

初赛资料与真题模拟·读程序写结果

```
1  #include <stdio.h>
2  char st[100];
3
4  int main() {
5      scanf("%s", st);
6      for (int i = 0; st[i]; ++i) {
7          if ('A' <= st[i] && st[i] <= 'Z') st[i] += 1;
8      }
9      printf("%s\n", st);
10     return 0;
11 }
```

- 输入: QuanGuoLianSai
- 输出:

```
1  #include <stdio.h>
2  int main() {
3      int x;
4      scanf("%d", &x);
5      int res = 0;
6      for (int i = 0; i < x; ++i) {
7          if (i * i % x == 1) {
8              ++res;
9          }
10     }
11     printf("%d", res);
12     return 0;
13 }
```

- 输入: 15
- 输出:

```
1  #include <iostream>
2  using namespace std;
3  int n, m;
4
5  int findans(int n, int m) {
6      if (n == 0) return m;
7      if (m == 0) return n % 3;
8      return findans(n - 1, m) - findans(n, m - 1) + findans(n - 1, m - 1);
9  }
10
11 int main(){
12     cin >> n >> m;
13     cout << findans(n, m) << endl;
14     return 0;
15 }
```

- 输入: 5 6
- 输出:

```
1 #include <stdio.h>
2 int n, d[100];
3 bool v[100];
4
5 int main() {
6     scanf("%d", &n);
7     for (int i = 0; i < n; ++i) {
8         scanf("%d", d + i);
9         v[i] = false;
10    }
11    int cnt = 0;
12    for (int i = 0; i < n; ++i) {
13        if (!v[i]) {
14            for (int j = i; !v[j]; j = d[j]) {
15                v[j] = true;
16            }
17            ++cnt;
18        }
19    }
20    printf("%d\n", cnt);
21    return 0;
22 }
```

- 输入: 10 7 1 4 3 2 5 9 8 0 6
- 输出:

```
1 #include <iostream>
2 using namespace std;
3 string s;
4
5 long long magic(int l, int r) {
6     long long ans = 0;
7     for (int i = l; i <= r; ++i) {
8         ans = ans * 4 + s[i] - 'a' + 1;
9     }
10    return ans;
11 }
12
13 int main() {
14     cin >> s;
15     int len = s.length();
16     int ans = 0;
17     for (int l1 = 0; l1 < len; ++l1) {
18         for (int r1 = l1; r1 < len; ++r1) {
19             bool bo = true;
20             for (int l2 = 0; l2 < len; ++l2) {
21                 for (int r2 = l2; r2 < len; ++r2) {
22                     if (magic(l1, r1) == magic(l2, r2)
23                         && (l1 != l2 || r1 != r2))
24                         bo = false;
25                 }
26             }
27         }
28     }
29 }
```

```

26         }
27
28         if (bo) {
29             ans += 1;
30         }
31     }
32 }
33 cout << ans << endl;
34 return 0;
35 }

```

- 输入: abacaba
- 输出:

```

1  #include <iostream>
2  using namespace std;
3  const int N = 110;
4  bool isUse[N];
5  int n, t;
6  int a[N], b[N];
7  bool isSmall() {
8      for (int i = 1; i <= n; ++i)
9          if (a[i] != b[i]) return a[i] < b[i];
10     return false;
11 }
12 bool getPermutation(int pos) {
13     if (pos > n) {
14         return isSmall();
15     }
16     for (int i = 1; i <= n; ++i) {
17         if (!isUse[i]) {
18             b[pos] = i; isUse[i] = true;
19             if (getPermutation(pos + 1)) {
20                 return true;
21             }
22             isUse[i] = false;
23         }
24     }
25     return false;
26 }
27 void getNext() {
28     for (int i = 1; i <= n; ++i) {
29         isUse[i] = false;
30     }
31     getPermutation(1);
32     for (int i = 1; i <= n; ++i) {
33         a[i] = b[i];
34     }
35 }
36 }
37 int main() {
38     scanf("%d%d", &n, &t);
39     for (int i = 1; i <= n; ++i) {
40         scanf("%d", &a[i]);
41     }
42     for (int i = 1; i <= t; ++i) {

