

Illumio Coding Assignment

Deliverables

1. Firewall Class
 - a. Constructor taking file path of a csv file*
 - b. accept_packet function with boolean return value and four arguments
 - i. String direction (inbound or outbound)
 - ii. String protocol (tcp or udp)
 - iii. Integer port
 - iv. String ipAddress (Ip address or range)

Assumptions

1. Input given is well formed and hence not required to validate the input
2. Given file path is valid
3. Port is an integer between (1-65535)

Algorithm

1. Read through the csv file in constructor and store each line in an ArrayList
2. In accept function:
 - a. Loop through the array list
 - b. Split each item by csv splitter (',')
 - c. Match the first split with the direction
 - d. Match the second with the protocol
 - e. Match the third with the port
 - f. Check if there is a hyphen in the fourth split.
 - i. If there is a hyphen then split it by hyphen
 1. Calculate ascii value of left split and the right split
 2. Calculate ascii value of the given ip address
 3. If given ip address ascii value is in between the left and right split then it is a match
 - ii. Else
 1. Match the ip address with the fourth split

Run-Time Complexity

1. Runs in a linear time as the code loops through the the number of rows in the given csv file.

Space Complexity

1. $O(n)$: To store n rows of a given csv file into an ArrayList

Test Cases

Sl.No	Direction	Protocol	Port	IP Address	Packet Status	Comments
1	outbound	udp	20000	192.168.10.1 1	False	Straight Forward comparison and comparison of port range and ip address range
2	outbound	tcp	20000	192.168.10.1 1	True	Checking for a rule where port falls in a range and not a direct comparison
3	inbound	udp	53	192.168.2.5	True	Checking for a rule where ip address falls in a range and not a direct comparison
4	outbound	tcp	120	192.168.10.4 5	True	This matches with the rule present on 700th row. This test case is for checking if the code is fast enough to compare with more than 500 entries