```
function mat = FormMatrix(u, alpha)
    m = sqrt( length(u));
    beta = 10^(-6);
    A = zeros(m^2, m^2);
    h = 1/(m+1);

    for i = 1:m
        for j = 1:m
            Uij=u(getInd(i,j,m));

            if i == 1 && j == 1
                Uimj=0;
                Uijm=0;
                Uijp= u (getInd(i,j+1, m));
                Uipj = u(getInd(i+1,j,m));
                Uipjm =0;
                Uimjp = 0;

                AW = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uimjp-Uimj)/h)^2+beta) )  );
                AE = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uipj-
Uipjm)/h)^2+beta) ) +  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/h)^2+beta) )
  );
                AS = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uipjm-Uijm)/h)^2 +((Uij-Uijm)/h)^2+beta) )  );
                AN = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uijp-Uimjp)/h)^2 +((Uijp-Uij)/h)^2+beta) )  );
                AC = 1 - AW - AE - AS - AN;


                A( getInd(i,j,m) , getInd(i,j,m) ) = AC;
                A(getInd(i,j,m), getInd(i+1,j,m)) = AE;
                A (getInd(i,j,m), getInd(i,j+1,m)) = AN;

            elseif i == m && j == 1
                Uimj=u(getInd(i-1,j,m));
                Uijm=0;
                Uijp= u (getInd(i,(j+1),m));
                Uipj = 0;
                Uipjm =0;
                Uimjp = u(getInd(i-1,j+1,m));

                AW = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uimjp-Uimj)/h)^2+beta) )  );
                AE = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uipj-
Uipjm)/h)^2+beta) ) +  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/h)^2+beta) )
  );
                AS = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uipjm-Uijm)/h)^2 +((Uij-Uijm)/h)^2+beta) )  );
                AN = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uijp-Uimjp)/h)^2 +((Uijp-Uij)/h)^2+beta) )  );
                AC = 1 - AW - AE - AS - AN;
```

```
                A( getInd(i,j,m) , getInd(i,j,m) ) = AC;
                A( getInd(i,j,m) , getInd(i-1,j,m) ) = AW;
                A (getInd(i,j,m), getInd(i,j+1,m)) = AN;


            elseif i ==1 && j == m

                Uimj=0;
                Uijm= u(getInd(i,j-1,m));
                Uijp= 0;
                Uipj = u(getInd(i+1,j,m));
                Uipjm = u(getInd(i+1,j-1,m));
                Uimjp = 0;
                AW = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uimjp-Uimj)/h)^2+beta) )  );
                AE = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uipj-
Uipjm)/h)^2+beta) ) +  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/h)^2+beta) )
  );
                AS = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uipjm-Uijm)/h)^2 +((Uij-Uijm)/h)^2+beta) )  );
                AN = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uijp-Uimjp)/h)^2 +((Uijp-Uij)/h)^2+beta) )  );
                AC = 1 - AW - AE - AS - AN;



                A( getInd(i,j,m) , getInd(i,j,m) ) = AC;
                A(getInd(i,j,m), getInd(i+1,j,m)) = AE;
                A(getInd(i,j,m), getInd(i,j-1,m)) = AS;

            elseif i == m && j == m
                Uimj= u(getInd(i-1,j,m));
                Uijm=u(getInd(i,j-1,m));
                Uijp= 0;
                Uipj = 0;
                Uipjm = 0;
                Uimjp = 0;
                AW = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uimjp-Uimj)/h)^2+beta) )  );
                AE = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uipj-
Uipjm)/h)^2+beta) ) +  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/h)^2+beta) )
  );
                AS = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uipjm-Uijm)/h)^2 +((Uij-Uijm)/h)^2+beta) )  );
                AN = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uijp-Uimjp)/h)^2 +((Uijp-Uij)/h)^2+beta) )  );
                AC = 1 - AW - AE - AS - AN;


                A( getInd(i,j,m) , getInd(i,j,m) ) = AC;
                A( getInd(i,j,m) , getInd(i-1,j,m) ) = AW;
```

```
                A(getInd(i,j,m), getInd(i,j-1,m)) = AS;

            elseif i == 1
                Uimj=0;
                Uijm=u(getInd(i,j-1,m));
                Uijp= u (getInd(i,(j+1),m));
                Uipj = u(getInd(i+1,j,m));
                Uipjm =u(getInd(i+1,j-1,m));
                Uimjp = 0;
                AW = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uimjp-Uimj)/h)^2+beta) )  );
                AE = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uipj-
Uipjm)/h)^2+beta) ) +  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/h)^2+beta) )
  );
                AS = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uipjm-Uijm)/h)^2 +((Uij-Uijm)/h)^2+beta) )  );
                AN = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uijp-Uimjp)/h)^2 +((Uijp-Uij)/h)^2+beta) )  );
