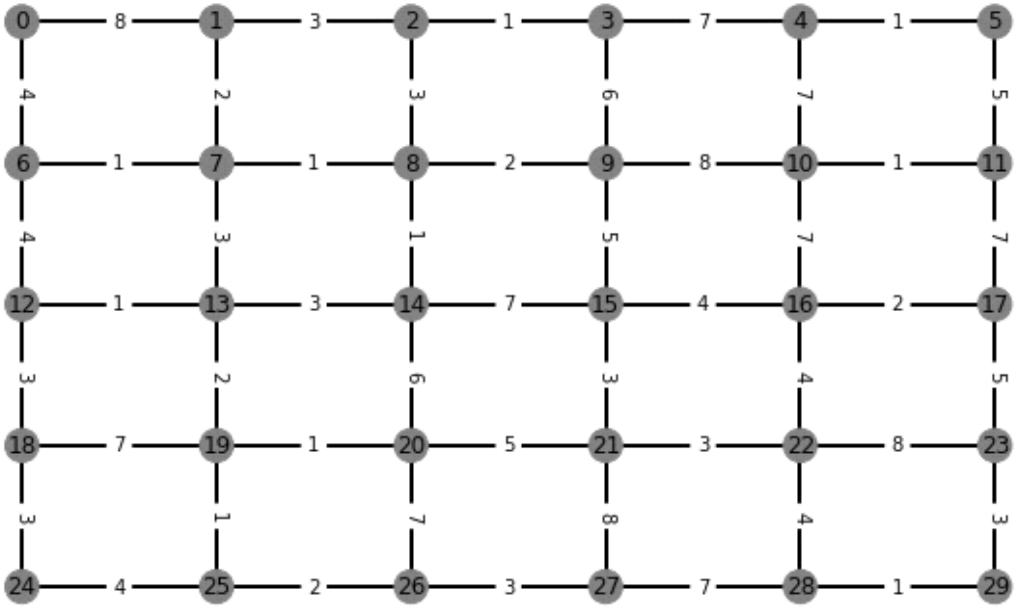
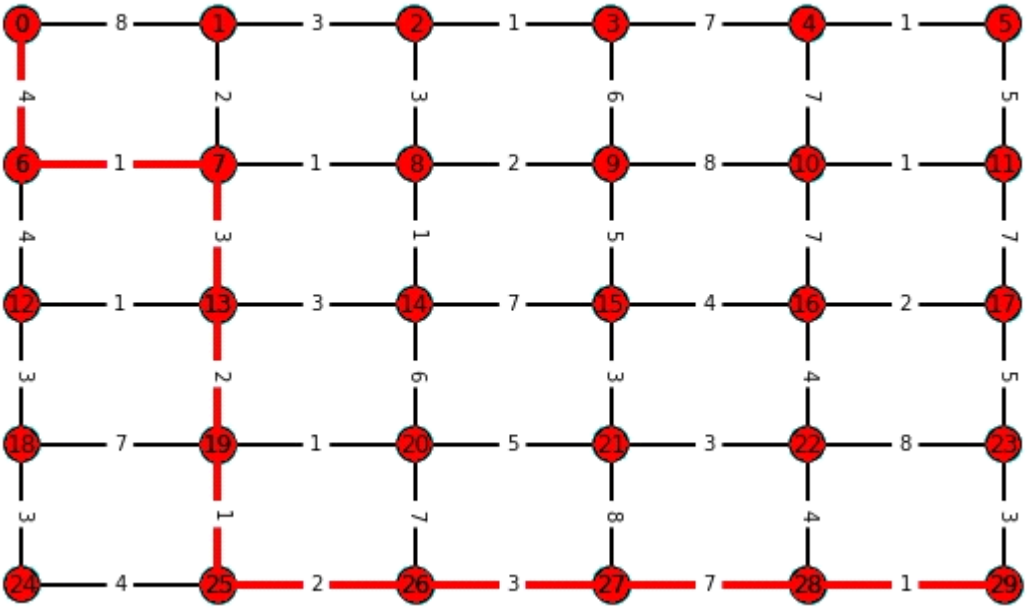
