

Assignment 2

by Deacon Prosser

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Introduction –

This reports aim is to deconstruct, propose and then reflect on that which would then solve the problem as stated in the assignment by using detailed and practical methods for as efficient as a solution as possible. Using techniques such as MoSCoW and by breaking it down into smaller steps. The problem is to create a solution for a Grocery company which has a delivery problem that needs to be solve and optimised.

Deconstruction –

Firstly, to sum up the requirements, it is needed for the solution for the deliveries to arrive no longer than 30 minutes, for them to arrive in the shortest possible route and in which be assigned to a possible active route as to be efficient with minimal separate deliveries which limits the need for multiple more transport vehicles this would reduce the fuel consumption of the journey also, these are the absolute minimum requirements to the solution so the Must-haves of the solution. This also should have a verification system so that another party may alter the routes and check them if another route is preferred or possibly a system in which a route is altered due to obstructions

such as traffic or road closures as these may cause the delivery to be over 30 minutes, these are the Should-haves of the solution. It could have a system in which the customer can track the order and be updated on delays but this isn't vital to the operation of the system, it just improves the user experience of using the system so therefore it is a Could-have. A possibility would be to delegate the delivery process to a third party similar to many systems today in which anyone could work self employed to deliver and work out the delivery routes on their own however this isn't what the company requires nor is it clear that they want this so therefore it is a possibility in the future but not at the current time or a Would-have in the solution.

Proposition –

To solve the requirements, it is needed to first work out the shortest available route to each delivery separately this is worked out in Figure 1 in which is a flowchart of a solution. In this it could be expanded to fit many different routes but since none was provided this is an example. This flowchart works by asking for the values to be inputted for the distance of each part of the route then adds up the separate route totals and on the decision point decides whether the first route or the second route is bigger then if route one is bigger it states that route two is the most efficient and then if route two is bigger states that route one is the most efficient this can be expanded for the necessary amounts of routes and different paths available similarly to the concept of the shortest path in computer science. Then it could be assigned to an existing route or create a new route if none were available or none were sufficient enough, this means that a delivery vehicle could carry more than one delivery at a time and could stop multiple times coming from the delivery station to each of the customers location and with this it is much more efficient if used correctly and the route is a relatively direct one as so the driver isn't going back on itself to the other customer. [1] The idea of the shortest path was used which comes from the idea in computer science however it can relate to a real life delivery strategy and is very useful in this situation as it can show clearly where the shortest path lies however it may not apply if multiple deliveries are to be delivered along a route as it may need to go back on itself to achieve this however if used in an ongoing way such as using it to go to the closest delivery location and so on it may be beneficial and sufficiently efficient. Using this method should also reduce the fuel consumption which is one of the requirements for the solution as it uses the most efficient way to deliver and there for using less fuel for the most efficient journey available. [2] [3] [4]

Reflection –

This solution is believed to be the most sufficient and efficient solution for this scenario as it completes all of the necessary requirements using a clear flowchart documented solution which reduces the total travel distance of all journeys however one journey that if completed individually may have been faster this provides a consistent and reliable method for delivery. This also reduces the fuel consumption by reducing the distance being travelled and ensures that the delivery is no more than 30 minutes late by assigning the orders to a specified route or creating a new one which is a widely used strategy in many companies that require transportation and logistical aspects, however there may be ways to improve upon in the future if more problems arise.

References

- [1] K. Jenkinson, "Are you optimising your transport strategy," 20 May 2025. [Online]. Available: <https://www.williamshaulage.co.uk/are-you-optimising-your-transport-strategy/>. [Accessed 5 January 2026].
- [2] Descartes, "10 tips when planning delivery routes," 19 September 2024. [Online]. Available: <https://routinguk.descartes.com/resources/10-tips-when-planning-delivery-routes>. [Accessed 5 January 2026].
- [3] w3schools, "DSA Shortest Path," [Online]. Available: https://www.w3schools.com/dsa/dsa_theory_graphs_shortestpath.php. [Accessed 5 January 2026].
- [4] StoneArch Logistics, "on time every time seven strategies for success in food transportation and shipping," 23 December 2024. [Online]. Available: <https://www.stonearchlogistics.com/blog/on-time-every-time-seven-strategies-for-success-in-food-transportation-and-shipping>. [Accessed 5 January 2026].

