---Step 1: Creating INP.File---

[ rawData,dat ] = creating\_inp\_file( '20x20x2.mph','mfnc.Bz',[10 13],'2mm\_mfnc.Bz.inp');

function [ rawData,dat ] = creating\_inp\_file( COMSOL\_file,Bz,sections,INP\_File)

%---Loading COMSOL\_file---

 model=mphload(COMSOL\_file);

 dat = mpheval(model,Bz,'edim','domain','selection',sections);

 sumOfNodes=length(dat.p(1,:));

 sumOfElements=length(dat.t(1,:));

%---Creating inp\_file---

 % Number of Lines in the file

 iLines=36+sumOfNodes+sumOfElements+ceil(sumOfNodes/9);

 % Cellarray for the fileinput (preallocation)

 rawData=cell(iLines,9);

 % Writting inp\_file

 rawData{1,1}='\*Heading';

 rawData{2,1}='\*\*Job name: COMSOL\_file';

 rawData{3,1}='\*\*Generated by: COMSOL Version 5.1';

 rawData{4,1}='\*Preprint, echo=NO, model=NO, history=NO, contact=NO';

 rawData{5,1}='\*Part, name=PART-1';

 rawData{6,1}='\*Node';

 for i=1:sumOfNodes

 rawData{6+i,1}=i;%Node numbers

 counter=1;

 for j=2:4

 rawData{6+i,j}=dat.p(counter,i);

 counter=counter+1;

 end

 end

 rawData{7+sumOfNodes,1}='\*Element, type=C3D4, elset=set1';

 for i=1:sumOfElements

 rawData{7+sumOfNodes+i,1}=i;

 counter=1;

 for j=2:5

 rawData{7+sumOfNodes+i,j}=dat.t(counter,i)+1;

 counter=counter+1;

 end

 end

 rawData{8+sumOfNodes+sumOfElements,1}='\*Nset, nest=ALL';

 counter=1;

 for i=1:ceil(sumOfNodes/9)

 for j=1:9

 if counter == sumOfNodes+1

 break

 end

 rawData{8+sumOfNodes+sumOfElements+i,j}=counter;

 counter=counter+1;

 end

 end

 rawData{9+sumOfNodes+sumOfElements+ceil(sumOfNodes/9)}='\*SOLID SECTION, ELSET=set1, MATERIAL=PBM';

 rawData{10+sumOfNodes+sumOfElements+ceil(sumOfNodes/9)}=1.0;

 rawData{11+sumOfNodes+sumOfElements+ceil(sumOfNodes/9)}='\*End Part';

 rawData{12+sumOfNodes+sumOfElements+ceil(sumOfNodes/9)}='\*Assembly, name=Assembly';

 rawData{13+sumOfNodes+sumOfElements+ceil(sumOfNodes/9)}='\*Instance, name=PART-1-2, part=PART-1';

 rawData{14+sumOfNodes+sumOfElements+ceil(sumOfNodes/9)}='\*End Instance';

 rawData{15+sumOfNodes+sumOfElements+ceil(sumOfNodes/9)}='\*End Assembly';

 rawData{16+sumOfNodes+sumOfElements+ceil(sumOfNodes/9)}='\*Material, name=PBM';

 rawData{17+sumOfNodes+sumOfElements+ceil(sumOfNodes/9)}='\*\* ----------------------------------------------------------------';

 rawData{18+sumOfNodes+sumOfElements+ceil(sumOfNodes/9)}='\*Step, name=Step-1';

 rawData{19+sumOfNodes+sumOfElements+ceil(sumOfNodes/9)}='\*Static';

 rawData{20+sumOfNodes+sumOfElements+ceil(sumOfNodes/9)}='2., 2., 2e-05, 2.';

 rawData{21+sumOfNodes+sumOfElements+ceil(sumOfNodes/9)}='\*Restart, write, frequency=0';

 rawData{22+sumOfNodes+sumOfElements+ceil(sumOfNodes/9)}='\*Output, field, variable=PRESELECT';

 rawData{23+sumOfNodes+sumOfElements+ceil(sumOfNodes/9)}='\*Output, history, variable=PRESELECT';

 rawData{24+sumOfNodes+sumOfElements+ceil(sumOfNodes/9)}='\*End Step';

 % Printing inp\_file

 iLines=length(rawData);

 fileID = fopen(INP\_File,'w');

 for i=1:iLines

 if iscellstr(rawData(i))==1

 formatSpec='%s\n';

 fprintf(fileID,formatSpec,rawData{i});

 else

 for j=1:8

 if isempty(rawData{i,j})==0 & isempty(rawData{i,j+1})==0

 formatSpec='%d, ';

 fprintf(fileID,formatSpec,rawData{i,j});

 if j==8

 formatSpec2='%d\n';

 fprintf(fileID,formatSpec2,rawData{i,j+1});

 end

 else

 formatSpec='%d\n';

 fprintf(fileID,formatSpec,rawData{i,j});

 break

 end

 end

 end

 end

 fclose(fileID);