论文中用到的所有解题代码

第一题中求解供应商各项评价指标代码：

订单完成率.cpp

```
#include <bits/stdc++.h>
using namespace std;
const int  N = 500;
string ss;
int tt;
struct node {
        string name;
        int w[N], num1, num2;
} s[N];
void read1() {
        for (int i = 1; i <= 402; i ++ ) {
                cin >> s[i].name;
                int number = 0;
                for (int j = 1; j <= 240; j ++ ) {
                        cin >> s[i].w[j];
                        if(s[i].w[j]) number ++ ;
                }
                s[i].num1 = number;
        }
}
void read2() {
        for (int i = 1; i <= 402; i ++ ) {
                cin >> ss;
                int number = 0;
                for (int j = 1; j <= 240; j ++ ) {
                        cin >> tt;
                        if(s[i].w[j] && tt >= s[i].w[j]) number ++ ;
                }
                s[i].num2 = number;
        }
}
void chuli() {
        for (int i = 1; i <= 402; i ++ ) {
                cout <<(double)s[i].num2/s[i].num1 << endl;
        }
}
int main() {
        freopen("订货.txt", "r", stdin);
        read1();
```

```
        fclose(stdin);
        freopen("供货.txt", "r", stdin);
        read2();
        fclose(stdin);
        freopen("订单完成率.txt", "w", stdout);
        chuli();
        fclose(stdout);
        return 0;
}
```

供求比的均值.cpp

```
#include <bits/stdc++.h>
using namespace std;
const int  N = 500;
string ss;
int tt;
struct node {
        string name;
        int w[N];
        double weekwcl[N], sum, num, ans;
} s[N];
void read() {
        for (int i = 1; i <= 402; i ++ ) {
                cin >> s[i].name >> s[i].num;
                for (int j = 1; j <= s[i].num; j ++ ) {
                        cin >> s[i].w[j];
                }
        }
}
void chuli() {
        int number;
        for (int i = 1; i <= 402; i ++ ) {
                cin >> ss >> number;
                for (int j = 1; j <= number; j ++ ) {
                        cin >> tt;
                        s[i].weekwcl[j] = (double)tt / s[i].w[j];
                }
                double x = 0;
                for (int j = 1; j <= number; j ++ ) {
                        x += s[i].weekwcl[j];
                }
                s[i].ans = x / number;
                cout << s[i].ans << endl;
        }
}
```

```
int main() {
        freopen("订货无冗余.txt", "r", stdin);
        read();
        fclose(stdin);
        freopen("供货无冗余.txt", "r", stdin);
        freopen("供求比的均值.txt", "w", stdout);
        chuli();
        fclose(stdin);
        fclose(stdout);
        return 0;
}
```

材料价值方差.cpp

```
#include <bits/stdc++.h>
using namespace std;
const int  N = 500;
struct node {
        string name;
        int sumi;
        double pj, sumd, fc;
        int w[N];
} s[N];
void chuli() {
        for (int i = 1; i <= 402; i ++ ) {
                cin >> s[i].name;
                for (int j = 1; j <= 240; j ++ ) {
                        cin >> s[i].w[j];
                        s[i].sumi += s[i].w[j];
                }
                s[i].pj = (double)s[i].sumi / 240;
                for (int j = 1; j <= 240; j ++ ) {
                        s[i].sumd += pow(s[i].pj - s[i].w[j], 2);
                }
                s[i].fc = s[i].sumd / 240;
                cout << s[i].fc << endl;
        }
}
int main() {
        freopen("供货.txt", "r", stdin);
        freopen("材料价值方差.txt","w",stdout);
        chuli();
        fclose(stdin);
        fclose(stdout);
        return 0;
}
```

下单次数.cpp

```
#include <bits/stdc++.h>
using namespace std;
const int  N = 500;
struct node {
        string name;
        int w[N];
} s[N];
void chuli() {
        for (int i = 1; i <= 402; i ++ ) {
                int number = 0;
                cin >> s[i].name;
                for (int j = 1; j <= 240; j ++ ) {
                        cin >> s[i].w[j];
                        if(s[i].w[j]) number ++ ;
                }
                cout << number << endl;
        }
}
int main() {
        freopen("订货.txt", "r", stdin);
        freopen("下单次数.txt","w",stdout);
        chuli();
        fclose(stdin);
        fclose(stdout);
        return 0;
}
```

