Sanjeev Kumar Singh
1BM18CS093
07/10/20 BS

ADS Lab 3

```
int CountIslands (vector <vector <int>> a)
{
 int n= a. size();
 int m= a[0]. size();

DisjointUnionSets *dus = new DisjointUnionSets (n*m);
 for (int j =0; j<n; j++)
  {
    for (int k =0; k<m; k++)
     {
       if (a[j][k] ==0)
       Continue;

   if (j+1 <n && a[j+1][k]==1)
      dus→Union (j* m +k, (j+1)*m +k);

   if (j-1 >=0 && a[j-1][k]==1)
      dus→ Union (j*m +k , (j-1) *m+k);

  if ( k+1 <m && a[j][k+1] ==1)
      dus→ Union (j*(m)+k , (j)*(m)+k+1);

   if (k-1 >=0 && a[j][k-1]==1)
      dus→ Union (j*m +k, (j)*(m)+k -1)
```

Songeev Kumar Singh
1BM18CS093
BS

Lab3

```
if ( j+1<n && k+1<m &&
          a[j+1] (k+1) ==1 )
dus→ union ( j*(m)+k, (j+1)*(m)+k+1);

if ( j+1<n && k-1 >=0 &&
      a(j+1] [k-1] ==1 )
dus→ union (j*m+k, (j+1)* m+k-1);

if (j-1>=0 && k+1 <m &&
        a(j-1] [k+1] ==1 )
 dus→ union ( j*m + k, (j-1)*m +k+1);

if(j-1 >=0 && k-1 >=0 && a(j-1][k-1]==1)
 dus→ union(j*m+k, (j-1)*m+k-1);
  }
}
int *c = new int [n*m];
 int numberofIslands = 0 ;
for (j=0 ; j<n; j++) {
  for (k=0; k<m ; k++) {
      if (a[j][k] ==1)
    { int x = dus→ find (j*m+k);
     if (c[x] ==0)
      {
        numberofIslands ++ ;
          c[x]++;
     }
    else   c[x] ++ ;
} } }
```