4 Distance vector

```
#include <stdio.h>

#define MAX 10
#define INF 9999

int main() {
    int cost[MAX][MAX], dist[MAX][MAX], via[MAX][MAX];
    int n;

    printf("Enter number of routers: ");
    scanf("%d", &n);

    printf("Enter the cost matrix (9999 if no direct link):\n");
    for (int i = 0; i < n; i++) {
        for (int j = 0; j < n; j++) {
            scanf("%d", &cost[i][j]);

            if (i == j)
                cost[i][j] = 0;
            else if (cost[i][j] == 0)
                cost[i][j] = INF;

            dist[i][j] = cost[i][j];

            if (cost[i][j] != INF && i != j)
                via[i][j] = j;
            else
                via[i][j] = -1;
        }
    }

    // Distance vector logic
    for (int k = 0; k < n; k++) {
        for (int i = 0; i < n; i++) {
            for (int j = 0; j < n; j++) {
                if (dist[i][k] + dist[k][j] < dist[i][j]) {
                    dist[i][j] = dist[i][k] + dist[k][j];
                    via[i][j] = via[i][k];
                }
            }
        }
    }

    // Print routing table
    for (int i = 0; i < n; i++) {
        printf("\nRouter %d Routing Table:\n", i);
        printf("To\tVia\tCost\n");
        for (int j = 0; j < n; j++) {
            if (i != j) {
                printf("%d\t%d\t%d\n", j, via[i][j], dist[i][j]);
            }
        }
    }

    return 0;
}
```