Mark scheme

**Q1.**

(a)     **All marks AO2 (apply)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ItemsCount | NewItemsCount | LoopA | Done | LoopB | NewItems | | | |
| [0] | [1] | [2] | [3] |
| 4 | 1 |  |  |  | 12 | 0 | 0 | 0 |
|  | 2 | 1 | False | 0 |  | 25 |  |  |
|  |  | 2 | False | 0 |  |  |  |  |
|  |  |  | True | 1 |  |  |  |  |
|  |  | 3 | False | 0 |  |  |  |  |
|  | 3 |  |  | 1 |  |  | 53 |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

**1.**      LoopA running over the values 1, 2, 3 and stops at 3;

**2.**      LoopB is set to 0 then changes to 1 then changes to 0 then changes to 1 and no further changes;;

**3.**      NewItems becoming 12, 25, 0, 0 at the end of LoopA value 1;

**4.**      NewItems not changing during LoopA value 2;

**R.** if NewItems has not changed previously

**5.**      NewItems having value 12, 25, 53, 0 at end of table;

**A.**      NewItems without trailing zeroes

**A.**      NewItems without repeated values for 12 and 25

**Note:** 12 might not be seen in NewItems[0] as does not need to be copied across into EAD in which case column should be blank

**I.** columns NewItemsCount and Done (first and third columns in EAD)

**5**

(b)     **Mark is for AO2 (apply)**

NewItems contains an array/list of the unique items from the Items array/list;

Remove duplicate items from an array/list;

**Max 1**

**1**

**[6]**

**Q2.**

(a)     *1 mark for each correct entry*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | *Values* | | | | |
| *New* | *Last* | *Ptr* | *[1]* | *[2]* | *[3]* | *[4]* | *[5]* |
|  |  |  |  | ***max*** | ***6*** |  |  |
| *6* | *3* | *1* | *4* | *7* | *9* |  |  |
|  |  |  |  | ***max*** | ***1*** |  |  |
|  |  | *2* |  |  |  |  |  |
|  | *2* |  |  |  |  | *9* |  |
|  | *1* |  |  |  | *7* |  |  |
|  |  |  |  | *6* |  |  |  |

***6***

(b)     Insert 6/a value into the array/ in the correct position;

**1**

**[7]**

**Q3.**

(a)

|  |  |  |  |
| --- | --- | --- | --- |
| Low | High | Middle | Found |
|  |  | *5* |  |
| *6* |  | *8* |  |
|  | *7* | *6* |  |
| *7* |  | *7* | true |

*1 mark for each entry above (as far as first incorrect entry)*

*Mark row by row*

**Max 7**

(b)     Binary search/chop

Iterative (no synonyms)

(Specific searches not on AS syllabus - search sufficient for mark)

**1**

**[8]**