```
$Title ProjectSchaduling

Set
i /i1*i10/
Alias(i,j)
;

$ontext
Sets
P(i,j)
/
i1.i4
i2.i7
i3.i8
/
$offtext

Parameters
P(j,i)
;

Set M /m1*m3/

Parameters
NM(i)
;
NM(i)=3;
;

Set t /t1*t12/
;

Parameters
d(i,m)
c(i,m)
q(i,m)
fs(i,m,j)
TM
Qmin
B
w(i)
;

TM=card(T)
scalar lamda /0.7/;
Qmin=lamda*10*card(i);

$call GDXXRW ProjectSchadulingData.xlsx par=p rng=p! rdim=1 cdim=1
$gdxin ProjectSchadulingData.gdx
$load p
$gdxin


$call GDXXRW ProjectSchadulingData.xlsx par=d rng=d! rdim=1 cdim=1
$gdxin ProjectSchadulingData.gdx
$load d
$gdxin


$call GDXXRW ProjectSchadulingData.xlsx par=c rng=c! rdim=1 cdim=1
```

```
$gdxin ProjectSchadulingData.gdx
$load c
$gdxin


$call GDXXRW ProjectSchadulingData.xlsx par=q rng=q! rdim=1 cdim=1
$gdxin ProjectSchadulingData.gdx
$load q
$gdxin

$call GDXXRW ProjectSchadulingData.xlsx par=fs rng=fs! rdim=2 cdim=1
$gdxin ProjectSchadulingData.gdx
$load fs
$gdxin

$call GDXXRW ProjectSchadulingData.xlsx par=w rng=w! rdim=1 cdim=0
$gdxin ProjectSchadulingData.gdx
$load w
$gdxin


B=2*sum(i,smin(m,c(i,m)));

Display
p
d
c
q
B
fs
w
;

Binary Variable
x(i,m,t)
;

Free Variable
Cost
Time
Quality
;
Time.up=TM;

Equations
objT
objC
objQ
cons1
cons2
cons3
cons4
;

objT(i)..        time =g= sum({m,t},(ord(t)+d(i,m)-1)*x(i,m,t));

objC..           cost =e= sum({i,t,m},c(i,m)*x(i,m,t));

objQ..           quality =e= sum({i,t,m},w(i)*q(i,m)*x(i,m,t));
```

```
cons1(i)..        sum({m,t},x(i,m,t))=e=1;

cons2(i,j)$(p(j,i))..      sum({m,t},ord(t)*x(i,m,t)) =g=  sum({m,t},(ord(t) +
                                                           d(i,m) -1 + fs(i,m,j))*x(j,»
m,t));


cons3..           sum({i,t,m},w(i)*q(i,m)*x(i,m,t)) =g= Qmin/card(i);


cons4..           sum({i,t,m},c(i,m)*x(i,m,t)) =l= B;


Model   ProjectSchaduling
/
objT
objC
objQ
cons1
cons2
cons3
cons4
/
;

Options
MIP = CPLEX
reslim =100
*maximum run time (sec.)
optcr = 0
;

Solve  ProjectSchaduling us MIP min time;

Display
"Time"
x.l
Cost.l
Time.l
Quality.l

Solve  ProjectSchaduling us MIP min cost;

Display
"Cost"
x.l
Cost.l
Time.l
Quality.l

Solve  ProjectSchaduling us MIP max quality;

Display
"Quality"
x.l
Cost.l
Time.l
Quality.l
```