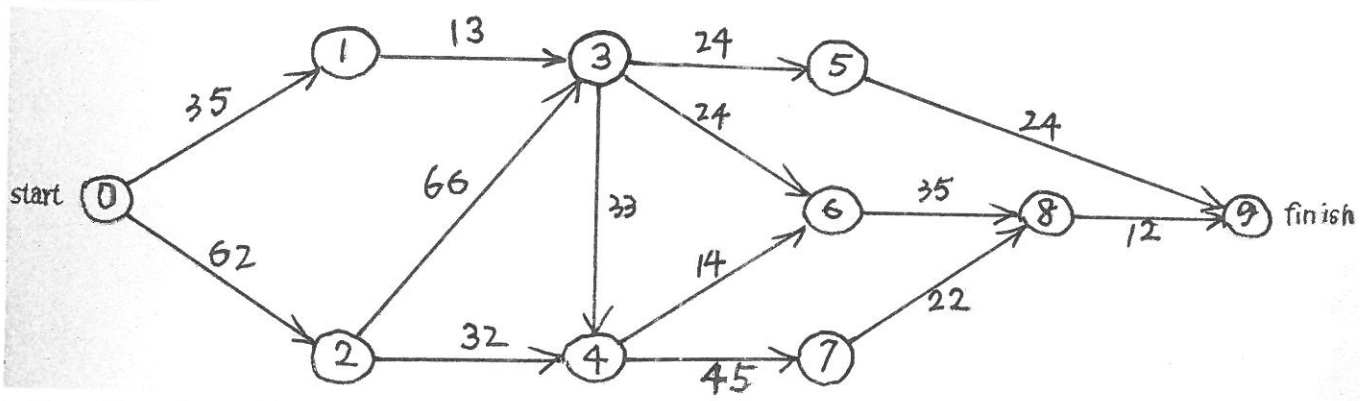
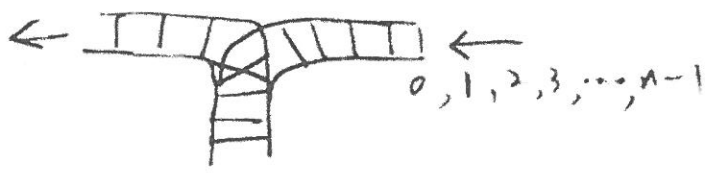
Briefly answer the following questions (20% for each)

1. **Please draw the expression tree for following exprssion ((((35 + 13) × 43)/((79 *5) + -2)) – ((35 × (+27 – 4)) * 6)).**
2. **For the AOE network of the following figure, please use the forward-backward approach to obtain the early start time and late start time for each activity, and which activities are critical?**



3. **Consider the railroad switching network in the following graph. Railroad cars numbered 0, 1, 2, 3, …., n-1 are at the right. Each time (run) only <u>four</u> of cars in a time is brought into the stack and removed in <u>two</u> of cars in a time at any time. For n = 8, and n = 12, what are the possible permutations of the cars that can be obtained in the final for the above cases (i.e., n = 8, and n = 12)?**



4. **Assume that the following ten terms, "ten", "night", "eight", "seven", "six", "five", "four", "three", "two", "one", in the order is inserted into a null AVL tree one by one. Please draw the <u>two</u> AVL trees <u>after</u> you insert the term, "five" and "two", respectively.**
5. **For the following graph, in which each edge is a bi-direntiolnal link. Suppose you start from node k to traverse all the nodes in the graph. Please draw the traverse order in <u>Depth-First</u> and <u>Breadth-first</u> search, respectively. Note that if you have more than one node in several directions to traverse in the next move, you should select the first node in the clockwise order, i.e., in the order of upper, upper-right, right, lower-right, lower, lower-left, left, and upper-left.**