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GRAPH_COLORING.C - Code::Blocks 20.03
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Start here x binary_search.c x OBST.C x GRAPH_COLORING.C x
1 // BE20F05F062 AKASH SHRIDHARAN
2 #include<stdio.h>
3 #include<conio.h>
4 static int m, n;
5 static int c=0;
6 static int count=0;
7 int g[50][50];
8 int x[50];
9 void nextValue(int k);
10 void GraphColoring(int k);
11 int main()
12 {
13     int i, j;
14     int temp;
15
16     printf("\nEnter the number of nodes: ");
17     scanf("%d", &n);
18
19
20     /* printf("\nIf edge exists then enter 1 else enter 0 \n");
21     for(i=1; i<=n; i++)
22     {
23         x[i]=0;
24         for(j=1; j<=n; j++)
25         {
26             if(i==j)
27                 g[i][j]=0;
28             else
29             {
30                 printf("%d -> %d: ", i, j);
31                 scanf("%d", &temp);
32                 g[i][j]=g[j][i]=temp;
33             }
34         }
35     }
36
37     */
38     printf("\nEnter Adjacency Matrix:\n");
39     for(i=1; i<=n; i++)
40     {
41         for(j=1; j<=n; j++)
42         {
43             scanf("%d", &g[i][j]);
44         }
45     }
46 }
```

```
C:\Users\akash\Desktop\5th_sem_books&PPTs\DAA\DAA-lab-works\GRAPH_COLORING.exe
Enter the number of nodes: 3
Enter Adjacency Matrix:
32 43 45
62 69 23
34 65 63

Possible Solutions are
1 1 1

The chromatic number is 1
The total number of solutions is 1
Process returned 0 (0x0)   execution time : 48.407 s
Press any key to continue.
```

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40 {
41     for(j=1;j<=n;j++)
42     {
43         scanf("%d", &g[i][j]);
44     }
45 }
46 printf("\nPossible solutions are\n");
47 for(m=1;m<=n;m++)
48 {
49     if(c==1)
50     {
51         break;
52     }
53     GraphColoring(1);
54 }
55 }
56
57 printf("\nThe chromatic number is %d", m-1);
58 //in for loop, m gets incremented first and then the condition is checked
59 //so it is m minus 1
60 printf("\nThe total number of solutions is %d", count);
61
62 getch();
63 }
64
65 void GraphColoring(int k)
66 {
67     int i;
68     while(1)
69     {
70         nextValue(k);
71         if(x[k]==0)
72         {
73             return;
74         }
75
76         if(k==n)
77         {
78             c=1;
79             for(i=1;i<=n;i++)
80             {
81                 printf("%d ", x[i]);
82             }
83             count++;

```

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```
73     return;
74 }
75
76 if (k==n)
77 {
78     c=1;
79     for (i=1; i<=n; i++)
80     {
81         printf("%d ", x[i]);
82     }
83     count++;
84     printf("\n");
85 }
86 else
87     GraphColoring(k+1);
88 }
89 }
90
91 void nextValue(int k)
92 {
93     int j;
94     while(1)
95     {
96         x[k]=(x[k]+1)%(m+1);
97         if (x[k]==0)
98         {
99             return;
100         }
101         for (j=1; j<=n; j++)
102         {
103             if (g[k][j]==1 && x[k]==x[j])
104                 break;
105         }
106
107         if (j==(n+1))
108         {
109             return;
110         }
111     }
112 }
113
114
115
```

C/C++ Windows (CR+LF) WINDOWS-1252 Line 15, Col 1, Pos 247 Insert Read/Write defa...

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