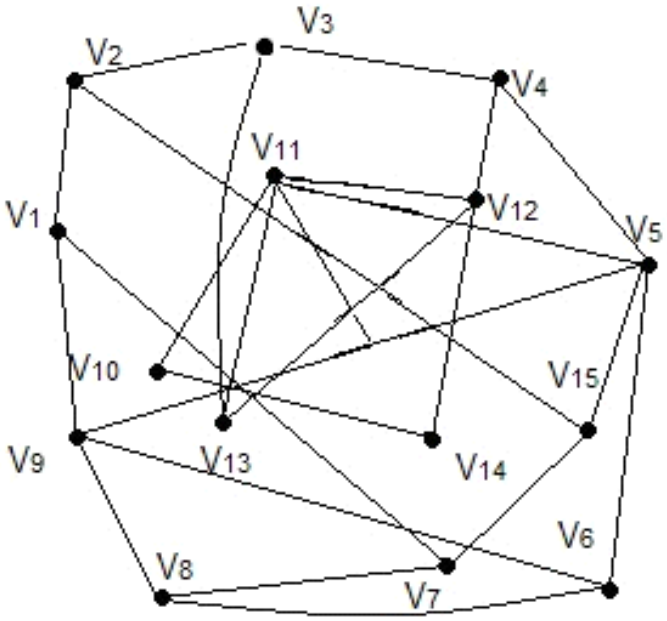
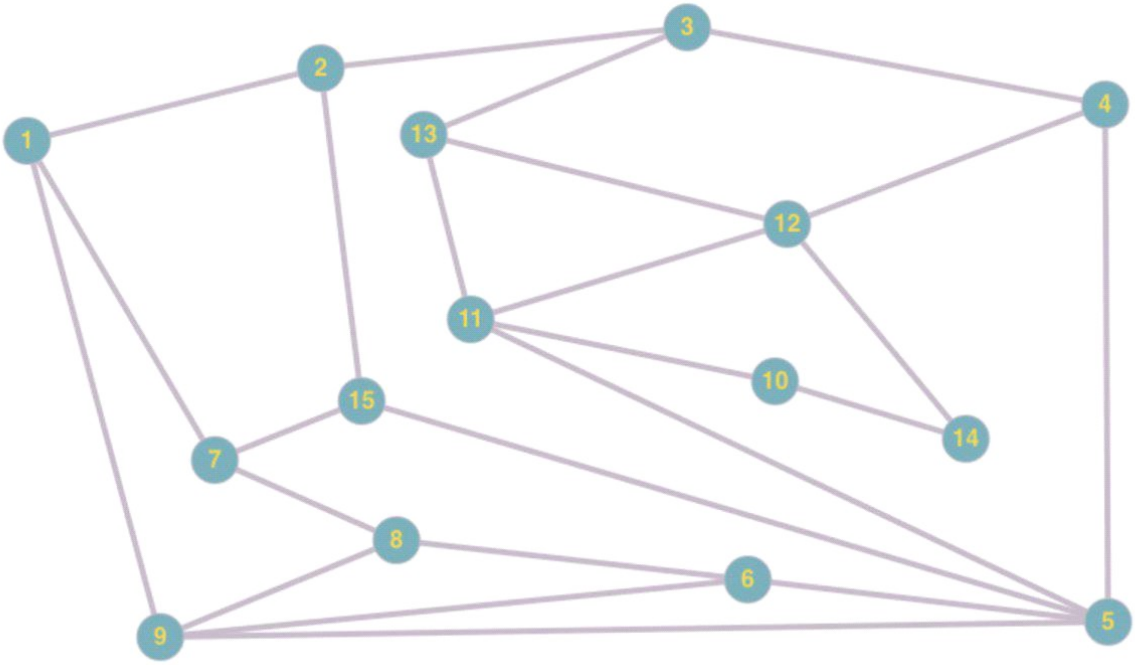
1.


