DFS Khoi tao Stack S; tao rong: S. top-idx =-1; Dua 1 vão S! S. top_idx = 0; S. data[0]=1; S= 117. Lãn lặp thá 1 while (S. top_idx = 0!=-1) { int u= S data[0]=1; S. top idx = -1, S=1 } if (mork[1]=0==0) -> bo qua d'én bien In " Duyet 1\n" ra man hinh. mark[1] = 1; dor (v là các định trong để thi) V=1-) bo qua tien bien V=2-7 bo qua. Their bien V=3 -> bo' and then tien v=4-thor tien dien adjacent (pt, 1,4)=1 Duty 4 vao S: S.top-idx=0; S. data [0] =41 5=944; V=5- thed dien then adjacent (pt. 15)=1 Dua 5 vão S: s.top-idx=\$1, S. data [1]=5; S= 14;5} V=6-) bid qua Fleir très V=7-) bo quer d'én lass

làn lập thứ 2 Trần Nguyễn Nhật Huy 5= 14,5 B21133333 while (Stop-idx=1!=1) int 4 = S. data [1] = 5 S. top_idx = 0, 5= 44 } mark[5]=0-) bo' qua dien tien In " Duyer 51 n' ra man hinh mark[5] = 1 for (V là cac đinh trong để thị) V = 2,3,6,75-) bò ana diễn tiên V = 1 -> thou their bien adjacent (pts 5,1)=1 Duly 1 vao S S. top_ Tdx = 1 S. data[1]=1 S= 14,19 V=4 -) thou tier lain adjacent (pG,5,4)=1 Dig 4 vão S S. top-idx = 2 S. data[2] = 4. 5= 44,1,49 V=8 -> thog trèi tiên adjacent (PG, 5, 8)=1 Dud 8 vão S' S. top-idx = 3 5. data [3] = 8 5= 14,1,4,8} Las lap this 3 5= 14,1,4,8} while Cs. top_idx= 3 != -1)} Int u = S. data [3] = 8 S. top - idx = 2. , S= & 4,1,4) mark[8] = 0-) b' qua dien tien In "Duyer 8 in" ra man hinh mark[8]=1 dor (v là cac thin trong to thi) V=1,3,6,7,8-) bd quá areai bien v= 2 -> thoù adjacent (pG, 8,2) = 1 Duky 2 vao S S. top-idx = 3 v=4 S. data[3] = 2, S= (4,1,4,2) advacant pa,8,4)=1