材料价值.cpp

```
#include <bits/stdc++.h>
using namespace std;
const int  N = 500;
struct node {
        string name;
        int w[N];
} s[N];
void chuli() {
        for (int i = 1; i <= 402; i ++ ) {
                int sum = 0;
                cin >> s[i].name;
                for (int j = 1; j <= 240; j ++ ) {
                        cin >> s[i].w[j];
                        sum += s[i].w[j];
```

```
                }
                cout << sum << endl;
        }
}
int main() {
        freopen("供货.txt", "r", stdin);
        freopen("材料价值.txt","w",stdout);
        chuli();
        fclose(stdin);
        fclose(stdout);
        return 0;
}
```

第一小题主程序.m

```
clean
clc
gj=load('评价标准.txt')
gj=zscore(gj)
r=corrcoef(gj)
[x,y,z]=pcacov(r)
 f=repmat(sign(sum(x)),size(x,1),1)
num=3
df=gj*x(:,[1:num])
tf=df*z(1:num)/100
[stf,ind]=sort(tf,'descend')
stf=stf',ind=ind'
```

第二题第一小问主程序.m

```
clear all;
clc;
options = gaoptimset('Generations', 1000,...
                     'PopulationSize', 200);
[x1,fval] = ga(@f1,402*24,[],[],[],
[],zeros(402*24,1),ones(402*24,1),@n1,options);
S = reshape(x1,24,402);
xlswrite('供应商的最少数量时对应的决策矩阵.xlsx',S);
```

第二题第二小问主程序.m

```
clear all;
clc;
```

```
A = 146;
B = 134;
C = 122;
options = gaoptimset('Generations', 1000,...
                     'PopulationSize', 200);
G = zeros((A+B+C),24);
for i =1:24
   [x2,fval] = ga(@f2,(A+B+C),[],[],[],
   [],zeros(A+B+C,1),ones(A+B+C,1),@n2,options);
   G(:,i) = x2';
end
xlswrite('最优供货量',G);
```

第二题第三小问主程序.m

```
clear all;
clc;
A = 146;
B = 134;
C = 122;
options = gaoptimset('Generations', 1000,...
                     'PopulationSize', 200);
[x3,fval] = ga(@f3,(A+B+C)*8,[],[],[],
[],zeros((A+B+C)*8,1),ones((A+B+C)*8,1),@n3,options);
Z = reshape(x3,A+B+C,8);
xlswrite('最优供货量',Z);
```

第三题主程序.m

```
clear all;
clc;
A = 146;
B = 134;
C = 122;
options = gaoptimset('Generations', 1000,...
                     'PopulationSize', 200);
G = zeros((A+B+C),24);
for i =1:24
   [x2,fval] = ga(@f4,(A+B+C),[],[],[],
   [],zeros(A+B+C,1),ones(A+B+C,1),@n4,options);
   G(:,i) = x2';
end
xlswrite('最优供货量',G);

options = gaoptimset('Generations', 1000,...
```

```
                    'PopulationSize', 200);
[x3,fval] = ga(@f3,(A+B+C)*8,[],[],[],
[],zeros((A+B+C)*8,1),ones((A+B+C)*8,1),@n5,options);
Z = reshape(x3,A+B+C,8);
xlswrite('最优供货量',Z);
```

第四题主程序.m

```
clear all;
clc;
options = gaoptimset('Generations', 1000,...
                    'PopulationSize', 200);
[x1,fval] = ga(@f1,402*24,[],[],[],
[],zeros(402*24,1),ones(402*24,1),@n1,options);
S = reshape(x1,24,402);
A = 146;
B = 134;
C = 122;
options = gaoptimset('Generations', 1000,...
                    'PopulationSize', 200);
[x3,fval] = ga(@f3,(A+B+C)*8,[],[],[],
[],zeros((A+B+C)*8,1),ones((A+B+C)*8,1),@n4,options);
Z = reshape(x3,A+B+C,8);
xlswrite('最优供货量',Z);
```

