

```
function y=f(a1,b1,a2,b2)
a1=a1*pi/180;
b1=b1*pi/180;
a2=a2*pi/180;
b2=b2*pi/180;
y=6378.137*acos(sin(a1)*sin(a2)*cos(b2-b1)+cos(a1)*cos(a2));
end
```

```
n=2191;
t=60;
nt=n*t;
d(:,6)=-1;
d(:,7)=0;
d(:,8)=0;
d(:,9)=0;
d2(:,1)=0;
d2(:,2)=0;
d2(:,3)=0;
d2(:,4)=0;
```

```
i=1;
while i<=n
pd=i*t-t+1;
```

```
d(pd,6)=d(pd,5);
d(pd,7)=d(pd,3);
d(pd,8)=d(pd,4);
```

```
if d(pd,5)==1
d(pd,9)=d(pd,1);
```

```
pd2=pd+1;
kk=1;
```

```

while kk==1 & pd2<=pd+59
if d(pd2-1,5)==1 & d(pd2,5)==1
d(pd2,6)=d(pd2,5);
d(pd2,7)=d(pd2,3);
d(pd2,8)=d(pd2,4);
d(pd2,9)=d(pd2,1);
else
kk=0;
end
pd2=pd2+1;
end

end

i=i+1;
end

jj=2;
while jj<=t

ii=1;
while ii<=n
pd=ii*t-t+jj;
if d(pd-1,5)==0 & d(pd,5)==1
xq=pd;

wz=jj;
min=10;
minwz=xq;

if jj<=t
i=1;
while i<=n

```

```
pd=i*t-t+jj;
if d(pd,6)==-1
d(pd,7)=d(pd-1,7);
d(pd,8)=d(pd-1,8);
end
i=i+1;
end
end

i=1;
while i<=n
pd=i*t-t+jj;
if d(pd,6)==-1
if f(d(xq,3),d(xq,4),d(pd,7),d(pd,8))<min
min=f(d(xq,3),d(xq,4),d(pd,7),d(pd,8));
minwz=pd;
end
end
i=i+1;
end

pd=minwz;
pd2=xq;
i=jj;

kk=1;
while kk==1 & i<=t
if d(pd2,5)==1
d(pd,6)=1;
d(pd,7)=d(pd2,3);
d(pd,8)=d(pd2,4);
d(pd,9)=d(pd2,1);
else
```

```
kk=0;
end
i=i+1;
pd=pd+1;
pd2=pd2+1;
end

end
ii=ii+1;
end

if jj<=t
i=1;
while i<=n
pd=i*t-t+jj;
if d(pd,6)=-1

d(pd,6)=0;
d(pd,7)=d(pd-1,7);
d(pd,8)=d(pd-1,8);

end
i=i+1;

end
end

jj=jj+1;
end

jj=1;
```

```
while jj<=n
ii=2;
jl1=0;
jl2=0;
jl3=0;
jl4=0;
while ii<=t
pd=jj*t-t+ii;
jl1=jl1+f(d(pd-1,3),d(pd-1,4),d(pd,3),d(pd,4));
jl2=jl2+f(d(pd-1,7),d(pd-1,8),d(pd,7),d(pd,8));
if d(pd-1,5)==1 & d(pd,5)==1
    jl3=jl3+f(d(pd-1,3),d(pd-1,4),d(pd,3),d(pd,4));
end
if d(pd-1,6)==1 & d(pd,6)==1
    jl4=jl4+f(d(pd-1,7),d(pd-1,8),d(pd,7),d(pd,8));
end

ii=ii+1;
end
d2(jj,1)=real(jl1);
d2(jj,2)=real(jl2);
d2(jj,3)=real(jl3);
d2(jj,4)=real(jl4);
jj=jj+1;
end
```