الملاحق

محتوى البرنامج في الماتلاب لصيغة بوسنت

```
clc
Clear
Do=input('insert latitude degrees for the first point   ');
Mo=input('insert latitude minutes for the first point   ');
So=input('insert latitude seconds for the first point   ');
DL=input('insert longitude degrees for the first point  ');
ML=input('insert longitude minutes for the first point  ');
SL=input('insert longitude seconds  for the first point  ');
DAz=input('insert Azimuth degrees forward   ');
MAz=input('insert Azimuth minutes forward   ');
SAz=input('insert Azimuth seconds forward   ');
OA=(Do+Mo/60)+(So/3600);
LA=(DL+ML/60)+(SL/3600);
Az=(DAz+MAz/60)+(SAz/3600);
e=1-((6356075)^2/(6377276)^2);
RA=6377276*(1-e)/(1-e*(sin(OA*pi/180))^2)^(1.5);
NA=6377276/(1-e*(sin(OA*pi/180))^2)^(0.5);
n=input('insert the number of set   ');
for i=1:n
    S(i)=input('insert distance   ');
    dO(i)=S(i)*cos(Az*pi/180)/RA;
    OB(i)=OA+dO(i);
    Om(i)=(OA+OB(i))*0.5;
    Nm(i)=6377276/(1-e*(sin(Om(i)*pi/180))^2)^(0.5);
    dL(i)=(S(i)/Nm(i))*sin(Az*pi/180)*sec(OB(i)*pi/180);
    LB(i)=LA+dL(i);
    dAz(i)=dL(i)*sin(Om(i)*pi/180)*sec(dO(i)*pi/2*180)*(1+((dL(i))^2/12)-
((dL(i))^2/12)*(sec(dO(i)*pi/2*180))^2);
    AzB(i)=Az+180+dAz(i);
    if AzB(i)>360
        AzB(i)=AzB(i)-360;
         else
       AzB(i)=AzB(i);
    end
L(i)=S(i)/1000;
end
x=degrees2dms(OB);
y=degrees2dms(LB);
z=degrees2dms(AzB);
w=[L',x,y,z];
disp('w')
disp('                      latitude                        longitude
Azimuth')
disp('
')
disp('    Dis(Km)  Degrees      Minutes Second   Degrees      Minutes
Second  Degrees      Minutes  Second')
disp(w)
```

محتوى البرنامج في الماتلاب لصيغة كلارك

```
Clc
Clear
  Do=input('insert latitude degrees for the first point   ');
  Mo=input('insert latitude minutes for the first point   ');
  So=input('insert latitude seconds for the first point   ');
  DL=input('insert longitude degrees for the first point   ');
  ML=input('insert longitude minutes for the first point   ');
  SL=input('insert longitude seconds  for the first point  ');
  DAz=input('insert Azimuth degrees forward   ');
  MAz=input('insert Azimuth minutes forward   ');
  SAz=input('insert Azimuth seconds forward   ');
  OA=Do+Mo/60+So/3600;
  LA=DL+ML/60+SL/3600;
  Az=DAz+MAz/60+SAz/3600;
  e=1-(6356786^2/6378260^2);
  RA=6378260*(1-e)/(1-e*(sin(OA*pi/180))^2)^(1.5);
  n=input('insert the number of set   ');
for i=1:n
    S(i)=input('insert distance   ');
    Oc(i)=OA+((S(i)*(cos(Az*pi/180)))/RA*40848136811*10^(-6));
    Om(i)=0.5*(OA+Oc(i));
    Rc(i)=6378260*(1-e)/(1-e*(sin(Oc(i)*pi/180))^2)^1.5;
    Rm(i)=6378260*(1-e)/(1-e*(sin(Om(i)*pi/180))^2)^1.5;
    Nm(i)=6378260/(1-e*(sin(Om(i)*pi/180))^2)^(0.5);
    Nc(i)=6378260/(1-e*(sin(Oc(i)*pi/180))^2)^(0.5);
    x=((S(i))^2*sin(Az*pi/180)*cos(Az*pi/180));
    y=2*Rm(i)*Nm(i)*40848136811*10^(-6);
    c(i)=(x/y)/3600;
    d(i)=(c(i)*tan(Az*pi/180)*tan(Oc(i)*pi/180))/3600;
    if 0<=Az<=90 && 180<=Az<=270
        c(i)=-c(i);
    else
        c(i)=c(i);
    end
    r(i)=S(i)*cos((Az+(2*c(i)/3))*pi/180);
    t(i)=(40848136811*10^(-6)*Rm(i));
    dO(i)=(r(i)/t(i))-d(i);
    OB(i)=dO(i)+OA;
    dL(i)=(((S(i)*sin((Az+(c(i)/3))*pi/180))/(Nc(i)*40848136811*10^(-
6)))*(sec((OB(i)+(d(i)/3))*pi/180)))/3600;
    LB(i)=LA+dL(i);
    dAz(i)=((dL(i)*sin((OB(i)+(2*d(i)/3))*pi/180)+c(i)))/3600;
    AzB(i)=Az+180+dAz(i);
    if AzB(i)>360
        AzB(i)=AzB(i)-360;
    else
       AzB(i)=AzB(i);
    end
L(i)=S(i)/1000;
end
k=degrees2dms(OB);
j=degrees2dms(LB);
z=degrees2dms(AzB);
w=[L',k,j,z];
disp('w')
disp('                      latitude                      longitude
Azimuth')
disp('
')
disp('    Dis(Km)  Degrees   Minutes   Second    Degrees   Minutes
Second   Degrees     Minutes     Second')
disp(w)
```

