

3.提升代码能力

1、斐波那契数列

```
1  #include <iostream>
2  using namespace std;
3  const int mod = 1e9 + 7;
4  int f[100005];
5  int main()
6  {
7      int n;
8      cin >> n;
9      f[1] = 1;
10     f[2] = 1;
11     for (int i = 3; i <= n; i++)
12     {
13         f[i] = (f[i-1] + f[i-2]) % mod;
14     }
15     cout << f[n] << endl;
16     return 0;
17 }
```

2、旋转矩阵

```
1  int num[205][205];
2  int main()
3  {
4      int n,m;
5      cin >> n >> m;
6      for (int i = 0; i < n; i++)
7      {
8          for (int j = 0; j < m;j++)
9              cin >> num[i][j];
10     }
11
12     for(int i=0; i < m; i++)
13     {
14         for (int j = 0;j < n; j++)
15         {
16             if (j!= n-1)
17                 cout << num[n-1-j][i] << " ";
18             else
19                 cout << num[n-1-j][i] << endl;
20         }
```

```

21     }
22     return 0;
23 }

```

3、最大子矩阵（暴力）

```

1  int A[55][55];
2
3  int main()
4  {
5      int n,m,ans;
6      cin >> n >> m;
7      ans = -1005;
8      for (int i = 0 ;i < n;i++)
9      {
10         for (int j = 0; j < m;j++)
11         {
12             cin >> A[i][j];
13         }
14     }
15
16     for (int i = 0; i < n; i++)    //i,j,k,l 上下左右四条边界
17     {
18         for (int j = i; j < n; j++)
19         {
20             for (int k = 0; k < m;k++)
21             {
22                 for (int l = k; l < m; l++)
23                 {
24                     int tmp = 0;
25                     for (int p = i; p <= j ;p++)
26                     {
27                         for (int q = k; q <= l; q++)
28                         {
29                             tmp += A[p][q];
30                         }
31                         if (tmp > ans)
32                             ans = tmp;
33                     }
34                 }
35             }
36         }
37     }
38     cout << ans <<endl;
39     return 0;
40 }

```

4、去重

```

1  int num[105],ans[105];
2  int main()

```

```

3 {
4     int n,m=0;
5     cin >> n;
6     for (int i = 0; i < n; i++)
7     {
8         cin >> num[i];
9     }
10    sort(num, num+n);
11    for (int i = 0; i < n; i++)
12    {
13        if ( i!= 0 && num[i] != num[i-1])
14        {
15            ans[m++] = num[i-1];
16        }
17    }
18    ans[m++] = num[n-1];
19    cout << m << endl;
20    for (int i =0 ; i < m; i++)
21    {
22        cout << ans[i] <<" ";
23    }
24    return 0;
25 }

```

5、进制转换

```

1 char ans[105];
2 int main()
3 {
4     int N,R,m,now;
5     cin >> N >> R;
6     if ( N < 0)
7     {
8         cout << "-";
9         N = - N;
10    }
11    while ( N )
12    {
13        now = N % R;
14        if (now <= 9)
15        {
16            ans[m++] = '0' + now;
17        }
18        else
19        {
20            ans[m++] = 'A' +now -10;
21        }
22        N /= R;
23    }
24    if ( !m)
25    {

```

```

26         cout << 0 ;
27     }
28     for (int i = m - 1; i>=0; i--)
29     {
30         cout << ans[i];
31     }
32     return 0;
33 }

```

6、回文数

```

1  int num[10005];
2  int digit[10005];
3  bool judge(int x)
4  {
5      int cnt = 0;
6      while(x)
7      {
8          digit[cnt++] = x % 10;
9          x /= 10;
10     }
11     for(int i = 0 ; i < cnt/2; i++)
12     {
13         if (digit[i] != digit[cnt-1-i])
14             return false;
15     }
16     return true;
17 }
18
19 int rev(int x)
20 {
21     int ret = 0;
22     while(x)
23     {
24         ret = ret * 10 + x % 10;
25         x /= 10;
26     }
27     return ret;
28 }
29 int main()
30 {
31     int n,m;
32     cin >> n;
33     m = 0;
34     num[m++] = n;
35     while (!judge(n))
36     {
37         n += rev(n);
38         num[m++] = n;
39     }
40     cout << m - 1 <<endl;

```

```

41     for (int i = 0; i < m; i++)
42     {
43         if ( i != m - 1)
44             cout << num [i] << "-->";
45         else
46             cout << num [i] << endl;
47     }
48     return 0;
49 }

```

6、机器人

```

1  #include <iostream>
2  #include <algorithm>
3  using namespace std;
4
5  int dx[4] = {0,-1,0,1};
6  int dy[4] = {1,0,-1,0};
7  char op[15];
8  int main()
9  {
10     int n,d,x,nowx=0,nowy=0;
11     cin >> n;
12     d = 3;
13     for (int i = 0; i < n; i++)
14     {
15         cin >> op >> x;
16         if (op[0] == 'b')
17         {
18             d = (d+2)%4;
19         }
20         else if (op[0] == 'l')
21         {
22             d = (d+1)%4;
23         }
24         else if (op[0] == 'r')
25         {
26             d = (d+3)%4;
27         }
28         nowx += dx[d] * x;
29         nowy += dy[d] * x;
30     }
31     cout << nowx << nowy;
32     return 0;
33 }

```