```

```

43     getNext();
44 }
45 for (int i = 1; i <= n; ++i) {
46     printf("%d", a[i]);
47     if (i == n) putchar('\n'); else putchar(' ');
48 }
49 return 0;
50 }

```

- 输入1: 6 10 1 6 4 5 3 2
- 输出1:
- 输入2: 6 200 1 5 3 4 2 6
- 输出2:

```

1  #include<iostream>
2  using namespace std;
3  int main()
4  {
5      int t[256];
6      string s;
7      int i;
8      cin >> s;
9      for (i = 0; i < 256; i++)
10         t[i] = 0;
11     for (i = 0; i < s.length(); i++)
12         t[s[i]]++;
13     for (i = 0; i < s.length(); i++)
14         if (t[s[i]] == 1)
15         {
16             cout << s[i] << endl;
17             return 0;
18         }
19     cout << "no" << endl;
20     return 0;
21 }

```

- 输入: xyzxyw
- 输出:

```

1  #include<iostream>
2  using namespace std;
3  int g(int m, int n, int x)
4  {
5      int ans = 0;
6      int i;
7      if (n == 1)
8          return 1;
9      for (i = x; i <= m / n; i++)
10         ans += g(m - i, n - 1, i);
11     return ans;
12 }
13 int main()
14 {
15     int t, m, n;

```

```

16     cin >> m >> n;
17     cout << g(m, n, 0) << endl;
18     return 0;
19 }

```

- 输入: 7 3
- 输出:

```

1  #include<iostream>
2  using namespace std;
3  int main()
4  {
5      string ch;
6      int a[200];
7      int b[200];
8      int n, i, t, res;
9      cin >> ch;
10     n = ch.length();
11     for (i = 0; i < 200; i++)
12         b[i] = 0;
13     for (i = 1; i <= n; i++)
14     {
15         a[i] = ch[i - 1] - '0';
16         b[i] = b[i - 1] + a[i];
17     }
18     res = b[n];
19     t = 0;
20     for (i = n; i > 0; i--)
21     {
22         if (a[i] == 0)
23             t++;
24         if (b[i - 1] + t < res)
25             res = b[i - 1] + t;
26     }
27     cout << res << endl;
28     return 0;
29 }

```

- 输入: 1001101011001101101011110001
- 输出:

```

1  #include<iostream>
2  using namespace std;
3  int main()
4  {
5      int n, m;
6      cin >> n >> m;
7      int x = 1;
8      int y = 1;
9      int dx = 1;
10     int dy = 1;
11     int cnt = 0;
12     while (cnt != 2)
13     {

```

```

14     cnt = 0;
15     x = x + dx;
16     y = y + dy;
17     if (x == 1 || x == n)
18     {
19         ++cnt;
20         dx = -dx;
21     }
22     if (y == 1 || y == m)
23     {
24         ++cnt;
25         dy = -dy;
26     }
27 }
28 cout << x << " " << y << endl;
29 return 0;
30 }

```

- 输入1: 4 3
 - 输出1:
 - 输入2: 2017 1014
 - 输出2:
 - 输入3: 987 321
 - 输出3:
-

```

1
2 #include <iostream>
3 using namespace std;
4 int main() {
5     int n, i, j, x, y, nx, ny;
6     int a[40][40];
7     for (i = 0; i < 40; i++)
8         for (j = 0; j < 40; j++)
9             a[i][j] = 0;
10    cin >> n;
11    y = 0;
12    x = n - 1;
13    n = 2 * n - 1;
14    for (i = 1; i <= n * n; i++) {
15        a[y][x] = i;
16        ny = (y - 1 + n) % n;
17        nx = (x + 1) % n;
18        if ((y == 0 && x == n - 1) || a[ny][nx] != 0)
19            y = y + 1;
20        else {
21            y = ny; x = nx;
22        }
23    }
24    for (j = 0; j < n; j++)
25        cout << a[0][j] << " ";
26    cout << endl;
27    return 0;
28 }

