



Tecnológico de Monterrey

Integrated Activity 1 - Reflection

Hannia Escamilla Pérez A01639113

12 de septiembre del 2025

Integration of Computer Security in Networks and Software Systems

Gpo 401

Gildardo Sánchez Ante

The problem for this activity had us thinking about how malicious code can be inserted in our codes when we pass them from one device to another and how we'd go about identifying it. Given how we "know" the malicious code then we'd have to look for the right algorithm to find it, our two choices were between KMP and Manacher. To resume, KMP is a brute force or also naive algorithm that searches for a certain pattern in a string and Manacher is a faster one that looks for palindromes in string, we chose Manacher for its efficiency and speed compared to KMP and also because of how the malicious code was defined by being a mirrored string.

This activity threw me back into algorithms immediately after a while of not focusing on them and while I did understand most, these past few ones were a bit more complicated to get a hang on them. Moreso I understood the base logic of them but implementing them was a bit more tough to do so. After reading and with help of my teammates I began to understand it more, hence why for this code I helped with the implementation of the int main and test case 3.

The way it works is that it stores the transmission and malicious code into two separate vectors, this allows us to apply the Manacher algorithm to find the mirrored malicious code in the transmissions, we know they're mirrored because they're palindromes. It then goes through the vector of the test files applying functions of the Manacher class it stores the malicious code and in what part of the transmission it is in. It also has an error check in case the files can't be opened.

I think I still have a lot more to understand about algorithms and they'll make more sense the more codes and practices we do, but it is a bit confusing at times still.