0

```
Dia 4 vao 5!
         S. top_idx = 4
          S. data [4] = 4, S= 14,1,4,2,4}
                                                       Las lapther 6
                                                       5= 14,1,4,2,1,2,5,84
    8.V=5 than adjacent (PG, 8,5) = 1
                                                       while (S. top_idx =7 != -1) }
     Duis 5 vas 5
          S. top-idx = 5
                                                           int 4= s. data (=) = 8.
          S. data [5]=5, S= 14,1,4,2,4,5}
                                                           Stap-idx=6, S= 4,1,4,2,1,2,5}
                                                           mark[8] =- 1 thou mark[8]!=0
 Lan lap that 4
                                                                chuyển qua vòng làp le tiệp
 5= 34,1,4,2,45}
                                                      Lãn làp thứ 7
While ( S. top-idx= 5 !=-1)
                                                      5= {4,1,4,2,1,2,5}
    int 4 = 5. data [5] = 5
    S. top_idx = 4., S= 14,1,4,2,45
                                                      while (5. top-idx=6!=-1)}
    mark (5]=1 than mark [5]!=0
                                                            Int 4= 5. data[6] = 5
         Chuyển que vòng làp là tiếp.
                                                           S. top- 1dx = 5, S= 14,1,4,2,1,2}
Làn làp thứ 5
                                                           mark[5]:1 thou mark[5]!:0
                                                                chuser qua voy lap to thep.
S= {4,1,4,2,4}
                                                     Lan lapthis 8
while (S. top-idx=41=+)}
                                                       5= 14,1,4,2,1,24
     int 4= S. data[4] = 4
                                                     while (S.tap_idx = 5 !=-1) }
     S. top_tdx = 3, S= 44,1,4,2)
                                                           int 4= 5 data [5] = 2
     mark[4]=0-) by qua diei laien
                                                          S. top_idx= 4, S= 14,1,4,2,1)
   In "Duyer 4'n" ra man him
                                                          mart[2]=0 -> bo qua their liver
    mark [4]=1
                                                        In Buyer 2 In" ra man winh
   dor (v là cá định trong đố thị)
                                                          mark[2] = 1.
     V=3,6,74-7 bo qua
                                                      dor ( v là cai thing to Hu)}
                                                                                                          St.
     V=1 -) than adjacat (pG, 4,1)=1
                                                          V=1,52-) bi qua
                                                         v= 3 - thoa' adjoent (ρG, 23) = 1, dua 3 vão 5
    Dia 1 vão S:
        S.top_idx = 4
                                                            S.topidk = 5
        S. data [4]=1, S= 44,1,4,2,1)
                                                           S.data [5]=3, S= 14,1,4,2,13]
                                                        V= 4 -> thoo adjusted (pG, 2,4) = 1, dute 4 vao S
    Dua 2 vão S!
                                                                                                          55
        S.top-idx =5
                                                            S. top_idk = 6
        S. data[5] = 2, S = 14,1,4,2,103
                                                             S. data [6]= 4, S= 14, 1, 4, 2, 1,3, 4 4
                                                       v= 6-> thoo adjacent (pG, 2, 6)=1, due 6 vão S
   Diù 5 vào S!
                                                            S. top_ ldx = 7.
         S. top-idx=6
         S. dota (6) = 5, 5= 14,1,4,2,1,2,5)
                                                            S data [7]=6, S=14,1,4,2,1,3,4,64
                                                      V=7-) thou adjacent (PG 2,7)=1, dua 7 vão S
   Dun 8 voo S. S. top-idx = 7
                                                           S. top-idk=8
                  S. data [7]= 8, 5= {4,1, 4,2,1,2,58}
                                                                                                         à tiện
                                                           S. data [8] = 7, S= {4,1,4,2,1,3,4,6,7}
```

V=8 -> thow adjacent (p6,2,87=1, 22da 8 vis 5 + 3. top-idk= 9 S. data [9] = 8, S= {4,1,4,2,1,3,4,6,7,8} Lan lap this 9 5= } 4,1,4,2,13,4,6,7,8 While (S. top_idx=9!=+)} int y = S. data [9] = 8. S.top-1dx = 8, 5= 14,1,4,2,1,3,4,6,7} mark [8]=1-> thai mark[8] != 0 chuyển qua vong làp là trêp Lan lap this 10 5= 14,1,4,2,13,4,6,7} while (S. top_idx = 8 ==-1) int 4: S. data [8] =7 S. top-Tdx = 7, S= 14,1,4,2,1,3,4,64 mark[7]=0 -> 10 qua arên biên In " Duyer 7 " " ra man him mark []=1 for (v là cac tinh trong to thi)} V= 1, 4, 5, 6, 7, 8 -> bo qua V= 2 -> thoã adjacent (p6, 7, 2) = 1, dun 2 vão S S. top-ldx = 8 S. data [8]=2, S= (4, 1, 4, 2, 1, 3, 4, 6, 82) V= 3 -) thoo adjacent (pG, 7,3)=1, stace 3 vais: S. top-idx = 9 S data[9]=3, S= | 4,1,4,2,1,3,4,6,2,3} Lão lão thú 11 5= {4,1,4,2, 1,3,4,6,2,3} while (Stop_idx = 9 !=-1)[Int u= S. data[9] - 3 3, top. idx = 8, 5= { 4,1,4,2,1,3,4,6,2} mark(3]=0-) bờ qua điệc tiện In " Duger 3 m" ra man him mark [3] = 1. for (v là coc d'in troy de ti) V=1,3,4,5,8 -> bd qua

