

```

library(lpSolve)
f.obj<- c(5,0,0,3,0,2,1,
          0,5,3,0,2,1,0,
          0,5,0,3,0,2,1,
          3,0,5,0,2,1,0,
          0,1,0,2,5,0,3,
          3,0,2,5,0,0,1,
          0,2,0,0,5,3,1,
          5,0,3,1,0,2,0,
          3,0,5,0,1,2,0,
          0,0,0,5,3,1,2,
          3,0,5,0,0,1,2,
          1,0,5,3,0,2,0,
          1,0,2,0,0,3,5,
          1,0,2,5,0,3,0,
          5,0,3,0,2,1,0,
          1,2,0,0,0,3,5,
          1,0,0,5,0,3,2,
          2,0,1,0,3,5,0,
          5,1,3,2,0,0,0,
          5,0,3,1,0,2,0,
          0,5,1,3,0,0,2)

f.obj
length(f.obj)
mat1<- matrix(0, nrow=21,ncol=length(f.obj))
mat1
dim(mat1)
for(i in 1:21){
  mat1[i, c(7*i-6, 7*i-5, 7*i-4, 7*i-3, 7*i-2, 7*i-1, 7*i)]<- 1

```

```
}
```

```
mat1
```

```
f.dir1<- rep("==", 21)
```

```
f.dir1
```

```
f.rhs1<- c(rep(2, 21))
```

```
f.rhs
```

```
mat2<- matrix(0, nrow=7, ncol= length(f.obj))
```

```
mat2
```

```
dim(mat2)
```

```
for(i in 1:7){
```

```
  mat2[i,c(i, i+7, i+14, i+21, i+28, i+35, i+42, i+49, i+56, i+63, i+70, i+77, i+84,  
            i+91, i+98, i+105, i+112, i+119, i+126, i+133, i+140 )]<- 1
```

```
}
```

```
mat2
```

```
dim(mat2)
```

```
f.dir2<- rep(">=",7)
```

```
f.dir2
```

```
f.rhs2<- c(rep(2, 7))
```

```
f.rhs2
```

```
mat3<- matrix(0, nrow=7, ncol= length(f.obj))
```

```
mat3
```

```
dim(mat3)
```

```
for(i in 1:7){
```

```
  mat3[i,c(i, i+7, i+14, i+21, i+28, i+35, i+42, i+49, i+56, i+63, i+70, i+77, i+84,
```

```
        i+91, i+98, i+105, i+112, i+119, i+126, i+133, i+140 )]<- 1
    }
```

```
mat3
```

```
dim(mat3)
```

```
f.dir3<- rep("<=",7)
```

```
f.rhs3<- c(rep(6, 7))
```

```
f.rhs3
```

```
#binding all constraints
```

```
f.con<- rbind(mat1, mat2, mat3)
```

```
f.rhs<- c(f.rhs1, f.rhs2, f.rhs3)
```

```
f.dir<- c(f.dir1, f.dir2, f.dir3)
```

```
answer<- lp("max", f.obj, f.con, f.dir, f.rhs, all.bin = TRUE)
```

```
answer
```

```
library(lpSolve)
```

```
f.obj<- c(5,0,0,3,0,2,1,
```

```
        0,5,3,0,2,1,0,
```

```
        0,5,0,3,0,2,1,
```

```
        3,0,5,0,2,1,0,
```

```
        0,1,0,2,5,0,3,
```

```
        3,0,2,5,0,0,1,
```

```
        0,2,0,0,5,3,1,
```

5,0,3,1,0,2,0,
3,0,5,0,1,2,0,
0,0,0,5,3,1,2,
3,0,5,0,0,1,2,
1,0,5,3,0,2,0,
1,0,2,0,0,3,5,
1,0,2,5,0,3,0,
5,0,3,0,2,1,0,
1,2,0,0,0,3,5,
1,0,0,5,0,3,2,
2,0,1,0,3,5,0,
5,1,3,2,0,0,0,
5,0,3,1,0,2,0,
0,5,1,3,0,0,2)

f.obj

length(f.obj)

mat1<- matrix(0, nrow=21,ncol=length(f.obj))

mat1

dim(mat1)

for(i in 1:21){

mat1[i, c(7*i-6, 7*i-5, 7*i-4, 7*i-3, 7*i-2, 7*i-1, 7*i)]<- 1

}

mat1

f.dir1<- rep("==", 21)

f.dir1

f.rhs1<- c(rep(2, 21))

f.rhs

```

mat2<- matrix(0, nrow=7, ncol= length(f.obj))

mat2

dim(mat2)

for(i in 1:7){
  mat2[i,c(i, i+7, i+14, i+21, i+28, i+35, i+42, i+49, i+56, i+63, i+70, i+77, i+84,
           i+91, i+98, i+105, i+112, i+119, i+126, i+133, i+140 )]<- 1
}

mat2

dim(mat2)

```

```

f.dir2<- rep(">=",7)

f.dir2

f.rhs2<- c(rep(6, 7))

f.rhs2

```

```

mat3<- matrix(0, nrow=7, ncol= length(f.obj))

mat3

dim(mat3)

for(i in 1:7){
  mat3[i,c(i, i+7, i+14, i+21, i+28, i+35, i+42, i+49, i+56, i+63, i+70, i+77, i+84,
           i+91, i+98, i+105, i+112, i+119, i+126, i+133, i+140 )]<- 1
}

mat3

dim(mat3)

```

```

f.dir3<- rep("<=",7)

```

```
f.rhs3<- c(rep(7, 7))
```

```
f.rhs3
```

```
#binding all constraints
```

```
f.con<- rbind(mat1, mat2, mat3)
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f.rhs<- c(f.rhs1, f.rhs2, f.rhs3)
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```
f.dir<- c(f.dir1, f.dir2, f.dir3)
```

```
answer<- lp("max", f.obj, f.con, f.dir, f.rhs, all.bin = TRUE)
```

```
answer
```