

- 8 Calculate the shortest distance between the **Start** node and each of the nodes in the graph using Dijkstra's algorithm.

Show your working on the graph **or** in the working space. Write your answers in the table provided.

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```

graph LR
    Start((Start)) --- 6 T((T))
    Start --- 22 Y((Y))
    T --- 4 V((V))
    V --- 3 W((W))
    V --- 9 X((X))
    W --- 5 X
    Y --- 3 X
    Y --- 8 Z((Z))
    X --- 10 Z

```

Working

- Answers:

T	V	W	X	Y	Z

- [5]

(b) A customer can claim a free coffee for every 11 loyalty points.

The programmer has defined a second program module:

Module	Description
<code>PointsReport()</code>	- output the customer ID for each customer who has 11 or more loyalty points - output the average loyalty points for all customers in the <code>Loyalty</code> array along with an appropriate message

Write efficient pseudocode for module `PointsReport()`

Assume the array contains the data for at least **one** customer.

(c) The programmer decides to amend the customer ID; it will be stored as a `STRING` instead of an `INTEGER`. This means that the 2D array `Loyalty` can no longer be used.

(i) Explain why the 2D array `Loyalty` can no longer be used.

(ii) Explain how a 1D array could be used to store both the loyalty points and the amended customer ID.