v=2-> +trai ad) a cent (pa, 5,2) = 1, dua 2 vão 5: S.top_idx = 9 S. data[9]=2, S= 14,1,4,2,1,3,4,6,2,21 V= 6 -) that adjacent (p(x 3,6) =1, this 3 vio 5 S. top_ Tax=10 S. data[10] = 6, S= 44,1,4,2,1,3,4,62,2,64 V=7, -> thou adjacent Cpt, 3,77, 1 , add 7 mos: 3.+op_ idx=11 S. data [11] = 7, S= 1 4,1,4,2,1,3,4,6,2,2,67 Lan lap the 12 5= 14,1,4,2, 1,3,4,6,2,2,6,7 While (S. top_idx = 11 !=-1)} int 4= S. data [1] = 7. S. top. Tax= 10, 5= 4,1,4,2,1,3,4,6,22,6 mark[7]=1 -) thai mark[7] !=0 chuyén qua vong làp le tiếp, Lân làn thứ B S= {4,1,4,2,1,3,4,6,2,2,6} while (S.top-idx = 10 1= -1) Int u= S. data[10] = 6. S. top - rdx = 9, S= 1, 4,1,4,2, 13, 4,6,2,2} mark[6]= 0 -) bo' qua otten kien In "Duget 61" ra man hinh mark [6] = 01 for (v la cue din troy of thi) } V= 1,4,5, 6,7,8 -> 50 qua V=2-1 Hair adjacent (p(T,6,2)=1, this 8 vão S. S. top_idx=10 S. data [10] = 2, S= {4,1,4,2,1,3,4,6,2,2,2} 1 =3 -) thoù adjacent Cpla, 6,3)=1, duà 3 vào s'. 5. top- idx=11 S. data [11]=3, S={4,1,4,2,1,3,4,62,2,65 Lan lapthir 14 5= 14,1,4,2,1,3,4,6,2,2,2,3 white. CS. top_idx = 11 !=+)} int u= S.tata[11] = 3

5. top-idx = 10, S= 44,1,4,2,1,3,4,6,2,2,2}

mark (3]=1 -) that mark (3]!=0 - church qua long to high

Lãn thứ 15 Lãn thứ 21 3= 44, 1, 4, 2, 1, 3, 4, 6, 2, 4, 2 } 5= 14,1,4,2,11 while (S. top-idx = 10 |=-1) While Gtop_idx = 4 !=- 17}. int u= S. data[10] = 2 Int u= S.data[4] = 1 S. top-idx = 9, S= 14,1,4,2,1,3,4,6,2,2} S.top_ide = 3, S= 14,1,4,2 } mark [2] = 1 -> thou mark[2] = 1 mark[1]=1 -> chuzin sang voing lap for tex Chuyển qua vong làp là thêp Lan this 16 Lan this 22 5= 44,1,4,29 S= 34,1,4,2,1,3,4,6,2,2) while (5. top_ idx = 3!=-1)} while (S. top_idx =3!=-1)} int 4:5. data[1] = 2 int 4: 5. data [9] = 2 S. top-idx = 8, 5= 44,1,4,2,1,3,4,6,2} S. top-idx = L, S= 1 4,1,44 mark[2]=1-1 chuyêr sang vong lập là tiếp. mark[2]=1-) chuyện qua vong lạp le thếp Lãn thá 23 Las this 17 5= 44,1,47 5= 14,1,4,2,1,3,4,6,24 while Cs. top-idx=2!=-11} while (S.top-idx = 8!=-1) int 4= S. data [2] = 4. S. topidx = 1, S= 44,14 int y = S. data [8] = 2 mark[4] = 1 -) changes say voing lap le hip! S. top_idx = 7, 5= 14,1,4,2,1,3,4,6} mark [2]=1-1 chuyêr que vong lap læ tiếp Las the 24 Lan thuí 18 5- 44,19 While (S. top. idx = 14= -1)[5= {4,1,4,2,1,3,4,6} int 4= S. dota [1]=1 while CS.top.idx=71=-11 S. top-idx = 0, S= 149 int y = S. data [7] = 6 mark[i]=1 -) chuyêr say vong lap le tiep. S.top.idx = 6, S= 14,1,4,2,1,3,44 Las this 25 mark[6] = 1 -) chuyển qua vong lãp là tiếp. Lãn thủ 19 5=149 while (S. top_idx = 0!=-1)} 5= 4 4, 1, 4, 2, 1,3, 44 int u= 5. data [0]=4. while (S. top_rdx= 6!=-1) s, top-idx=-1, S= 14 1nt 4 = 5. data [6] = 4. mark[4] = (-) church say von lap le then 5. top_idx: 5, S= {4,1,4,2,1,3} mark [4]=1 -) chuyển qua rong làp lệ tiếp. Las that 26 Lan the 20 S=1 4 5= 14,1,4,2,1,39 while (5. top-idk=5!=-1) while (Stop_id==+ == -1) int 4= 5. data [5] = 3 les this way lon 5, top-idx = 4, S= 4 4,1,4,2,1 } mark[3]=1-) chuyển qua vòng lạp kế tiếp

