" that was left in the array.**



2 Matrix Multiplication

The pseudo-code below describes an algorithm to multiply two $N \times N$ matrices, A and B, and store the result in a third $N \times N$ matrix, R. Translate the pseudo-code into an ARM Assembly Language program.

```
for (i = 0; i < N; i++) {
  for (j = 0; j < N; j++) {
    r = 0;
    for (k = 0; k < N; k++) {
      r = r + ( A[i,k] * B[k,j] );
    }
    R[i,j] = r;
  }
}
```