محتوى البرنامج في الماتلاب للفرق بين صيغتي بوسنت و كلارك

```
clc
Clear
Do=input('insert latitude degrees for the first point   ');
Mo=input('insert latitude minutes for the first point   ');
So=input('insert latitude seconds for the first point   ');
DL=input('insert longitude degrees for the first point   ');
ML=input('insert longitude minutes for the first point   ');
SL=input('insert longitude seconds for the first point   ');
DAz=input('insert Azimuth degrees forward   ');
MAz=input('insert Azimuth minutes forward   ');
SAz=input('insert Azimuth seconds forward   ');
OA= (Do+Mo/60) + (So/3600);
LA= (DL+ML/60) + (SL/3600);
Az= (DAz+MAz/60) + (SAz/3600);
e=1-(6356584^2/6378260^2);
e1=1-((6356075) ^2/ (6377276)^2);
RA=6378260*(1-0.0067)/(1-0.0067*(sin (OA*pi/180))^2)^(1.5);
RA1=6377276*(1-e1)/(1-e1*(sin(OA*pi/180))^2)^(1.5);
NA1=6377276/(1-e1*(sin(OA*pi/180))^2)^(0.5);
n=input('insert the number of set   ');
for i=1:n
    S(i)=input('insert distance   ');
    dO1(i)=S(i)*cos(Az*pi/180)/RA1;
    OB1(i)=OA+dO1(i);
    Om1(i)=(OA+OB1(i))*0.5;
    Nm1(i)=6377276/(1-e1*(sin(Om1(i)*pi/180))^2)^(0.5);
    dL1(i)=(S(i)/Nm1(i))*sin(Az*pi/180)*sec(OB1(i)*pi/180);
    LB1(i)=LA+dL1(i);
    dAz1(i)=dL1(i)*sin(Om1(i)*pi/180)*sec(dO1(i)*pi/2*180)*(1+((dL1(i))^2/12)-
((dL1(i))^2/12)*(sec(dO1(i)*pi/2*180))^2);
    AzB1(i)=Az+180+dAz1(i);
    if AzB1(i)>360
        AzB1(i)=AzB1(i)-360;
         else
       AzB1(i)=AzB1(i);
    end
    Oc(i)=OA+((S(i)*(cos(Az*pi/180)))/RA*40848136811*10^(-6));
    Om(i)=0.5*(OA+Oc(i));
    Rc(i)=6378260*(1-e)/(1-e*(sin(Oc(i)*pi/180))^2)^1.5;
    Rm(i)=6378260*(1-e)/(1-e*(sin(Om(i)*pi/180))^2)^1.5;
    Nm(i)=6378260/(1-e*(sin(Om(i)*pi/180))^2)^(0.5);
    Nc(i)=6378260/(1-e*(sin(Oc(i)*pi/180))^2)^(0.5);
    x=((S(i))^2*sin(Az*pi/180)*cos(Az*pi/180));
    y=2*Rm(i)*Nm(i)*40848136811*10^(-6);
    c(i)=(x/y)/3600;
    d(i)=(c(i)*tan(Az*pi/180)*tan(Oc(i)*pi/180))/3600;
     if 90<Az<180 && 270<Az<360
        c(i)=-c(i);
    else
        c(i)=c(i);
    end
    r(i)=S(i)*cos((Az+(2*c(i)/3))*pi/180);
    t(i)=(40848136811*10^(-6)*Rm(i));
    dO(i)=(r(i)/t(i))-d(i);
    OB(i)=dO(i)+OA;
    dL(i)=(((S(i)*sin((Az+(c(i)/3))*pi/180))/(Nc(i)*40848136811*10^(-
6)))*(sec((OB(i)+(d(i)/3))*pi/180)))/3600;
    LB(i)=LA+dL(i);
    dAz(i)=((dL(i)*sin((OB(i)+(2*d(i)/3))*pi/180)+c(i)))/3600;
    AzB(i)=Az+180+dAz(i);
    if AzB(i)>360
        AzB(i)=AzB(i)-360;
    else
       AzB(i)=AzB(i);
    end
  if OB1(i)>OB(i)||LB1(i)>LB(i)||AzB1(i)>AzB(i)
       m(i)=OB1(i)-OB(i);
       L(i)=LB1(i)-LB(i);
       p(i)=AzB1(i)-AzB(i);
  else
       m(i)=OB(i)-OB1(i);
       L(i)=LB(i)-LB1(i);
      p(i)=AzB(i)-AzB1(i);
  end
ds(i)=S(i)/1000;
end
k=degrees2dms(m);
j=degrees2dms(L);
z=degrees2dms(p);
w=[ds',k,j,z];
disp('w')
disp('                  diferece in latitude          diference in longitude        diference in
Azimuth')
disp('
')
disp('    Dis(Km)    Degrees   Minutes  Second      Degrees   Minutes Second      Degrees
Minutes Second')
disp(w)
```