BFS Khai bao hang to Q too rong: Q. font =0; Q. rear =-1 Dia 1 vão Q Q. rear = 0 Q. data [0] = 1 Q=(1) Lân lăn 1 while (Q. front & Q. rear) (000)} u = Q.data[0] = 1 Q. front = 1 , Q=1 } mark [1] = 0 - > bo aua In " Duyet 1 m". mar [1] = 1. for (V: cac dish to trong to thi)} La V=1,2,3,6,7,8 -> bo' qua V=4 -> adjacent (pG, 1,4) =1, the 4 vas Q: Q. rear = 1 Q. data[1]=4, Q=149 v=5-radiocent(p6, 1,5)=1, this 5 vai Q Q. rear = 2. a data[2] =5, Q= 14,5] Lãn lặn 2 Q= 14,53 while (Q. front = 1 < Q. rear = 2)} 4= Q. data[1]=4. Q. from = 2, Q = 15} mark[4]=0-) bo qua In "Bluyer 410" mark[4]=1 for (v: cac dinh from to the)

V=3,4,6,7 -> bò qua V=1-) adjacent (pG,4,1)=1, doc 1 vão a Q rear = 3 Q. data[3] = 1. , Q = 15,1] V=2-) adjacent (pG, 4,2)=1, dua 2 vão Q: Q. rear = 4 Q. data[4] = 2, Q= 15,1,2 } V= 5 -> adjacent (pG, 4,5)=1, die 5 vao 6 Q rear = 5 Q. data [5] = 5, Q= 15,1,2,54 V=8 -) adsacrt(PG, 4,8)=1, tag 8 vão & Q. rear = \$6 Q. data [8] = 8, Q = 15,1,25,8} Lãn lãp 3 Q= 15,1,2,5,84 while (Q. front = 2 (Q. rear = 6)} 4= Q. data[2] = 5 Q. Front = 3, Q= 11,2,5,8 4 mark[5]=0 -> bo qua In " Duyer 5 h" mark [5] = 1 for (v: cac thinh trong to thi) V= 2,3,5,6,7-> 60 qua. V=1-) adjacent (pG,5,1)=1, and 1 vao Q Q. rear =7 Q. data[7]=1, Q=11,25,8,1) V= 4-) ad Jacent (pG, 5, 4)=1, tud 4 vão Q Q.reor = 8 Q. data [8]=1, Q= 11,2,5,8,1,4) V=8-) adjacent (pG,5,8)=1, dua 8 vão à Q. rear = 9 Q data [9] = 8, Q= {1,25,8,1,4,8} Lão lão 4 Q= 11,2,5,8,1,4,8 4 while (Q. front = 3 (Q. rear = 9)} u= Q. data [3] = 1 Q. front = 4, Q = 12,5,8,1,4,84 mark [1]=1 -> chayen say vong lap le her Lan lan 5 Q= 12,5,8,1,4,8} while CQ. Front = A (Q. rear = 9) 4 1

```
V=4-7 adjacent(pa, 8, 4)=1, story 4 was a:
       4= Q. data[4] = 2
        Q. dront = 5, Q = 15,8,1,4,8 4
                                                                  a. data [16] =4., Q= {1,4,8,3,4,67,8,2,4}
                                                                  Q. rear = 16.
        mark[2] = 0 -> bd qua
                                                             V=5-) adjacent (pG, 85) = 1, atua 5 vuo a:
      In " Duyer 2\n"
      man [2] = 1
                                                                 Q. dala [A] =5, Q= (1,4,8,3,4,6,7,8,2,4,5)
                                                                 Q. rear=1817.
      dor (v: cac shinh then to this)
                                                         Lan lan 8
         V= 1,2,5-) bò qua
        V=3, -> adjacent (pG,2,3)=1, this 3 vaos
                                                           Q=11,4,8,3,4,6,7,8,2,4,5
             Q - rear = 10
                                                          While (Q. front = 7 (Q. rear = 17)}
             Q. data [10] = 3, Q = {5,8,1,4,83}
                                                              U= Q. data (7) =1
        V= 4-> adjacent (pG, 2, 4)=1, the 4 voo 5.
                                                              Q. front = 8, Q= 44,8,3,4,6,7,82,4,5}
            Q. rear = 11
                                                              mark [1]=1-) chuyển sang vòng lặp tế-
            Q data [1]=4, Q=15,8,1,4,8,3$,44
                                                         Lan lan 9
        V= 6-) adjacent (pG, 2,6)=1, day 2 vão s
                                                          Q=14,8,3,4,6,7,8,2,4,5}
            Q. rear = 12
                                                         while (a. front = 8 ( Q. rear = 17)
            Q. data[12]=6, Q=15,8,1,4,8,3,4,64
                                                             4= Q. data [8]=4
        V=7-) adjacent(p(0,2,7)=1, dun7 vão s:
                                                             a. front = 9, a= 18,3,4,6,7,8,2 45
            Q. rear = 13
                                                             mank [A]=1-) chuyên sany vony lớp là thép
            Q. data [13] = 7, Q= 55, 8, 1, 4, 8, 3, 4, 6, 7}
        V=8-) adjacent (pg, 2, 8) =1, this 8 vão 5
                                                        Lãn làn 10
            Q. rear = 14
                                                          Q= 18,3,4,6,7,8,2,45
            Q. dota [14] = 8, Q= $5,8,1,4,8,3,4,6,7,8}
                                                         while (a.front=9 (a.rear=A))
Lân lặp 6
                                                             4= Q. data [9] = 8.
  Q= 45,8,1,4,8,3,46,7,81
                                                             Q. front = 10, Q = 13,4,6,7,8,2,4,5}
  while Ofront = 55. Q. rear = 14)
                                                              mark [8] = 1-) chuyển say vong lợp lớ hép?
       4= Q. data (5] = 5
                                                        Lãn làp 11
      Q front = 6, Q = 18,1,4,8,3,4,6,7,8}
                                                           Q= 13, 4, 6, 7, 8, 2, 4, 54
      mark[5] = 1 -> chuyện song vòng làple tiếp.
                                                         while ( Q. front = 10 ( Q. rear = 17)}
Lãn lãn 7
                                                              4= Q. data [10] = 3
  Q= 18, 1, 4, 8, 3, 46, 7, 8 }
                                                              Q front = 11, Q = 14, 6, 7, 8, 2, 4, 5 b
 while (Q. front = 6 < Q. rear = 14) }
                                                              mark [3] = 0 -) Lo qua
      4= Q. data [6] = 8
                                                             In Buyer 31n"
      Q. front = 7, Q= 11, 4, 8, 3, 4, 6, 7,8 6
                                                             mark [3] =1
     mark [8] = 0 -> bid qua
                                                            dor (v: cac alm then to thi)
    In "Duyer 8\n"
                                                               V=1,3,4,5,8 -> bo quy
                                                              V=2, > adjacent (pla, 3, 2)=1, dua 2 vão Q!
     mark [8]=1
    for (v: cut this let for to this)
                                                                 Q. rear= 18
                                                                 a. data (18] = 2, Q= 1 4,6, 7, 8, 2, 4,5,2}
         V= 1, 3, 6, 7,8 -> bo qua.
                                                              V= B. - ) adjacent (pt, 3, 6)=1, true 6 vão Q:
         V=2-> adjacent (pt, 8,2=1, dw. 2 vio Q
                                                                  Q. deta[19]=6, Q=14,6,7,8,2,4,5,2,6}
              Q. rear = 15
                                                             v= +-> actiacent (pg ,3,7)=1, than 7 vio a: 2
a. rev= 20 = 7, a= 14,6,7,8,2,4,5,2,67}
              Q. data[15]=2, Q=11,4,83,4,6,7,82]
```

