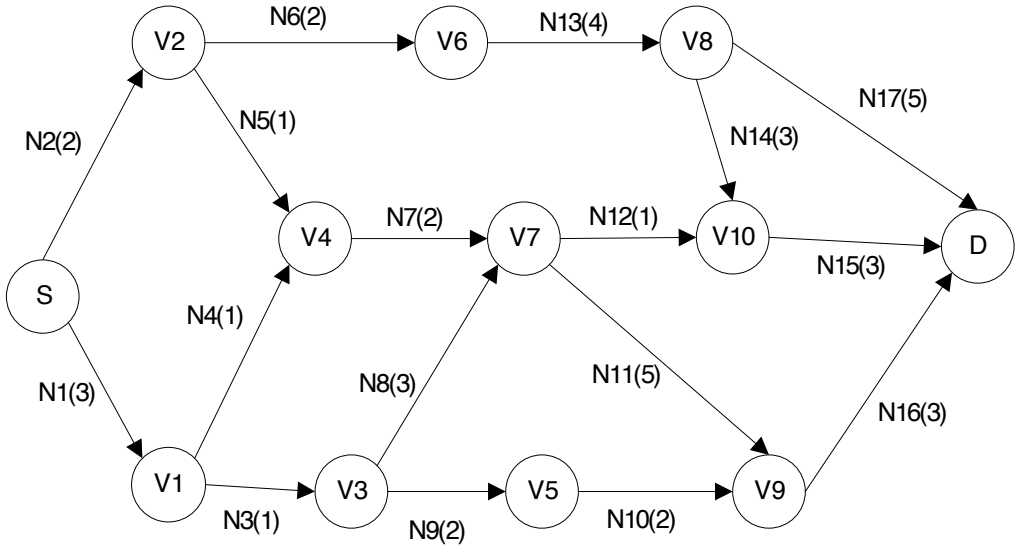
VLSI 設計自動化導論 作業

Program 1:

Given a graph as shown below. The number in parentheses on each edge is the weight of the edge. The graph is also described in a file with MCNC benchmark format. Please write a program to

(a) Apply DFS(depth first search) algorithm to print out the traverse order of vertices

(b) Apply single source shortest path(Dijkstra) algorithm to print out the distance from source to every vertex.



檔案格式說明：

```
CIRCUIT [Circuit Name] //  電路開始
        INSTANCE [Instance Name] [Cell Type]      // Cell Type 為.lib 裡定義之 Standard Cell Type
            [Net Name(Weight, Direction1)] [Net Name2(weight2, Direction2)] …//此 Cell 所連接的
                                                    Net，括弧中的數字對，表示此 net 上的 Weight  和
                                                    方向( i 表示 input，o  表示 output)
        …
        …
ENDCIRCUIT        //  電路結束
```

Case：

```
/* Generated by v2 */
CIRCUIT avqlarge
  INSTANCE S    PAD //Source
     N1(3,o) N2(2,o)
  INSTANCE V1    ai2s
     N1(3,i) N3(1,o) N4(1,o)
  INSTANCE V2    i1s
     N2(2,i) N5(1,o) N6(2,o)
  INSTANCE V3    ai2s
     N3(1,i) N8(3,o) N9(2,o)
  INSTANCE V4    ai2s
     N4(1,i) N5(1,i) N7(2,o)
  INSTANCE V5    dsr2s
     N9(2,i) N10(2,o)
  INSTANCE V6    ai2s
     N6(2,i) N13(4,o)
  INSTANCE V7    i1s
     N7(2,i) N8(3,i) N11(5,o) N12(1,o)
  INSTANCE V8    i1s
     N13(4,i) N14(3,o) N17(5,o)
  INSTANCE V9    i1s
     N10(2,i) N11(5,i) N16(3,o)
  INSTANCE V10    i1s
     N12(1,i) N14(3,i) N15(3,o)
  INSTANCE D       PAD //Destination
     N15(3,i) N16(3,i) N17(5,i)
ENDCIRCUIT
```