                AC = 1 - AW - AE - AS - AN;


                A( getInd(i,j,m) , getInd(i,j,m) ) = AC;
                A(getInd(i,j,m), getInd(i+1,j,m)) = AE;
                A(getInd(i,j,m), getInd(i,j-1,m)) = AS;
                A (getInd(i,j,m), getInd(i,j+1,m)) = AN;

            elseif i == m
                Uimj=u(getInd(i-1,j,m));
                Uijm=u(getInd(i,j-1,m));
                Uijp= u (getInd(i,(j+1),m));
                Uipj = 0;
                Uipjm = 0;
                Uimjp = u(getInd(i-1,j+1,m));
                AW = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uimjp-Uimj)/h)^2+beta) )  );
                AE = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uipj-
Uipjm)/h)^2+beta) ) +  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/h)^2+beta) )
  );
                AS = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uipjm-Uijm)/h)^2 +((Uij-Uijm)/h)^2+beta) )  );
                AN = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uijp-Uimjp)/h)^2 +((Uijp-Uij)/h)^2+beta) )  );
                AC = 1 - AW - AE - AS - AN;


                A( getInd(i,j,m) , getInd(i,j,m) ) = AC;
                A( getInd(i,j,m) , getInd(i-1,j,m) ) = AW;
                A(getInd(i,j,m), getInd(i,j-1,m)) = AS;
                A (getInd(i,j,m), getInd(i,j+1,m)) = AN;

            elseif j == 1
                Uimj=u(getInd(i-1,j,m));
                Uijm=0;
                Uijp= u (getInd(i,(j+1),m));
```

```
                Uipj = u(getInd(i+1,j,m));
                Uipjm =0;
                Uimjp = u(getInd(i-1,j+1,m));
                AW = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uimjp-Uimj)/h)^2+beta) )  );
                AE = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uipj-
Uipjm)/h)^2+beta) ) +  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/h)^2+beta) )
  );
                AS = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uipjm-Uijm)/h)^2 +((Uij-Uijm)/h)^2+beta) )  );
                AN = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uijp-Uimjp)/h)^2 +((Uijp-Uij)/h)^2+beta) )  );
                AC = 1 - AW - AE - AS - AN;


                A( getInd(i,j,m) , getInd(i,j,m) ) = AC;
                A( getInd(i,j,m) , getInd(i-1,j,m) ) = AW;
                A(getInd(i,j,m), getInd(i+1,j,m)) = AE;
                A (getInd(i,j,m), getInd(i,j+1,m)) = AN;

            elseif j==m
                Uimj=u(getInd(i-1,j,m));
                Uijm=u(getInd(i,j-1,m));
                Uijp= 0;
                Uipj = u(getInd(i+1,j,m));
                Uipjm =u(getInd(i+1,j-1,m));
                Uimjp = 0;
                AW = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uimjp-Uimj)/h)^2+beta) )  );
                AE = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uipj-
Uipjm)/h)^2+beta) ) +  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/h)^2+beta) )
  );
                AS = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uipjm-Uijm)/h)^2 +((Uij-Uijm)/h)^2+beta) )  );
                AN = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uijp-Uimjp)/h)^2 +((Uijp-Uij)/h)^2+beta) )  );
                AC = 1 - AW - AE - AS - AN;


                A( getInd(i,j,m) , getInd(i,j,m) ) = AC;
                A( getInd(i,j,m) , getInd(i-1,j,m) ) = AW;
                A(getInd(i,j,m), getInd(i+1,j,m)) = AE;
                A(getInd(i,j,m), getInd(i,j-1,m)) = AS;



            else
                Uimj=u(getInd(i-1,j,m));
                Uijm=u(getInd(i,j-1,m));
                Uijp= u (getInd(i,(j+1),m));
                Uipj = u(getInd(i+1,j,m));
                Uipjm =u(getInd(i+1,j-1,m));
                Uimjp = u(getInd(i-1,j+1,m));
```

```
                AW = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uimjp-Uimj)/h)^2+beta) )  );
                AE = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uipj-
Uipjm)/h)^2+beta) ) +  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/h)^2+beta) )
  );
                AS = -alpha/h^2* (  1/(2*sqrt ( ((Uij-Uimj)/h)^2 +((Uij-Uijm)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uipjm-Uijm)/h)^2 +((Uij-Uijm)/h)^2+beta) )  );
                AN = -alpha/h^2* (  1/(2*sqrt ( ((Uipj-Uij)/h)^2 +((Uijp-Uij)/
h)^2+beta) ) +  1/(2*sqrt ( ((Uijp-Uimjp)/h)^2 +((Uijp-Uij)/h)^2+beta) )  );
                AC = 1 - AW - AE - AS - AN;


                A( getInd(i,j,m) , getInd(i,j,m) ) = AC;
                A( getInd(i,j,m) , getInd(i-1,j,m) ) = AW;
                A(getInd(i,j,m), getInd(i+1,j,m)) = AE;
                A(getInd(i,j,m), getInd(i,j-1,m)) = AS;
                A (getInd(i,j,m), getInd(i,j+1,m)) = AN;



            end

        end
    end

    mat = A;
end
function ind = getInd(i,j, m)
    ind = i + (j-1) * m ;
end

Not enough input arguments.

Error in FormMatrix (line 3)
    m = sqrt( length(u));
```

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