

Section IIQuestion 21

(a) Number of Trains = 0

Train = 1 2 3 4 5 6 ..... infinite loop

Number of Trains = 1

Train = 1 - Program ends without locating the train

Number of Trains = 2

Train = 1 2 - Program ends before locating the second train.

- When run, X and Y are undefined in ReadLocation, and it does not return any value. In DisplayTrains X and Y are undefined, and so it does not display.

(ii) When the number of trains is entered as 0, the program, rather than quitting, loops indefinitely. It repeatedly calls the ReadTrains, ReadLocation and DisplayTrainID ~~the~~ modules despite the fact that the user entered a value of 0 trains. This is because the program will loop while Train does not equal NumberOfTrains, and since ~~the~~ Train is assigned the value of 1 in line 3 and incremented in line 8, it will never become equal. Thus the program loops indefinitely.

When the number of trains is entered as 1, the pre-test WHILE loop condition is broken immediately, as it reaches equality with Trains, and so the loop is bypassed immediately, and the program quits ~~the~~ without displaying the location



of the train.

When the NumberOfTrains is entered as 2, the loop proceeds once, but then the value of train is incremented and now equals the NumberOfTrains. Thus, the condition for the WHILE loop is broken and the program quits, without processing the second train as required.

(iii) Line 4 should be changed to:

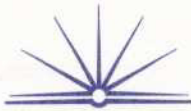
~~WHILE (Train <= 0) AND (Train <= NumberOfTrains)~~  
With this condition, the program works as desired.

~~WHILE (NumberOfTrains <= 0) AND (Train <= Num~~

WHILE Train <= NumberOfTrains

Thus, if Number of Trains is entered as 0, the condition is immediately broken and the loop, and program, terminates. The inclusion of the equality into the condition ~~means~~ means that the program will loop for the desired number of trains, rather than quitting before processing the final train.

Also, there are problems with the Read Location module. Line 14 should be executed first, followed by line 15. Then, lines 12 and 13 should follow, but, the assignment statements



need to be reversed. So, they will now read:

LocationX = X

and LocationY = Y.

The ~~the~~ DisplayTram10 also has problems, in that line 18 refers to undefined variables in that module. It should read:

display Tram10 at LocationX, LocationY

b)

i) The member may be violating copyright because they are using code which is intellectual property owned by another person. It is plagiarism because they are passing the code off as their own. The owner should be contacted to ~~ask~~ <sup>request</sup> permission and see whether they require acknowledgement because this is not being given because the member is not giving the website address or details of who actually wrote the code.

ii) The management could ~~develop~~ <sup>develop</sup> a code of conduct which the developers could agree to abide by and suffer consequences for infringement. The code could cover responsibilities such as those pertaining to copyright & the need to acknowledge the use of others work, commitment to

produce quality software that is reliable,  
respond to problems and prevent  
the spread of viruses. The  
management could also inform them of  
their rights such as authorship that  
are in conjunction with these  
responsibilities