1. Transportation problem:

Cities 1 and 2 have 100K and 200K passengers per year, respectively. Airports 1 and 2 can accept a demand of 150K and 150K passengers per year, respectively. The city-to-airport driving times are listed at right.

Please formulate the linear programming problem and solve it using GAMS Solver.

Given:

: the demand of city ,

: the capacity of airport ,

: the driving time from city to airport

To find:

: the passengers traveling from city to airport

: the total travel cost

Model:

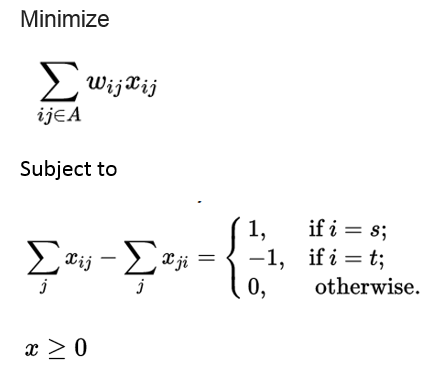
Subject to

Solutions from GAMS:

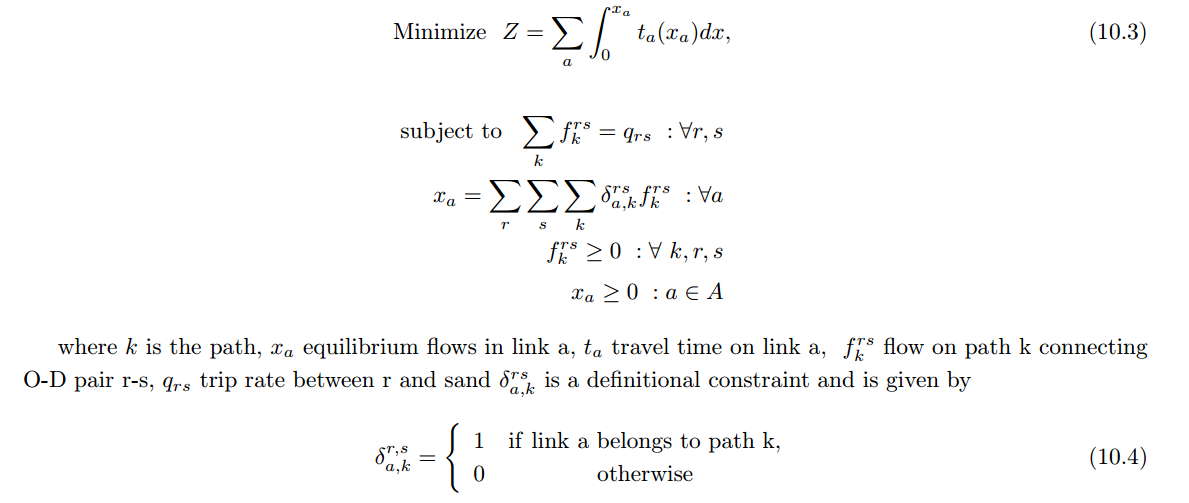
GAMS Code:

|  |
| --- |
| $title Problem 2  \*LIMROW = 0, LIMCOL = 0  OPTIONS ITERLIM=100000, RESLIM = 1000000, SYSOUT = OFF, SOLPRINT = OFF, lp = COINGLPK, mip = COINGLPK, OPTCR= 0.1;  Set i /1\*2/;  alias (i, j);  parameter a(i)/  1 100  2 200  /;  parameter b(j)/  1 150  2 150  /;  parameter c(i,j)/  1. 1 1  1. 2 2  2. 1 2  2. 2 2  /;  variable z;  positive variables x(i,j);  equations  obj  demand(i)  supply(j)  ;  obj.. z =e= sum((i,j),c(i,j)\*x(i,j));  demand(i).. sum(j,x(i,j)) =e= a(i);  supply(j).. sum(i,x(i,j)) =l= b(j);  Model problem\_2 /all/;  solve problem\_2 using LP minimizing z;  display x.l;  display z.l; |

2. Shortest path problem

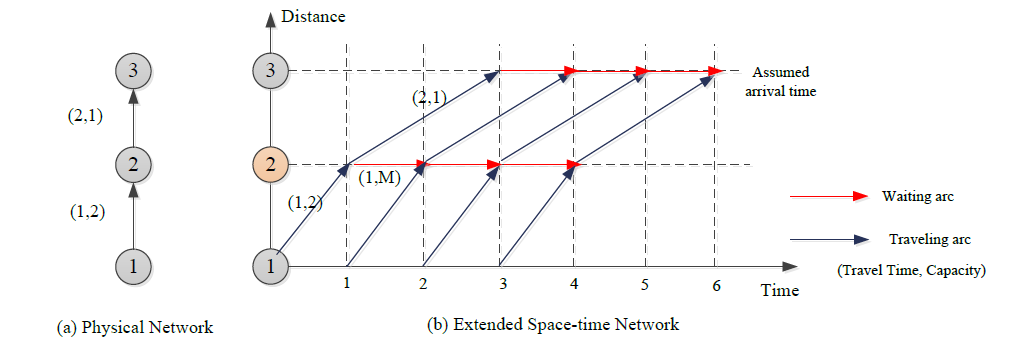
 

3. Traffic assignment problem



4. Dynamic system optimal problem

Space-time network:



Agent-based model:

Minimize (16)

Subject to

(18)

