01 The algorithm in Figure 1 is a sorting algorithm

- array indexing starts at 0
- line numbers are included but are not part of the algorithm

Figure 1

```
 1   arr <- [7, 1, 2]
 2   sorted <- false
 3   WHILE sorted = false
 4       sorted <- true
 5       i <- 0
 6       WHILE i < 2
 7           IF arr[i+1] < arr[i] THEN
 8               t <- arr[i]
 9               arr[i] <- arr[i+1]
10               arr[i+1] <- t
11               sorted <- false
12           ENDIF
13           i <- i + 1
14       ENDWHILE
15   ENDWHILE
```

01.1 Choose the line number where **selection** is first used in the algorithm shown in **Figure 1**.

[1 mark]

Line 2 Line 3 Line 7 Line 12

01.2 Choose the line number where **iteration** is first used in the algorithm shown in **Figure 1**.

[1 mark]

Line 1 Line 3 Line 7 Line 13

01.3 Choose the line number where **variable initialisation** occurs in the algorithm shown in **Figure 1**.

[1 mark]

Line 1 Line 3 Line 7 Line 13

01.4 State the data type of the variable `sorted` in the algorithm shown in **Figure 1**.

[1 mark]

……..

01.5 State the value of `arr[2]` in the algorithm shown in Figure 1.

[1 mark]

……..

01.5 The identifier `sorted` is used in the algorithm shown in Figure 1.
Explain why this is a better choice than using the identifier `s`.

[2 marks]

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01.6 Identify which of the following is the only false statement about the algorithm in Figure 1.

[1 mark]

A. The algorithm uses nested iteration

B. The algorithm uses indefinite iteration

C. The algorithm uses a constant

01.7 Study **line 6** of the algorithm shown in **Figure 1**. Explain what this line does.

[2 marks]

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01.8 Study **line 7** of the algorithm shown in **Figure 1**. Explain what this line does.

[2 marks]

……..

……..

……..

01.9 Study **line 8** of the algorithm shown in **Figure 1**. What value will `t` take the first time the algorithm is run?

[1 mark]

……..

01.A What is the purpose of the variable `t` on **line 8** of the algorithm shown in **Figure 1**?

[1 mark]

……..