dis(km)	Latitude in puissant			Longitude in puissant			Azimuth in puissant		
	Degrees	Minutes	seconds	Degrees	Minutes	seconds	Degrees	Minutes	seconds
5	30	0	0.969392	40	0	3.060082	250	0	1.534492
10	30	0	1.938784	40	0	6.12018	250	0	3.095938
15	30	0	2.908176	40	0	9.180294	250	0	4.712598
20	30	0	3.877568	40	0	12.24043	250	0	6.415529
25	30	0	4.84696	40	0	15.30057	250	0	8.240347
30	30	0	5.816352	40	0	18.36074	250	0	10.2295
35	30	0	6.785744	40	0	21.42092	250	0	12.4354
40	30	0	7.755136	40	0	24.48112	250	0	14.92486
45	30	0	8.724528	40	0	27.54133	250	0	17.78576
50	30	0	9.69392	40	0	30.60156	250	0	21.13736
55	30	0	10.66331	40	0	33.66181	250	0	25.14693
60	30	0	11.6327	40	0	36.72207	250	0	30.05795
65	30	0	12.6021	40	0	39.78235	250	0	36.24029
70	30	0	13.57149	40	0	42.84265	250	0	44.28584

نتائج البرامج باللغة الإنجليزية

dis(km)	Latitude in Clarke			Longitude in Clarke			Azimuth in Clarke		
	Degrees	Minutes	seconds	Degrees	Minutes	seconds	Degrees	Minutes	seconds
5	30	0	2.37E-05	40	0	2.08E-08	250	0	0
10	30	0	4.74E-05	40	0	4.16E-08	250	0	0
15	30	0	7.10E-05	40	0	6.23E-08	250	0	0
20	30	0	9.46E-05	40	0	8.30E-08	250	0	0
25	30	0	0.000118	40	0	1.04E-07	250	0	0
30	30	0	0.000142	40	0	1.25E-07	250	0	0
35	30	0	0.000165	40	0	1.45E-07	250	0	0
40	30	0	0.000189	40	0	1.66E-07	250	0	0
45	30	0	0.000212	40	0	1.87E-07	250	0	0
50	30	0	0.000236	40	0	2.08E-07	250	0	0
55	30	0	0.000259	40	0	2.29E-07	250	0	0
60	30	0	0.000283	40	0	2.50E-07	250	0	0
65	30	0	0.000306	40	0	2.71E-07	250	0	0
70	30	0	0.00033	40	0	2.92E-07	250	0	0

