Network Path Consolidator

1. Introduction

This document describes the Python program created to parse, process, and combine multiple network paths with bandwidth information. It ensures that paths between nodes have the same cable and direction and sums bandwidth accordingly. The program supports a structured input format and generates a section-by-section output.

2. Input Format

2.1 Start node End node and Bandwidth applied

Path - 1

```
Enter start device (e.g., A): A
Enter end device (e.g., Z): D
Enter bandwidth in Mbps (e.g., 100): 30

📍 All loop-free paths from A to D:

Path 1: A to B [east, GENERIC, 30 Mbps], B to C [east, GENERIC, 30 Mbps], C to D [east, GENERIC, 30 Mbps]
Path 2: A to B [east, ABC, 30 Mbps], B to C [east, GENERIC, 30 Mbps], C to D [east, GENERIC, 30 Mbps]
Path 3: A to E [east, GENERIC, 30 Mbps], E to D [west, GENERIC, 30 Mbps]
Path 4: A to I [east, GENERIC, 30 Mbps], I to H [west, GENERIC, 30 Mbps], H to G [west, GENERIC, 30 Mbps], G to F [west, GENERIC, 30 Mbps], F to E [west, GENERI
C, 30 Mbps], E to D [west, GENERIC, 30 Mbps]
```

Path – 2

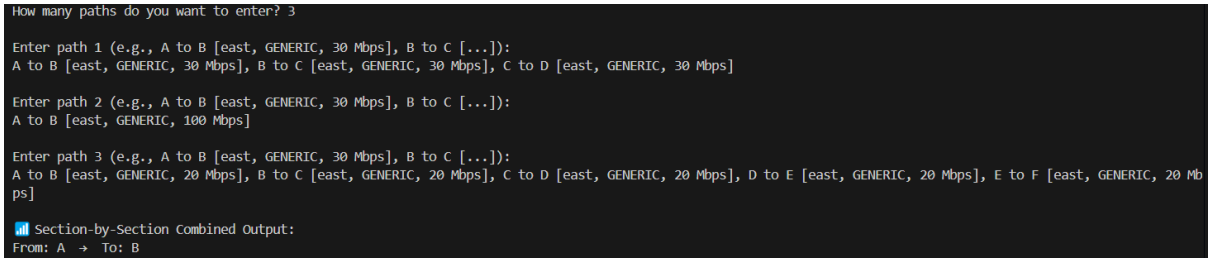
```
Enter start device (e.g., A): A
Enter end device (e.g., Z): B
Enter bandwidth in Mbps (e.g., 100): 100

📍 All loop-free paths from A to B:

Path 1: A to B [east, GENERIC, 100 Mbps]
Path 2: A to B [east, ABC, 100 Mbps]
Path 3: A to E [east, GENERIC, 100 Mbps], E to D [west, GENERIC, 100 Mbps], D to C [west, GENERIC, 100 Mbps], C to B [west, GENERIC, 100 Mbps]
Path 4: A to I [east, GENERIC, 100 Mbps], I to H [west, GENERIC, 100 Mbps], H to G [west, GENERIC, 100 Mbps], G to F [west, GENERIC, 100 Mbps], F to E [west,
NERIC, 100 Mbps], E to D [west, GENERIC, 100 Mbps], D to C [west, GENERIC, 100 Mbps], C to B [west, GENERIC, 100 Mbps]
```

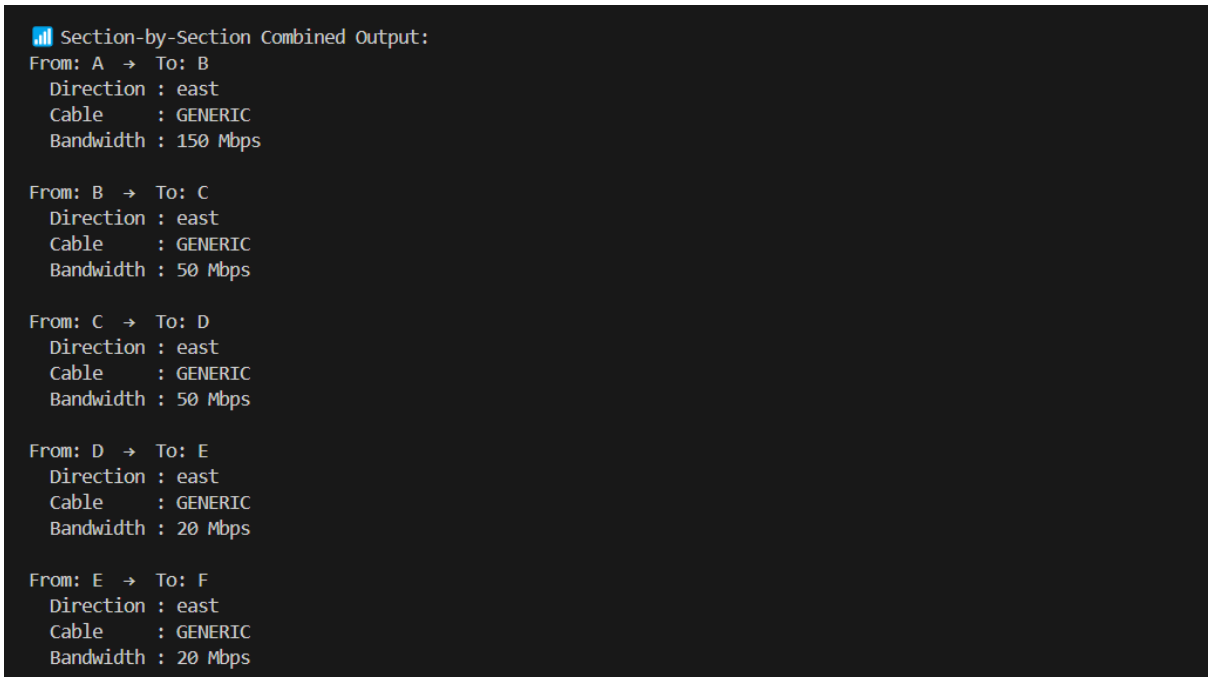
Path – 3

```
Enter start device (e.g., A): A
Enter end device (e.g., Z): F
Enter bandwidth in Mbps (e.g., 100): 20

📍 All loop-free paths from A to F:

Path 1: A to B [east, GENERIC, 20 Mbps], B to C [east, GENERIC, 20 Mbps], C to D [east, GENERIC, 20 Mbps], D to E [east, GENERIC, 20 Mbps], E to F [east, GENERI
C, 20 Mbps]
Path 2: A to B [east, ABC, 20 Mbps], B to C [east, GENERIC, 20 Mbps], C to D [east, GENERIC, 20 Mbps], D to E [east, GENERIC, 20 Mbps], E to F [east, GENERIC, 2
0 Mbps]
Path 3: A to E [east, GENERIC, 20 Mbps], E to F [east, GENERIC, 20 Mbps]
Path 4: A to I [east, GENERIC, 20 Mbps], I to H [west, GENERIC, 20 Mbps], H to G [west, GENERIC, 20 Mbps], G to F [west, GENERIC, 20 Mbps]
```

2.2 Aggregating paths

Taking the selected path from each separate path findings and aggregating them, program will ask how many paths users wants to aggregate and then give each path.





3. Conclusion

This program helps structure and validate multiple network paths, combining their bandwidths intelligently while ensuring that cable type and direction match for each link between devices.