

Question 21.

(a) (i) Number of trains = 0, TrainID = ~~22123~~ location X = 20

output	Number of Train	Train	TrainID	location X	location Y
TrainID at 20, 40	0	1	2212	20	40
		2			
		etc			
		↓			

Number of Trains = 1

output	Number of Trains	Train	TrainID	X	Y
	1	1			

Number of Trains = 2

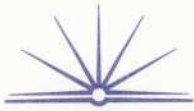
output	Number of Trains	Train	TrainID	X	Y
TrainID at X, Y	2	1			
		2			

(ii) The algorithm doesn't work because the condition on line 4 results in a number of errors as ~~shown~~ highlighted by the test data.

When the number of trains = 0, the loop from lines 4-9 should not be entered, however, as trains begins with 1, the terminating condition is never met.

When the number of trains = 1, the loop from lines 4-9 isn't entered, despite the fact that it should be executed once; this is because the terminating condition is met straight away.

When the number of trains = 2, the loop from lines 4-9 is only executed once, despite the fact that it should be executed twice. This is because; once inside the loop, the trains integer is incremented and the terminating condition is met.



~~is~~ In addition, lines 12-13 are incorrect as they ~~show~~ the values returned from the ReadLocation procedure are incorrectly used.

In the DisplayTrainID procedure, it doesn't display at the correct co-ordinates.

(iii) I would modify the algorithm in a number of ways to ensure its correct functionality.

1. line 3 should be changed to $train = 0$

2. line ~~WHILE~~⁴ should be changed to

WHILE $train < \text{NumberOfTrains}$

3. Line 8 should come before lines 5, 6, 7

This will remove the loop problem

4. Line 12, 13 should read

Location $X = X$

Location $Y = Y$

and should appear after lines 14 and 15

5. Line 18 should read

display Train ID at Location X ,

Location Y .



b)i) Firstly, this team member has broken the Copyright Act of 1968. This is because he has not requested the authorisation of the author. It is the author's intellectual property and he/she should expect to be consulted about the use of this component.

It is unethical to copy someone else's work and claim it as your own. This is plagiarism and further breaks the Copyright Act.

This team member will receive no credit for this

~~work~~
work, as the source has not been acknowledged.

Lastly, as a result of this person plagiarising the sections he took, the manufacturer must increase the cost of his/his product ~~to~~ to cover the costs for the stolen one.

ii) As software developers, their responsibilities are to ~~create~~ create a reliable and quality piece of software, ensure it has no virus infections, ensure it does the task consistently and that all sources of information are adequately acknowledged.

Firstly, the software must be reliable and have a degree of quality to it. Consumers purchase their products expecting that the software accurately completes the task and has no logic, syntax or run-time errors.

Secondly, the software can not contain any viruses that may damage the computer system of the Train Department. It should be checked with an Anti-Virus program to ensure that no bugs ~~are~~ remain in it when sold.

Lastly, to prevent copyright infringements, sources of information must be correctly acknowledged to prevent any legal proceedings that may occur.