CMPE538 Evolutionary Multi-Objective Optimization

Assignment I

I. Solve TSP problem discussed in the lecture by using GA algorithm.
You should submit your work by using turnitin.
Your report should include:
- Definition of the problem
- Matlab code
- Your Result for the given example. (Fitness and tour).

II. Solve 8-Queens problem discussed in the lecture by using GA algorithm.
You should submit your work by using turnitin.
Your report should include:
- Definition of the problem
- Matlab code
- Your solution. (Fitness and Queens positions).

Note: You can use mutation only for updating your solutions.
You can use following code for fitness calculation.

```
function Fitness=Clashes(x)
    n=numel(x);

   L=0;
  for i=1:n
      for j=1:n
         if (i~=j)
            dx=abs(i-j);
            dy=abs(x(i)-x(j));
            if (dx==dy)
               L=L+1;
            end
         end
      end
   end
end
```

```
function [Off1 Off2]=Crossover_PMX(P1,P2)
% Partially Matched Crossover

Num_Vars=length(P1);

% Select two crossover points randomly,

Xp1=1+round(rand*(Num_Vars-1));
Xp2=Xp1;
while Xp2==Xp1
   Xp2=1+round(rand*(Num_Vars-1));
end

if Xp2 < Xp1
   Temp=Xp2;
   Xp2=Xp1;
   Xp1=Temp;
end

Off1=P1;
Off2=P2;

% Partially Matched Xover
for i=Xp1:Xp2
   Loc1=find(P1==P2(i));
   Loc2=find(P2==P1(i));

   Temp=Off1(i); Off1(i)=Off1(Loc1); Off1(Loc1)=Temp;
   Temp=Off2(i); Off2(i)=Off2(Loc2); Off2(Loc2)=Temp;
end

end
```