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#include <stdio.h>

struct DisjSet {

    int parent[10];

    int rank[10];

    int n;

}dis;
void makeSet()

{
    for (int i = 0; i < dis.n; i++) {

        dis.parent[i] = i;

        dis.rank[i]=0;
    }
}
void displaySet()

{   printf("\nParent Array\n");

    for (int i = 0; i < dis.n; i++) {

        printf("%d ",dis.parent[i]); }

    printf("\nRank Array\n");

    for (int i = 0; i < dis.n; i++)

    {

        printf("%d ",dis.rank[i]);

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    }

    printf("\n");

}
int find(int x)
{
    if (dis.parent[x] != x) {
        dis.parent[x] = find(dis.parent[x]);
    }
    return dis.parent[x];
}
void Union(int x, int y)

{
    int xset = find(x);

    int yset = find(y);
    if (xset == yset)

        return;

    if (dis.rank[xset] < dis.rank[yset]) {
        dis.parent[xset] = yset;
        dis.rank[xset] = -1;
    }
    else if (dis.rank[xset] > dis.rank[yset]) {
        dis.parent[yset] = xset;
        dis.rank[yset] = -1;
    }
    else {
        dis.parent[yset] = xset;
        dis.rank[xset] = dis.rank[xset] + 1;
        dis.rank[yset] = -1;
    }
}

```

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}
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int main()
{   int n,x,y;
    printf("How many elements ?");
    scanf("%d",&dis.n);
    makeSet();
    int ch,wish;
do
{

printf("\n___MENU_\n");

printf("1. Union \n2.Find\n3.Display\n");

printf("enter choice\n");

scanf("%d",&ch);

switch(ch)
{

case 1: printf("Enter elements to perform union");

        scanf("%d %d",&x,&y);

        Union(x, y);

        break;
```

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case 2: printf("Enter elements to check if connected components");

        scanf("%d %d",&x,&y);

        if (find(x) == find(y))

            printf("Connected components\n") ;

        else

            printf("Not onnected components \n") ;

        break;

case 3: displaySet();

        break;

}

printf("\nDo you wish to continue?(1/0)\n");

scanf("%d",&wish);

}while(wish==1);

return 0;

}
```

Output

How many elements ?4

__MENU__

1. Union

2.Find

3.Display

enter choice

1

Enter elements to perform union3

4

Do you wish to continue ?(1/0)

1

__MENU__

1. Union

2.Find

3.Display

enter choice

1

Enter elements to perform union5

6

Do you wish to continue ?(1/0)

1

__MENU__

1. Union

2.Find

3.Display

enter choice

3

Parent Array

3 1 2 3

Rank Array

-1 0 0 1

Do you wish to continue ?(1/0)

■