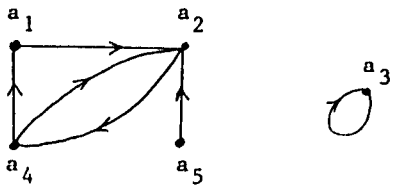


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1. What are the definitions of adjacency matrix and path matrix for a digraph ?
A digraph is shown as follow, what is the adjacency matrix X and path matrix P (assume the max. number of edges is 2) (15%)



2. What is a linear doubly link list ?
Write an algorithm or program to delete the node pointed to by P from a doubly linked list and stores its contents in X. (15%)
3. What is a threaded binary tree ?
Write an algorithm or program to construct a new node in the left side of the node pointed to by P, suppose a node has info, left, right, rthread, and father fields. (15%)
4. Explain 'interpolation search' with example. What is the difference comparing with 'binary search' ? (15%)
5. Suppose a three dimensional array Y is declared using $Y(1:7, -5:2, -9:4)$ What is the total elements of array Y. Suppose the base location of Y is $Y_{base} = 500$, and each element is stored on a 8-word length storage, what is the location of the element $Y(4, -2, 2)$ with row-major representation. (15%)
6. Comparison the following storage management method, (a). First fit (b). Best fit (c). Worst fit. (15%)
7. What is 'merge sort' ? Explain it with example (10%)