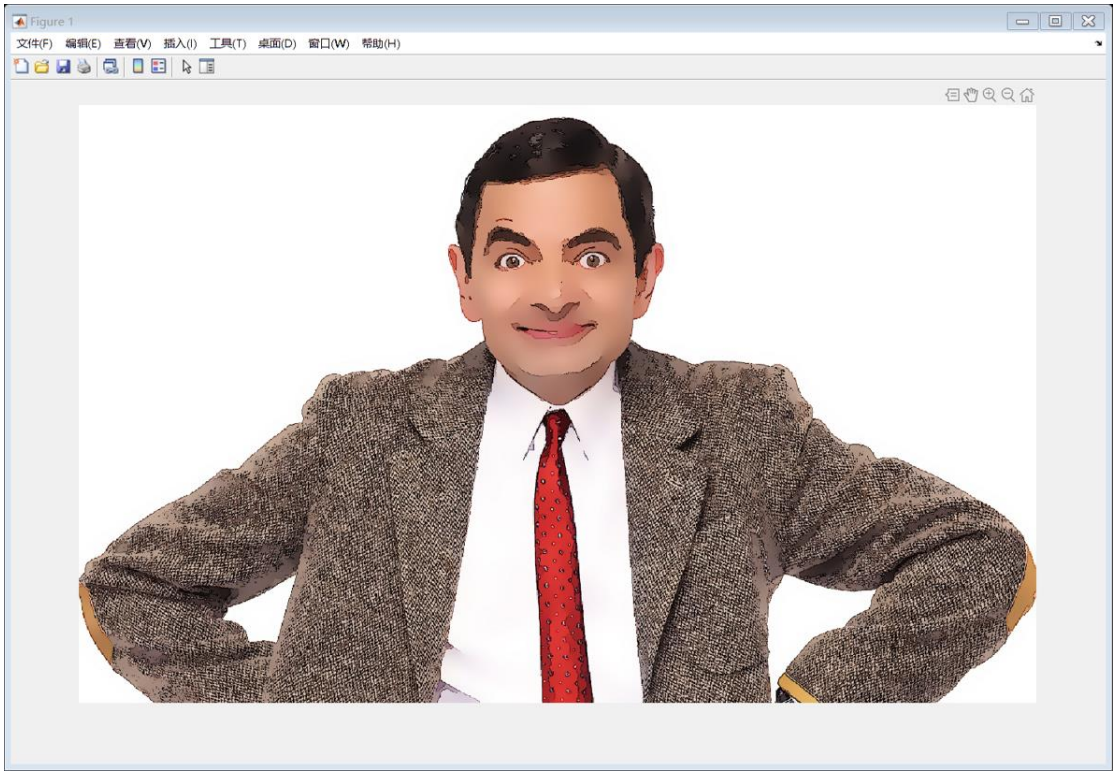
```
I=imread('..\pic\输入\sourceImage.jpg');
%选择风格
style=2;
switch style
    case 1
        I=youhua(I);   %油画
    case 2
        I=dongman(I);   %动漫
    case 3
        I_=jianbi(I);   %简笔画
        I(:,:,1)=I_;
        I(:,:,2)=I_;
        I(:,:,3)=I_;
    case 4
        I=qiangti(I);   %墙体
    case 5
        I=xingkong(I);   %叠加
    case 6
        I=fudiao(I);   %浮雕
        I_=imread('..\pic\输入\pic6.jpg');
        I(:,:,1)=I_;
        I(:,:,2)=I_;
        I(:,:,3)=I_;
end
% imwrite(I,'..\pic\6.jpg');
%选择图片
picnum=1;
```

```
switch picnum
        case 1
                output=pic1(I);
        case 2
                output=pic2(I);
        case 3
                output=pic3(I);
        case 4
                output=pic4(I);
        case 5
                output=pic5(I);
        case 6
                output=pic6(I);
end
% imwrite(output,'..\pic\out6.jpg');
```

1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,警告：图像太大，无法在屏幕上显示；将以 67% 显示



图片预处理函数

```
%图 1
function resImg=pic1(srcImg)
resImg = imread('..\pic\输入\targetImage1.jpg');
%变换到目标图片
srcImg=imcrop(srcImg,[444.5 0.5 994 1200]);
[h1,w1,d1] = size(srcImg);
xs1 = [1 w1 1 w1]';
ys1 = [1 1 h1 h1]';

[h2,w2,d2] = size(resImg);
xs2=[185;667.5;185;667.5];
ys2=[180.5;180.5;797;797];

tform = fitgeotrans([xs1 ys1],[xs2 ys2],'projective');
src_registered = imwarp(srcImg,tform,'OutputView',imref2d(size(resImg)));
mask = sum(src_registered,3)~=0;
idx = find(mask);
resImg(idx) = src_registered(idx);
resImg(idx+h2*w2) = src_registered(idx+h2*w2);
resImg(idx+2*h2*w2) = src_registered(idx+2*h2*w2);

mask=imread('..\pic\输入\a.jpg');
%对蒙版做处理，去除人像边缘噪声
mask=rgb2hsv(mask);
for i=1:h2
    for j=1:w2
        if mask(i,j,2)==1
```

```
                mask(i,j,:)=0;
            end
        end
    end
    mask=hsv2rgb(mask);
    mg=rgb2gray(mask);
    for i=1:h2
        for j=1:w2
            if mg(i,j)~=0
                mg(i,j)=1;
            end
        end
    end
    se1 = strel('square',2);
    mg=imerode(mg,se1);
    mg=bwareaopen(mg,50);
    mg=~bwareaopen(~mg,50);
    %与 mask 结合
    for j=187:(187+480)