```

- 输入: 3
- 输出:

```
1  #include <iostream>
2  using namespace std;
3  int n, s, a[100005], t[100005], i;
4  void mergesort(int l, int r)
5  {
6      if (l == r)
7          return;
8      int mid = (l + r) / 2;
9      int p = 1;
10     int i = l;
11     int j = mid + 1;
12     mergesort(l, mid);
13     mergesort(mid + 1, r);
14     while (i <= mid && j <= r)
15     {
16         if (a[j] < a[i])
17         {
18             s += mid - i + 1;
19             t[p] = a[j];
20             p++;
21             j++;
22         }
23         else
24         {
25             t[p] = a[i];
26             p++;
27             i++;
28         }
29     }
30     while (i <= mid)
31     {
32         t[p] = a[i];
33         p++;
34         i++;
35     }
36     while (j <= r)
37     {
38         t[p] = a[j];
39         p++;
40         j++;
41     }
42     for (i = l; i <= r; i++)
43         a[i] = t[i];
44 }
45 int main()
46 {
47     cin >> n;
48     for (i = 1; i <= n; i++)
49         cin >> a[i];
50     mergesort(1, n);
51     cout << s << endl;
52     return 0;
53 }
```

- 输入: 6 2 6 3 4 5 1
- 输出:

```
1  #include <iostream>
2  using namespace std;
3  int main()
4  {
5      int max, min, sum, count = 0;
6      int tmp;
7      cin >> tmp;
8      if (tmp == 0)
9          return 0;
10     max = min = sum = tmp;
11     count++;
12     while (tmp != 0)
13     {
14         cin >> tmp;
15         if (tmp != 0)
16         {
17             sum += tmp;
18             count++;
19             if (tmp > max)
20                 max = tmp;
21             if (tmp < min)
22                 min = tmp;
23         }
24     }
25     cout << max << "," << min << "," << sum / count << endl;
26     return 0;
27 }
```

- 输入: 1 2 3 4 5 6 0 7
- 输出:

```
1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      int i = 100, x = 0, y = 0;
7      while (i > 0)
8      {
9          i--;
10         x = i % 8;
11         if (x == 1)
12             y++;
13     }
14     cout << y << endl;
15     return 0;
16 }
```

- 输入: 无
- 输出:


```

1  #include <iostream>
2  using namespace std;
3
4  int main(){
5      int a[6] = {1, 2, 3, 4, 5, 6};
6      int pi = 0;
7      int pj = 5;
8      int t, i;
9      while (pi < pj)
10     {
11         t = a[pi];
12         a[pi] = a[pj];
13         a[pj] = t;
14         pi++;
15         pj--;
16     }
17     for (i = 0; i < 6; i++)
18         cout << a[i] << ",";
19     cout << endl;
20     return 0;
21 }

```

- 输入: 无
- 输出:

```

1  #include <iostream>
2  using namespace std;
3  int main()
4  {
5      int i, length1, length2;
6      string s1, s2;
7      s1 = "I have a dream.";
8      s2 = "I Have A Dream.";
9      length1 = s1.size();
10     length2 = s2.size();
11     for (i = 0; i < length1; i++)
12         if (s1[i] >= 'a' && s1[i] <= 'z')
13             s1[i] -= 'a' - 'A';
14     for (i = 0; i < length2; i++)
15         if (s2[i] >= 'a' && s2[i] <= 'z')
16             s2[i] -= 'a' - 'A';
17     if (s1 == s2)
18         cout << "=" << endl;
19     else if (s1 > s2)
20         cout << ">" << endl;
21     else
22         cout << "<" << endl;
23     return 0;
24 }

