#include <stdio.h>

#include <stdlib.h>

struct Ed

{

int source, dest;

};

struct Gr

{

int V, E;

Ed\* ed;

};

struct subset

{

int parent;

int count;

};

int find(struct subset sub[], int i);

void Contaction(struct subset sub[], int x, int y);

int Mincut(struct Gr\* gr)

{

int V = gr->V, E = gr->E;

Ed \*ed = gr->ed;

struct subset \*sub = new subset[V];

for (int v = 0; v < V; ++v)

{

sub[v].parent = v;

sub[v].count = 0;

}

int vertices = V;

while (vertices > 2)

{

int i = rand() % E;

int sub1 = find(sub, ed[i].source);

int sub2 = find(sub, ed[i].dest);

if (sub1 == sub2)

continue;

else

{

printf("Contracting edges are %d-%d\n",

ed[i].source, ed[i].dest);

vertices--;

Contaction(sub, sub1, sub2);

}

}

int cut\_edg = 0;

for (int i=0; i<E; i++)

{

int sub1 = find(sub, ed[i].source);

int sub2 = find(sub, ed[i].dest);

if (sub1 != sub2)

cut\_edg++;

}

return cut\_edg;

}

int find(struct subset sub[], int i)

{

if (sub[i].parent != i)

sub[i].parent =

find(sub, sub[i].parent);

return sub[i].parent;

}

void Contaction(struct subset sub[], int x, int y)

{

int xr = find(sub, x);

int yr = find(sub, y);

if (sub[xr].count < sub[yr].count)

sub[xr].parent = yr;

else if (sub[xr].count > sub[yr].count)

sub[yr].parent = xr;

else

{

sub[yr].parent = xr;

sub[xr].count++;

}

}

struct Gr\* createGr(int V, int E)

{

Gr\* gr = new Gr;

gr->V = V;

gr->E = E;

gr->ed = new Ed[E];

return gr;

}

int main()

{

int V = 8;

int E = 13;

struct Gr\* gr = createGr(V, E);

gr->ed[0].source = 0;

gr->ed[0].dest = 1;

gr->ed[1].source = 1;

gr->ed[1].dest = 2;

gr->ed[2].source = 2;

gr->ed[2].dest = 3;

gr->ed[3].source = 3;

gr->ed[3].dest = 4;

gr->ed[4].source = 4;

gr->ed[4].dest = 5;

gr->ed[5].source = 5;

gr->ed[5].dest = 6;

gr->ed[6].source = 6;

gr->ed[6].dest = 7;

gr->ed[7].source = 7;

gr->ed[7].dest = 0;

gr->ed[8].source = 1;

gr->ed[8].dest = 6;

gr->ed[9].source = 0;

gr->ed[9].dest = 6;

gr->ed[10].source = 1;

gr->ed[10].dest = 7;

gr->ed[11].source = 2;

gr->ed[11].dest = 5;

gr->ed[12].source = 3;

gr->ed[12].dest = 5;

gr->ed[13].source = 2;

gr->ed[13].dest = 4;

printf("\nMincut is %d\n",

Mincut(gr));

return 0;

}

Output:

Contracting ed 2-3

Contracting ed 7-0

Contracting ed 3-4

Contracting ed 6-7

Contracting ed 3-5

Contracting ed 0-1

Mincut is : 2