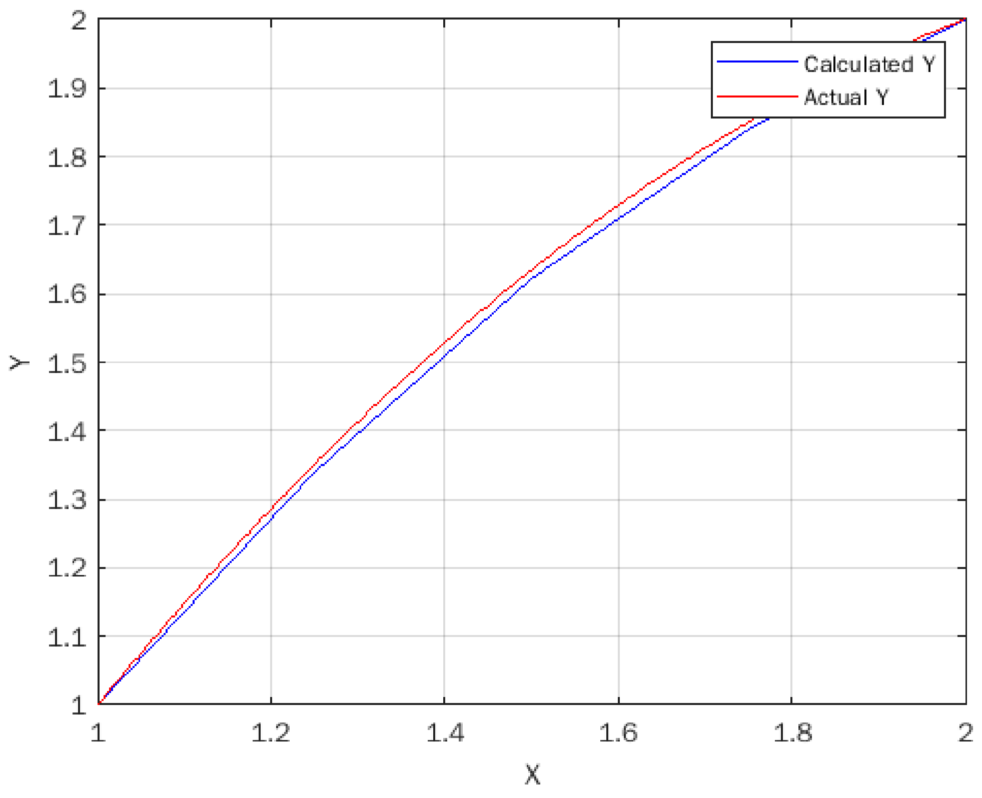
```
h = 0.25;
x = 1:h:2;
n = length(x);
% Finding the entries of the block tridiagonal matrix
a = eye(2);
a(1,1) = -6/(h*h);
a(1,2) = 1;
a(2,1) = -Bb(x(1))/(2*h);
a(2,2) = Bb(x(1))*h/12;
A = a;
for i=2:n
    a(1,1) = -6/(h*h);
    a(1,2) = 1;
    a(2,1) = -Bb(x(i))/(2*h);
    a(2,2) = Bb(x(i))*h/12;
    A=cat(3,A,a);
end
b = eye(2);
b(1,1) = 12/(h*h);
b(1,2) = 4;
b(2,1) = Cc(x(1));
b(2,2) = Aa(x(1));
B = b;
for i=2:n
    b(1,1) = 12/(h*h);
    b(1,2) = 4;
    b(2,1) = Cc(x(i));
    b(2,2) = Aa(x(i));
    B=cat(3,B,b);
end
c = eye(2);
c(1,1) = -6/(h*h);
c(1,2) = 1;
c(2,1) = Bb(x(1))/(2*h);
c(2,2) = -Bb(x(1))*h/12;
C = c;
for i=2:n
    c(1,1) = -6/(h*h);
    c(1,2) = 1;
    c(2,1) = Bb(x(i))/(2*h);
    c(2,2) = -Bb(x(i))*h/12;
    C=cat(3,C,c);
end
d = zeros(2,1);
d(2,1) = Dd(x(i));
D = d;
for i=2:n
    d(2,1)= Dd(x(i));
    D=cat(3,D,d);
end
z = zeros(2,1);
z(1,1) = 2;
```

```
D(:,:,n-1) = D(:,:,n-1)-C(:,:,n-1)*z;
z(1,1) = 1;
D(:,:,2) = D(:,:,2)-A(:,:,2)*z;
A(1,1,2) = 0;
A(1,2,2) = 0;
A(2,1,2) = 0;
A(2,2,2) = 0;
C(1,1,n-1) = 0;
C(2,1,n-1) = 0;
C(1,2,n-1) = 0;
C(2,2,n-1) = 0;
y = zeros(2,1,n);
% Thomas algorithm
gamma = zeros(2,2);
beta = zeros(2,2);
gamma = B(:,:,1)\C(:,:,1);
beta = B(:,:,1)\D(:,:,1);
for i=2:n-1
    gamm = (B(:,:,i)-A(:,:,i)*gamma(:,:,i-1))\C(:,:,i);
    gamma = cat(3,gamma,gamm);
    bet = (B(:,:,i)-A(:,:,i)*gamma(:,:,i-1))\(D(:,:,i)-
A(:,:,i)*beta(:,:,i-1));
    beta = cat(3,beta,bet);
end
y(:,:,n-1) = beta(:,:,n-1);
for i=n-2:-1:2
    y(:,:,i) = beta(:,:,i) - gamma(:,:,i)*y(:,:,i+1);
end
% Printing values of y in range [0,1] with h = 0.1
Y = zeros(n,1);
Y(1) = 1;
Y(n) = 2;
for i=2:n-1
    fprintf('%6.2f %20.8f\n',x(i),y(1,1,i));
    Y(i) = y(1,1,i);
end

syms u(t)
ode= t*diff(u,t,2)+u==0;
% cond1=D2u(0)==0;
cond1=u(1)==1;
% cond3=D2u(1)==0;
cond2=u(2)==2;
conds=[cond1 cond2];
sol(t)=dsolve(ode,conds);

xx = 1:h/100:2;
z=sol(xx);

% Plotting graph to compare actual and expected values

plot(x,Y,'b', xx, z, 'r');
grid on;
xlabel('X');
```

```
ylabel('Y');
legend('Calculated Y', 'Actual Y');
function y = Bb(x)
    y = 0;
end
function y = Cc(x)
    y = 1;
end
function y = Aa(x)
    y = x;
end
function y = Dd(x)
    y = 0;
end
```

```
  1.25            1.33928632
  1.50            1.62266128
  1.75            1.83885602
```



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