f1.m

```
function z = f1(x)
x = round(x);
x = x';
S = reshape(x,24,402);
SA = S(:,1:146);
SB = S(:,147:280);
SC = S(:,281:402);
COUNTA = 0;
COUNTB = 0;
COUNTC = 0;
for i=1:146
  if sum(SA(:,i)) > 0
      COUNTA= COUNTA + 1;
  end
end
for i=1:134
  if sum(SB(:,i)) > 0
      COUNTB  = COUNTB  + 1;
```

```
  end
end
for i=1:122
  if sum(SC(:,i)) > 0
      COUNTC  = COUNTC  + 1;
  end
end
z = COUNTA + COUNTB+ COUNTC;
end
```

f2.m

```
function z = f2(x)
A = 146;
B = 134;
C = 122;
x = x';
GA = x(1:A);
GB = x((A+1):(A+B));
GC = x((A+B+1):(A+B+C));
z= 1.2*sum(GA)+1.1*sum(GB)+sum(GC);
end
```

f3.m

```
function z = f3(x)
A = 146;
B = 134;
C = 122;
G = xlsread('最优供货量');
rho = xlsread('rho');
x = x';
Sz = reshape(x,A+B+C,8);
z= G(:,1)'*Sz*rho(:,1);
end
```

f4.m

```
function z = f4(x)
A = 146;
B = 134;
C = 122;
x = x';
```

```
GA = x(1:A);
GB = x((A+1):(A+B));
GC = x((A+B+1):(A+B+C));
z= 1.2*sum(GA)+1.1*sum(GB)+sum(GC);
end
```

n1.m

```
function  [ceq,c]=n1(x)
x = round(x);
x =x';
maxA = xlsread('maxA');
maxB = xlsread('maxB');
maxC = xlsread('maxC');
S = reshape(x,24,402);
SA = S(:,1:146);
SB = S(:,147:280);
SC = S(:,281:402);
s = (-2.28e4)*ones(24,1)+(-2.28e4)*eye(24,1);
ceq(:,1) = s-diag(0.98*(SA*maxA/0.6+SB*maxB/0.66+SC*maxC/0.72));
c =0;
end
```

n2.m

```
function  [ceq,c]=n2(x)
A = 146;
B = 134;
C = 122;
maxA = xlsread('maxA');
maxB = xlsread('maxB');
maxC = xlsread('maxC');
max = [maxA;maxB;maxC];
x = x';
GA = x(1:A);
GB = x((A+1):(A+B));
GC = x((A+B+1):(A+B+C));
p = x - max(:,1);
ceq(:,1) = 0.98*(sum(GA)/0.6+sum(GB)/0.66+sum(GC)/0.72) - 2.28e4;
for i = 1:402
   ceq(:,i+1) = p(i);
end
c =0;
end
```

n3.m

```
function  [ceq,c]=n3(x)
A = 146;
B = 134;
C = 122;
G = xlsread('最优供货量');
x = x';
x = x';
Sz = reshape(x,A+B+C,8);
con= G(:,1)'*Sz;
for i =1:8
    ceq(:,i) = con(i)-6000;
end
for i =1:8
    c(:,i) = sum(Sz(:,i))-1;
end
end
```

n4.m

```
function  [ceq,c]=n4(x)
A = 146;
B = 134;
C = 122;
maxA = xlsread('maxA');
maxB = xlsread('maxB');
maxC = xlsread('maxC');
max = [maxA;maxB;maxC];
x = x';
GA = x(1:A);
GB = x((A+1):(A+B));
GC = x((A+B+1):(A+B+C));
p = x - max(:,1);
ceq(:,1) = 0.98*(sum(GA)/0.6+sum(GB)/0.66+sum(GC)/0.72) - 2.28e4;
for i = 1:402
   ceq(:,i+1) = p(i);
end
c =0;
end
```

n5.m

```
function  [ceq,c]=n5(x)
A = 146;
B = 134;
C = 122;
maxA = xlsread('maxA');
maxB = xlsread('maxB');
maxC = xlsread('maxC');
max = [maxA;maxB;maxC];
x = x';
GA = x(1:A);
GB = x((A+1):(A+B));
GC = x((A+B+1):(A+B+C));
p = x - max(:,1);
ceq(:,1) = 0.98*(sum(GA)/0.6+sum(GB)/0.66+sum(GC)/0.72) - 2.28e4;
for i = 1:402
   ceq(:,i+1) = p(i);
end
c =0;
end
```