```
S = load('tomography.mat');
disp(S);
```

```
    A: [576×784 double]
    b: [576×1 double]
```

```
A = S.A;
b = S.b;

[m, n] = size(A);
K = 10;
error_tol = 1e-6;
x = zeros(n, 1);

rowNormSq = sum(A.^2, 2);
rowNormSq(rowNormSq == 0) = 1;

errs = zeros(K, 1);
prev_err = Inf;

for k = 1:K
    order = randperm(m);
    for idx = 1:m
        i = order(idx);
        ai = A(i, :).';
        x = x - ((ai.' * x - b(i))/rowNormSq(i)) * ai;
    end

    r = A*x - b;
    errs(k) = norm(r)/norm(b);
    fprintf("Cycle %d: relative error = %.6f\n", k, errs(k));

    if k > 1 && abs(errs(k) - prev_err) <= error_tol * builtin('max', prev_err, 1)
        break;
    end

    prev_err = errs(k);
end
```

```
Cycle 1: relative error = 0.140319
Cycle 2: relative error = 0.061345
Cycle 3: relative error = 0.034633
Cycle 4: relative error = 0.025148
Cycle 5: relative error = 0.018696
Cycle 6: relative error = 0.016192
Cycle 7: relative error = 0.014592
Cycle 8: relative error = 0.012685
Cycle 9: relative error = 0.011197
Cycle 10: relative error = 0.009468
```

```
figure;
```

```
imshow(reshape(x, 28, 28), []);
colormap gray;
axis image off;
```

```
figure;
plot(1:k, errs(1:k), '-o', 'LineWidth', 2);
grid on;
```