Appendix –

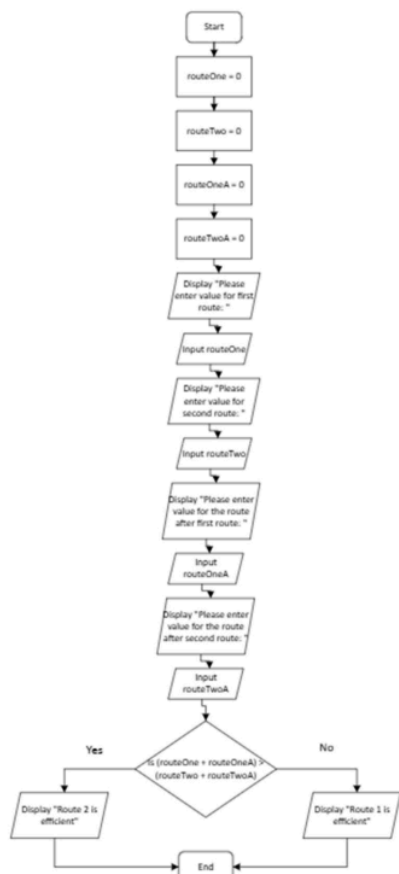


Figure 1

Assignment 2

GRADEMARK REPORT

FINAL GRADE

45 / 100

GENERAL COMMENTS

Engagement with Literature 6/15

4 references included. Sources are industry blogs and W3Schools. No peer-reviewed academic journals/books on computational thinking, problem solving, or optimisation. Literature is used descriptively to support general ideas (shortest path, logistics efficiency). There is very limited critical engagement or synthesis. IEEE applied properly.

Knowledge and Understanding 12/25 Clear understanding of the problem scenario (route efficiency, fuel use, 30-minute lateness). Three core aims from the brief are identified correctly. Attempts to deconstruct the problem into smaller elements. But there is no explicit or structured use of MoSCoW, despite mentioning requirements implicitly. Requirements, constraints, and solution ideas are frequently mixed together. Deconstruction is narrative, not analytical. No clear prioritisation of requirements. Relevant variables are identified but not clearly defined or grouped. There is no explanation of how variables interact. They are illustrated using examples rather than analysed conceptually. Confirms very basic awareness.

Cognitive and Intellectual Skills 9/20

The techniques such as Decomposition or abstract thinking are mentioned confirming some awareness that problems can be broken into sub-problems. Nevertheless reflection is very limited, mostly descriptive ("what was done"), not evaluative. There is no discussion of effectiveness or alternatives. Some trade-offs such as more vehicles vs fuel use or fewer vehicles vs delivery lateness are recognised. Real world limitations (vehicle availability, geography) are mentioned. Assumptions are implicit, not stated clearly. Justification is informal and repetitive. Limitations are described but not analysed. Some

justification is present, but underdeveloped.

Practical Application Skills 13/30

A flowchart is included but conceptually weak and misaligned with the brief. It compares only two routes, which is unrealistic for the problem context. Correct basic flowchart symbols used. Demonstrates algorithmic thinking at a very simple level. Focuses on manual input of route values and simple comparison logic and does not address order grouping, driver allocation, time constraints (30-minute rule) and/or fuel optimisation beyond distance. Flowchart is closer to a programming exercise than a delivery-routing solution. Explanation matches the flowchart logic but focuses narrowly on route comparison. Mentions shortest-path thinking. Limited linkage to constraints, variables, real-world delivery operations. There is no justification for why this approach suits GrocerQuick's scenario.

Transferable Skills 5/10

Good, separate title page and ToC. Clear section headings. Attempted academic tone. Logical structure overall. But there are frequent grammatical and spelling errors, long, unclear sentences, limited academic and inconsistent terminology that do not match L4 professional standard.

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