
ME C231A, EECS C220B, Problem Set #1, OPT1

Table of Contents

HW2_4	1
HW2_5	1
HW2_6	2
HW2_7	2
HW2_7(a)	2
HW2_8	3
HW2_8(b)	3
Attribution	3

Follow this format to organize the script file which "manages" all of the tasks in producing HW1. Conclude by **publishing** this file, and then printing the resulting html file to pdf. Turn the pdf file (electronically) in via bCourses (more instructions later).

HW2_4

```
f = ones(3,1);
A = [-1 0 0; 0 -1 0; 0 0 -1; -1 1 -1];
b = [-2;1;3;-4];
[x1,fval] = linprog(f,A,b);
f = ones(3,1);
A = [-1 1 -1];
b = -4;
LB = [2;-1;-3];
[x2,fval] = linprog(f,A,b,[],[],LB,[]);
% x1 and x2 are different local minimum with the same cost
%-----
%-----
```

HW2_5

```
A=eye(5);
b=ones(5,1);
H = 2*A'*A;
f = -2*A'*b;
x_cls = quadprog(H, f, [eye(5);-eye(5)],
    [0.5*ones(5,1);0.5*ones(5,1)]);
x_ls = A\b; % get standard least-squares solution
x_ls(x_ls>0.5) = 0.5; % set any entries that are greater than 0.5 to
    0.5
x_ls(x_ls<-0.5) = -0.5; % set any entries that are less than -0.5 to
    -0.5
% Compare performance (ie., cost function) to direct solution from
    QUADPROG
```

```
disp(norm(A*x_cls-b));
disp(norm(A*x_ls-b));
%Two methods has the same solution.
%-----
%-----
```

HW2_6

```
%read
%-----
%-----
```

HW2_7

HW2_7(a)

```
f1=figure(1);
set(f1,'name','HW2_7(a)','Numbertitle','off');
xData = cumsum([0 0.1+rand(1,19)]);
yData = [sort(3*rand(1,10)) fliplr(sort(3*rand(1,10)))]';
xQuery = 0.1:0.2:max(xData);
yInterpLinear = interp1(xData, yData, xQuery);
yInterpSpline = interp1(xData, yData, xQuery, 'spline');
subplot(2,1,1)
plot(xData, yData, 'k*', xQuery, yInterpLinear, '-or')
legend('Data Points', 'Linear Interpolated
Values', 'Location','Best');
ylabel('y')
subplot(2,1,2)
plot(xData, yData, 'k*', xQuery, yInterpSpline, '-or')
legend('Data Points', 'Spline Interpolated
Values', 'Location','Best');
xlabel('x')
ylabel('y')
%HW2_7(b)
%HW2_7(c)
f2=figure(2);
set(f2,'name','HW2_7(c)','Numbertitle','off');
p= bldgIdentification(RoomTempData(:,2), FanData(:,2),
    SupplyTempData(:,2));
NewRoomTemData=zeros(1,length(RoomTempData));
NewRoomTemData(1)=RoomTempData(1,2);
for k=1:length(RoomTempData)-1
    NewRoomTemData(k+1)=(1-p(1)*FanData(k,2))*RoomTempData(k,2) +
        p(2)*FanData(k,2)*SupplyTempData(k,2);
end
plot(RoomTempData(:,1), RoomTempData(:,2), 'r', RoomTempData(:,1),
    NewRoomTemData, 'b');
datetick('x')
ylabel('RoomTemp')
%-----
%-----
```

HW2_8

HW2_8(b)

```
A1=[1,0;0,1];  
b1=[0;-5];  
Ainf=[1,0;0,1];  
binf=[2;0];  
Ac=[3,2;1,0;-1,0;0,1;0,-1];  
bc=[-3;2;0;3;2];  
[xOpt, J] = reglInf(A1, b1, Ainf, binf, Ac, bc);
```

Attribution

Include you name, date and the class number. Zhipeng Yu ,2016/9/16 ME231A

```
fprintf('Zhipeng Yu ,2016/9/16 ME231A');
```

Published with MATLAB® R2015b