



## Problem Statement

Problem solving application.

### Graph applications

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**Statement of the problem addressed:** "Rappi is a delivery company that is actively seeking solutions to optimize its operations and reduce costs. One of its main challenges is the high expense associated with employee pay, which depends mainly on the route and distance traveled during deliveries. To solve this problem, Rappi intends to develop a program that calculates the minimum amount of money an employee should receive when moving from one location to another. This program will also provide the most efficient route for the employee to follow, ensuring that they reach their destination while minimizing costs.

In addition to its concerns regarding employee payments, Rappi also faces challenges with its internal mail system. Its network infrastructure consists of wires connecting multiple servers, each with its own specific latency measured in milliseconds. These latency values represent the time required to transmit a mail item between servers. To improve the efficiency of its mail delivery system, Rappi has decided to hire a software company specialized in solving this type of optimization problem.

The software company will develop a program capable of determining the shortest time required to send a message from a source server to a destination server. By identifying the most efficient wire sequence for transmitting mail, Rappi can significantly reduce the time it takes for messages to reach their recipients. Importantly, the program assumes that no delays occur on the servers themselves, focusing only on optimizing the transmission process.

Through these initiatives, Rappi aims to improve its overall operational efficiency, minimize costs associated with employee payments and improve the speed and reliability of its internal mail system."