Lân làn 12 Q={4,6,7,8,2,4,5,2,6,7} while CQ. front = 11 < Q. rear = 20) 4= Q.data[11]=4 Q. front = 12, Q= 16,7,8,2,45,2,6,7 \$ mark [4]=1-) chuyến sang vong lập là Lan lap 13 Q= 1, 6, 7, 8, 2, 4, 5, 2, 6, 7 9 While (Q. front = 12 / Q. rear = 20)} U= Q.ddta[12]=6. Q. front = B, Q = 1 7,8,2,4,5,2,6,79 mark [6] = 0 -> 60 aug. In " Dwet 61" mark [6]=1. for (v: Cat dish then to thi) } V= 1, 4,5,7,6,8 -) bo que V=2-) adjacent (pG,6,2)=1, true 2vão a: Q. rear = 21 a. data [21] = 2., a= 17,8,2,4,5,2,6,7,2} V=3-) adjacent (pa, 6,3)=1, tua 3 vão Q! Q. rear = 22 Q.data[22]=3, Q=b7, 8, 2, 4,5, 2, 6, 7, 2, 34 Lan lap 14 Q = 17,8,2,4,5,2,6,7,2,3} while (a. front = 13 < a. rear = 22)4 U= Q. data [13]=7. Q. front = 14, Q= 1, 8,2,4,5,2,6,7,2,3} mark [7] = D -) bo qua In "Duget 7 h" mark [7] =1 dor (v. cac dish tren to thy) V= 1,4,5,6,7,8 -> bd qua V=2-7 adjacent (PG,7,2)=1, dues 2 vão Q! Q. rear = 13 Q. data [23] = 2., Q= 18,245,2,67,2,3,24 v3 -> adjacent (pG,73)=1, this 3 vac 6. Q. rear = 24 Q. data[24]=3 j Q= 18,24,5,26,7,23,23)

Lân lap 15 Q=18,2,4,5,2,6,7,2,3,2,3 } while (a. front = 14 & a. rear = 24)} 4= Qdata[14] = 8 Q front = 15, Q = 1, 2,4,5,2,6,7,2,3,2,3) mark[8]=1-) chuyển sony long lập ker Lan lap 16 Q=12,4,5,2,6,7,2,3,2,34 while (Q. front = 15 & Q. recr = 24)} 4= Q. data [15] = 2. Q. dront = 16, Q = 1 4,5,2,6,7,2,3,2,3} mark (2] = 1 -) chayer sany vong lap let, Lãn làp 17 Q= 14,5,2,6,7,2,3,2,39 While (Q. front = 16 & Q. rear = 24 4 4= Q. data [16] = 4. Q. front= 17, Q= 15,2,6,7,2,3,2,3-9 mark [4]=1-) chuyés say vong lap la Lan lan 18 Q= (5,2,6,7,2,3,2,3) while (Q. front = 17 & Q. rear = 24) U= Q. data [17]=5 a. front = 18, 2 = 12,6,7,2,3,2,31 mark [5]=1-) chuyện say vony lập mer Làn làn 19 Q = 12,6,7,2,3,2,3} while (Q. front = 18 = Q. rear = 24) 4= Q. data [18]= 2 a. front = 19, Q= 1 6,7,23,23} mark [2] = 1 -) chuyện say vong làp mot Lan lan 20 0= 167,23,234 Whe (Q. front = 19 (Q. rear : 24)) 4= Q. data[19] =6. Q. front = 20, Q=167, 2,3,2,3} mark [6]=1-) chuyến say với lập lệ

Lan lan 21 Q= 17,2,3,2,34 While (Q. front= 20 & Q. rear = 24)} 4= Q. data[20]=7 Q. front = 21, Q= { 23,2,3 } mark [7]= 1-1 wing laip 10 Lân lap 22 Q= 12,3,2,34 While (Q. front = 21 & Q. rear= 24) 4= Q. data [21] = 2 Q tront = 22, Q=13,2,34 mark [2] = 1 -) vony lap ler. Lãn lãn 23 a= 13,23} while (a. front = 22 < Q - rear = 24) { u= Q data [22]=3 Q. front = 23, Q=12,34 mark [3] = 1-1 long lap 16' Lan lap 24 Q=12,37 while (a. front = 23 < Q. rear = 24)} 4=Q. data [23] = 2 a front = 24, a= 137 mark [2]=1-) vong lap le' Lão lão 25 Q=133 white (a. front = 24 & Q. rear = 24)} 4 = Q. data [24] =3 Q. front = 25 , Q=1 4 mark (3)=1-) voiry lop le Lãn lớn 26 Q=1 while (Q. front = 25) Q. rear = 24)} let this voing logs