Program 102.Assembly line scheduling

Program:

```
def assembly_line(a, t, e, x):
    n = len(a[0])  # Number of stations

    # Time to leave the first station on both lines
    T1 = [0] * n
    T2 = [0] * n

    # Initialize the entry times
    T1[0] = e[0] + a[0][0]
    T2[0] = e[1] + a[1][0]

    # Fill tables T1[] and T2[] using the above recursive relations
    for j in range(1, n):
        T1[j] = min(T1[j - 1] + a[0][j], T2[j - 1] + t[1][j] + a[0][j])
        T2[j] = min(T2[j - 1] + a[1][j], T1[j - 1] + t[0][j] + a[1][j])

    # Consider exit times and return the minimum time to leave the last station
    final_time = min(T1[n - 1] + x[0], T2[n - 1] + x[1])
    return final_time

# Example usage
a = [[4, 5, 3, 2],  # Time taken at each station on line 1
     [2, 10, 1, 4]]  # Time taken at each station on line 2
t = [[0, 7, 4, 5],  # Transfer time from line 1 to line 2
     [0, 9, 2, 8]]  # Transfer time from line 2 to line 1
e = [10, 12]  # Entry time for line 1 and line 2
x = [18, 7]   # Exit time for line 1 and line 2

print(assembly_line(a, t, e, x))  # Output: 35
```

Output:

```
"C:\Program Files\Python312\python.exe" "C:\Work Space\DAA\DAA COADS.PYTHON\program 102.py"
35

Process finished with exit code 0
```

Time complexity:
O(n)