```

- 输入: 无
- 输出:

```

1  #include <iostream>
2  using namespace std;
3  int main()
4  {
5      char a[100][100], b[100][100];
6      string c[100];
7      string tmp;
8      int n, i = 0, j = 0, k = 0, total_len[100], length[100][3];
9      cin >> n;
10     getline(cin, tmp);
11     for (i = 0; i < n; i++)
12     {
13         getline(cin, c[i]);
14         total_len[i] = c[i].size();
15     }
16     for (i = 0; i < n; i++)
17     {
18         j = 0;
19         while (c[i][j] != ':')
20         {
21             a[i][k] = c[i][j];
22             k = k + 1;
23             j++;
24         }
25         length[i][1] = k - 1;
26         a[i][k] = 0;
27         k = 0;
28         for (j = j + 1; j < total_len[i]; j++)
29         {
30             b[i][k] = c[i][j];
31             k = k + 1;
32         }
33         length[i][2] = k - 1;
34         b[i][k] = 0;
35         k = 0;
36     }
37     for (i = 0; i < n; i++)
38     {
39         if (length[i][1] >= length[i][2])
40             cout << "NO,";
41         else
42         {
43             k = 0;
44             for (j = 0; j < length[i][2]; j++)
45             {
46                 if (a[i][k] == b[i][j])
47                     k = k + 1;
48                 if (k > length[i][1])
49                     break;
50             }
51             if (j == length[i][2])
52                 cout << "NO,";
53             else
54                 cout << "YES,";
55         }
56     }
57     cout << endl;
58     return 0;

```

- 输入:
3
AB:ACDEbFBkBD
AR:ACDBrT
SARS:Severe Atypical Respiratory Syndrome
- 输出:

```

1  #include <iostream>
2  using namespace std;
3  int lps(string seq, int i, int j)
4  {
5      int len1, len2;
6      if (i == j)
7          return 1;
8      if (i > j)
9          return 0;
10     if (seq[i] == seq[j])
11         return lps(seq, i + 1, j - 1) + 2;
12     len1 = lps(seq, i, j - 1);
13     len2 = lps(seq, i + 1, j);
14     if (len1 > len2)
15         return len1;
16     return len2;
17 }
18 int main()
19 {
20     string seq = "acmerandacm";
21     int n = seq.size();
22     cout << lps(seq, 0, n - 1) << endl;
23     return 0;
24 }
```

- 输入: 无
- 输出:

```

1  #include <iostream>
2  #include <cstring>
3  using namespace std;
4  int map[100][100];
5  int sum[100], weight[100];
6  int visit[100];
7  int n;
8  void dfs(int node)
9  {
10     visit[node] = 1;
11     sum[node] = 1;
12     int v, maxw = 0;
13     for (v = 1; v <= n; v++)
14     {
15         if (!map[node][v] || visit[v])
16             continue;
17         dfs(v);
```

```

18         sum[node] += sum[v];
19         if (sum[v] > maxw)
20             maxw = sum[v];
21     }
22     if (n - sum[node] > maxw)
23         maxw = n - sum[node];
24     weight[node] = maxw;
25 }
26 int main()
27 {
28     memset(map, 0, sizeof(map));
29     memset(sum, 0, sizeof(sum));
30     memset(weight, 0, sizeof(weight));
31     memset(visit, 0, sizeof(visit));
32     cin >> n;
33     int i, x, y;
34     for (i = 1; i < n; i++)
35     {
36         cin >> x >> y;
37         map[x][y] = 1;
38         map[y][x] = 1;
39     }
40     dfs(1);
41     int ans = n, ansN = 0;
42     for (i = 1; i <= n; i++)
43         if (weight[i] < ans)
44         {
45             ans = weight[i];
46             ansN = i;
47         }
48     cout << ansN << " " << ans << endl;
49     return 0;
50 }

```

- 输入:

```

11
12
13
24
25
26
37
78
711
69
910

```

- 输出: