format short

clear all

clc

variables={'x\_1','x\_2','s\_1','s\_2','sol'};

cost=[-3 -5 0 0 0];

info=[-1 -3;-1 -1];

b=[-3;-2];

s=eye(size(info,1));

A=[info s b];

BV=[]

for j=1:size(s,2)

for i=1:size(A,2)

if A(:,i)==s(:,j)

BV=[BV i];

end

end

end

display(BV)

fprintf('Basic variables (BV) : ')

display(variables(BV))

% compute value of table:

zjcj=cost(BV)\*A-cost;

% print table:

zjcj=[zjcj;A];

display(zjcj);

% dual simplex method start:

run=true;

while run

solution=A(:,end);

if any(solution<0)

fprintf('The current bfs is not feasible \n');

[leaveVar,pvtRow]=min(solution);

fprintf('leaving row = %d \n',pvtRow)

% find entering variable:

row=A(pvtRow,1:end-1);

zj=zjcj(:,1:end-1);

for i=1:size(row,2)

if row(i)<0

ratio(i)=abs(zj(i)./row(i));

else

ratio(i)=inf;

end

end

[minVal,pvtCol]=min(ratio);

fprintf('entering variable = %d \n',pvtCol);

% update the BV

BV(pvtRow)=pvtCol

fprintf('Basic variables (BV) : ')

display(variables(BV))

pvtKey=A(pvtRow,pvtCol);

A(pvtRow,:)=A(pvtRow,:)./pvtKey;

for i=1:size(A,1)

if i~=pvtRow

A(i,:)=A(i,:)-A(i,pvtCol).\*A(pvtRow,:);

end

end

display(A)

zjcj=cost(BV)\*A-cost;

display(zjcj);

else

run=false;

fprintf('The current bfs is feasible and optimal \n');

end

end

final\_bfs=zeros(1,size(A,2));

final\_bfs(BV)=A(:,end);

final\_bfs(end)=sum(final\_bfs.\*cost);

display(final\_bfs)