Robot Timing Simulation

You are trying to model how long your robots will take to complete a circuit. You have two types of robots: organizer robots and mover robots. Some number of each type of robot will travel along different paths through a common set of nodes. There are two types of nodes: A nodes and B nodes. The robots perform an action at each node on their path, and these actions require different amounts of time to complete:

At A nodes:

- Organizer robots must perform a pick action (30 seconds)
- Mover robots must perform a push action (20 seconds)

At B nodes:

- Organizer robots must perform a place action (45 seconds)
- Mover robots must perform a pull action (35 seconds)

Robots follow their paths on the same set of nodes, so it is possible for robots to be at the same node at the same time. If this happens, whichever robot gets there first gets to perform their action first, and the other must wait until the first robot has left the node to start their action. In the event of a tie, any Organizer robot can go first.

Your task is to build an application that takes in 3 csv files and produces 2 new csv files:

- The first input file describes the robots: “id, robot_type, speed”.
- The second input file describes the nodes: “id, node_type”.
- The third input file describes the paths: “robot_id, node_id”. In this file, the order of the rows is the order of the robot’s node visitation (note: all the robot paths will be in the same file, one after the other).
- The first output file should report the times for each robot to complete its path.
    - Each row should be “robot_id, seconds".
- The second output file should be a list of the visits to each node.
    - Each row should be “node_id, robot_id1, robot_id2...” where robot_idN is the Nth robot to have visited the node.

You can assume that all robots start at the same time from a start node that is separate from the other nodes, all nodes are equidistant, and speed is defined as the number of seconds it takes to get from one node to the next.

The goal of this challenge is for us to get an understanding of how you would code in a work environment. Be conscious of design, commenting, and basic testing. This challenge is designed to be completed in 3-5 hours, do not spend more time than this for the sake of your own time. You may use whatever languages and frameworks you believe are useful for this challenge. You may use online resources to look up syntax or helper functions, but you may not look up solutions or communicate with anyone else during the test. Please do not share any information about this test with anyone before, during, or after the test. Once you have completed the challenge, please email a zip file containing all code files and output files to the person who you have been corresponding with, as well as the amount of time you spent on the test. Good luck!