```
 1: #include"dm.h"
 2:
 3: int main()
 4: {
 5:
 6:     ///----- parse file
 7:     ifstream file_in("pattern3.txt");
 8:     int nShape; ///# of total shapes
 9:     int nTri=0,nRec=0,nSqu=0,nCir=0;
10:
11:     file_in>>nShape;
12:
13:     shape** shape_list = new shape*[nShape];
14:
15:     string s1,s2;
16:     for(int i=0;i<nShape;++i)
17:     {
18:         ///get name
19:         file_in>>s1;
20:         ///get type
21:         file_in>>s2;
22:         if(s2=="triangle")
23:         {
24:           double side_0,side_1,side_2;
25:           file_in>>side_0>>side_1>>side_2;
26:           triangle *pTri=new triangle(side_0,side_1,side_2,s1);
27:           shape_list[i] = pTri;
28:           ++nTri;
29:         }
30:         else if(s2=="rectangle")
31:         {
32:           double side_0,side_1,side_2,side_3;
33:           file_in>>side_0>>side_1>>side_2>>side_3;
34:           rectangle *pRec=new rectangle(side_0,side_1,side_2,side_3,s
35:           shape_list[i] = pRec;
36:           ++nRec;
37:         }
38:
39:         else if(s2=="square")
40:         {
41:           double side_0,side_1,side_2,side_3;
42:           file_in>>side_0>>side_1>>side_2>>side_3;
43:           square *pSqu=new square(side_0,side_1,side_2,side_3,s1);
44:          shape_list[i] = pSqu;
45:          //cout<<pSqu->sides[0];
46:           ++nSqu;
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47:         }
48:
49:         else if(s2=="circle")
50:         {
51:           double r;
52:           file_in>>r;
53:           circle *pCir=new circle(r,s1);
54:           shape_list[i] = pCir;
55:           ++nCir;
56:         }
57:     }
58:     for(int i=0;i<nShape;++i)
59:     {
60:       shape_list[i]->set_perimeter();
61:     }
62:
63:     ///----- print results
64:
65:     cout<<"[# of each shape]"<<endl;
66:     cout<<"Triangle: "<<nTri<<endl;
67:     cout<<"Rectangle: "<<nRec<<endl;
68:     cout<<"Square: "<<nSqu<<endl;
69:     cout<<"Circle: "<<nCir<<endl;
70:     cout<<endl;
71:
72:     cout<<"[Legal]"<<endl;
73:     for(int i=0;i<nShape;++i)
74:     {
75:       if(shape_list[i]->get_perimeter() != -1){
76:         shape_list[i]->get_information();
77:       }
78:     }
79:     cout<<endl;
80:     cout<<"[Illegal]"<<endl;
81:     for(int i=0;i<nShape;++i)
82:     {
83:       if(shape_list[i]->get_perimeter() == -1){
84:         shape_list[i]->get_information();
85:       }
86:     }
87:     return 0;
88: }
```