dis(km)	Latitude in puissant			latitude in Clarke			Difference puissant and Clarke in latitude		
	Degrees	Minutes	seconds	Degrees	Minutes	seconds	Degrees	Minutes	seconds
5	30	0	0.96939	30	0	2.37E-05	0	0	0.969368
10	30	0	1.93878	30	0	4.74E-05	0	0	1.938737
15	30	0	2.90818	30	0	7.10E-05	0	0	2.908105
20	30	0	3.87757	30	0	9.46E-05	0	0	3.877473
25	30	0	4.84696	30	0	0.000118	0	0	4.846842
30	30	0	5.81635	30	0	0.000142	0	0	5.81621
35	30	0	6.78574	30	0	0.000165	0	0	6.785579
40	30	0	7.75514	30	0	0.000189	0	0	7.754947
45	30	0	8.72453	30	0	0.000212	0	0	8.724316
50	30	0	9.69392	30	0	0.000236	0	0	9.693685
55	30	0	10.6633	30	0	0.000259	0	0	10.66305
60	30	0	11.6327	30	0	0.000283	0	0	11.63242
65	30	0	12.6021	30	0	0.000306	0	0	12.60179
70	30	0	13.5715	30	0	0.00033	0	0	13.57116

dis(km)	longitude in puissant			longitude in Clarke			Difference puissant and Clarke in longitude		
	Degrees	Minutes	seconds	Degrees	Minutes	seconds	Degrees	Minutes	seconds
5	40	0	3.060082	40	0	2.08E-08	0	0	3.060082
10	40	0	6.12018	40	0	4.16E-08	0	0	6.12018
15	40	0	9.180294	40	0	6.23E-08	0	0	9.180294
20	40	0	12.24043	40	0	8.30E-08	0	0	12.24043
25	40	0	15.30057	40	0	1.04E-07	0	0	15.30057
30	40	0	18.36074	40	0	1.25E-07	0	0	18.36074
35	40	0	21.42092	40	0	1.45E-07	0	0	21.42092
40	40	0	24.48112	40	0	1.66E-07	0	0	24.48112
45	40	0	27.54133	40	0	1.87E-07	0	0	27.54133
50	40	0	30.60156	40	0	2.08E-07	0	0	30.60156
55	40	0	33.66181	40	0	2.29E-07	0	0	33.66181
60	40	0	36.72207	40	0	2.50E-07	0	0	36.72207
65	40	0	39.78235	40	0	2.71E-07	0	0	39.78235
70	40	0	42.84265	40	0	2.92E-07	0	0	42.84265

dis(km)	Backward Azimuth in puissant			Backward Azimuth in Clarke			Difference puissant and Clarke in Backward Azimuth		
	Degrees	Minutes	seconds	Degrees	Minutes	seconds	Degrees	Minutes	seconds
5	250	0	1.53449234	250	0	0	0	0	1.534492
10	250	0	3.09593772	250	0	0	0	0	3.095938
15	250	0	4.71259782	250	0	0	0	0	4.712598
20	250	0	6.41552927	250	0	0	0	0	6.415529
25	250	0	8.24034697	250	0	0	0	0	8.240347
30	250	0	10.2295029	250	0	0	0	0	10.2295
35	250	0	12.4354015	250	0	0	0	0	12.4354
40	250	0	14.9248607	250	0	0	0	0	14.92486
45	250	0	17.7857616	250	0	0	0	0	17.78576
50	250	0	21.1373593	250	0	0	0	0	21.13736
55	250	0	25.1469345	250	0	0	0	0	25.14693
60	250	0	30.057952	250	0	0	0	0	30.05795
65	250	0	36.2402897	250	0	0	0	0	36.24029
70	250	0	44.285843	250	0	0	0	0	44.28584