%This program finds the minimum amount of "fuzz" to make the false

%negatives equal to 0

%true positive= The CP appears in both the actual and test OP list

%false positive= The CP appears in the test but not the actual OP list

%false negative= The CP appears in the actual but not the test OP list

%true negative= The CP does not appear in either list

%false negatives are what we are trying to minimize

function [fuzziness-1]=MinFuzz (TrueOP,TestOP,N)

fuzziness=0;

FN=N;

StoredTestOP=TestOP;

while FN>0

TestOP=StoredTestOP;

TP=0;

FP=0;

%%%%Adjusting TestOP step

tempTestOP=[];

for fuzz=-fuzziness:fuzziness

tempTestOP=[tempTestOP fuzz+TestOP]; %#ok<AGROW>

end

for i=1:length(tempTestOP)

if tempTestOP(i)<1

tempTestOP(i)=1; %#ok<AGROW>

end

if tempTestOP(i)>N

tempTestOP(i)=N; %#ok<AGROW>

end

end

TestOP=unique(tempTestOP);

%%%%

%%%%Comparing Step

for i=1:length(TestOP)

check=0;

for j=1:length(TrueOP)

if TestOP(i)==TrueOP(j)

TP=TP+1;

check=1;

end

end

if check==0

FP=FP+1;

end

end

FN=length(TrueOP)-TP;

TN=N-TP-FP-FN;

%%%%

fuzziness=fuzziness+1;

end

label=['True Positives False Positives'; 'False Negatives True Negatives'];

equal=['-';'-'];

results=num2str([TP FP;FN TN]);

liner=[' | ';' | '];

TITLE=['Minimum fuzz factor of: ' num2str(fuzziness-1)];

disp(TITLE)

disp([liner label liner equal liner results liner])