0 8 1 3 2 1 3 7 4 1 5
4 2 3 6 7 5
6 1 7 1 8 2 9 8 10 1 11
4 3 1 5 7 7
12 1 13 3 14 7 15 4 16 2 17
3 2 6 3 4 5
18 7 19 1 20 5 21 3 22 8 23
3 1 7 8 4 3
24 4 25 2 26 3 27 7 28 1 29


0 8 1 3 2 1 3 7 4 1 5
4 2 3 6 7 5
6 1 7 1 8 2 9 8 10 1 11
4 3 1 5 7 7
12 1 13 3 14 7 15 4 16 2 17
3 2 6 3 4 5
18 7 19 1 20 5 21 3 22 8 23
3 1 7 8 4 3
24 4 25 2 26 3 27 7 28 1 29

2.






```
#include <stdio.h>

//size of our matrix
#define N 30

int main()
{
   int DISTANCE[N];
   int VISITED[N];

   int GRAPH[N][N] = {
   //    1  2  3  4  5  6  7  8  9  10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
```

```
28 29 30
 /*1*/ { 0, 1, 0, 0, 0, 0, 4, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
 /*2*/ { 0, 0, 1, 0, 0, 0, 0, 8, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
 /*3*/ { 0, 0, 0, 6, 0, 0, 0, 0, 3, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
 /*4*/ { 0, 0, 0, 0, 3, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
 /*5*/ { 0, 0, 0, 0, 0, 3, 0, 0, 0, 0, 5, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
 /*6*/ { 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 7, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
 /*7*/ { 0, 0, 0, 0, 0, 0, 0, 2, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
 /*8*/ { 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 7, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
 /*9*/ { 0, 0, 0, 0, 0, 0, 0, 0, 0, 4, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
 /*10*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 2, 0, 0, 0, 0, 4, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
 /*11*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 4, 0, 0, 0, 0, 3, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
 /*12*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 7, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
 /*13*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 5, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
 /*14*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 3, 0, 0, 0, 0, 4, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
 /*15*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 2, 0, 0, 0, 0, 7, 0, 0, 0, 0, 0, 0, 0, 0 },
 /*16*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 5, 0, 0, 0, 0, 8, 0, 0, 0, 0, 0, 0, 0 },
 /*17*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 7, 0, 0, 0, 0, 2, 0, 0, 0, 0, 0, 0 },
 /*18*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 5, 0, 0, 0, 0, 0 },
 /*19*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 7, 0, 0, 0, 0, 3, 0, 0, 0, 0, 0 },
 /*20*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 3, 0, 0, 0, 0, 2, 0, 0, 0, 0 },
 /*21*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 1, 0, 0, 0 },
 /*22*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 3, 0, 0 },
 /*23*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 8, 0, 0, 0, 0, 8, 0 },
 /*24*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 7 },
 /*25*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 4, 0, 0, 0, 0 },
 /*26*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 7, 0, 0, 0 },
 /*27*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 3, 0, 0 },
 /*28*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 3, 0 },
 /*29*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 6 },
 /*30*/{ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 }
  };

  for (int i = 0; i < N; i++)
  {
     DISTANCE[i] = 999;
     VISITED[i] = 0;
  }
  DISTANCE[0] = 0;

  int min, k, a;

  do
  {
     k = 999;
     min = 999;

     for (int i = 0; i < N; i++)
     {
        if ((VISITED[i] == 0) && (DISTANCE[i] < min))
        {
           min = DISTANCE[i];
           k = i;
        }
     }
```

```
        if (k != 999)
        {
            for (int i = 0; i < N; i++)
            {
                if (GRAPH[k][i] > 0)
                {
                    a = min + GRAPH[k][i];
                    if (a < DISTANCE[i])
                    {
                        DISTANCE[i] = a;
                    }
                }
            }
            VISITED[k] = 1;
        }
    } while (k < 999);

    printf("\nThe shortest ways:\n\n");
    for (int i = 0; i < N; i++)
    {
        printf("l(V0-V%d) = %d\n", i, DISTANCE[i]);
    }
    printf("\n");

    return 0;
}
```