        for i=180:797
            if mask(i,j,:)>=0.01 & mg(i,j)==1
                reslmg(i,j,:)=mask(i,j,:)*255;
            end
        end
    end
    figure,
    imshow(reslmg);
    end
```

```
%图 2
function reslmg=pic2(srclmg)
[h1,w1,d1] = size(srclmg);
xs1 = [1 w1 1 w1]';
ys1 = [1 1 h1 h1]';

reslmg = imread('..\pic\输入\targetImage2.jpg');
[h2,w2,d2] = size(reslmg);
xs2=[46;543;18;592];
ys2=[46;50;372;413];
%变换到目标
tform = fitgeotrans([xs1 ys1],[xs2 ys2],'projective');
src_registered = imwarp(srclmg,tform,'OutputView',imref2d(size(reslmg)));
mask = sum(src_registered,3)~=0;
idx = find(mask);
reslmg(idx) = src_registered(idx);
reslmg(idx+h2*w2) = src_registered(idx+h2*w2);
reslmg(idx+2*h2*w2) = src_registered(idx+2*h2*w2);

m1=imread('..\pic\输入\b.jpg');
m1=rgb2hsv(m1);
for i=1:h2
    for j=1:w2
        if m1(i,j,2)==1
            m1(i,j,:)=0;
        end
    end
end
m1=hsv2rgb(m1);
```

```
mg=rgb2gray(m1);
for i=1:h2
    for j=1:w2
        if mg(i,j)~=0
            mg(i,j)=1;
        end
    end
end
se1 = strel('square',2);
mg=imerode(mg,se1);
mg=bwareaopen(mg,20);
mg=~bwareaopen(~mg,20);

for j=501:(501+42)
    for i=366:(366+45)
        if m1(i,j,:)~=0 & mg(i,j)==1
            reslmg(i,j,:)=m1(i,j,:)*255;
        end
    end
end
figure,imshow(reslmg);
end

%图 3
function reslmg=pic3(srclmg)
srclmg=imcrop(srclmg,[444.5 0.5 994 1200]);
[h1,w1,d1] = size(srclmg);
xs1 = [1 w1 1 w1]';
ys1 = [1 1 h1 h1]';
```

```
reslmg = imread('..\pic\输入\targetImage3.jpg');
[h2,w2,d2] = size(reslmg);
xs2=[355;568;394;600];
ys2=[119;95;646;541];

tform = fitgeotrans([xs1 ys1],[xs2 ys2],'projective');
src_registered = imwarp(srclmg,tform,'OutputView',imref2d(size(reslmg)));
mask = sum(src_registered,3)~=0;
idx = find(mask);
reslmg(idx) = src_registered(idx);
reslmg(idx+h2*w2) = src_registered(idx+h2*w2);
reslmg(idx+2*h2*w2) = src_registered(idx+2*h2*w2);

m1=imread('..\pic\输入\c.jpg');
m1=rgb2hsv(m1);
for i=1:h2
    for j=1:w2
        if m1(i,j,2)==1
            m1(i,j,:)=0;
        end
    end
end
m1=hsv2rgb(m1);
mg=rgb2gray(m1);
for i=1:h2
    for j=1:w2
        if mg(i,j)~=0
            mg(i,j)=1;
```

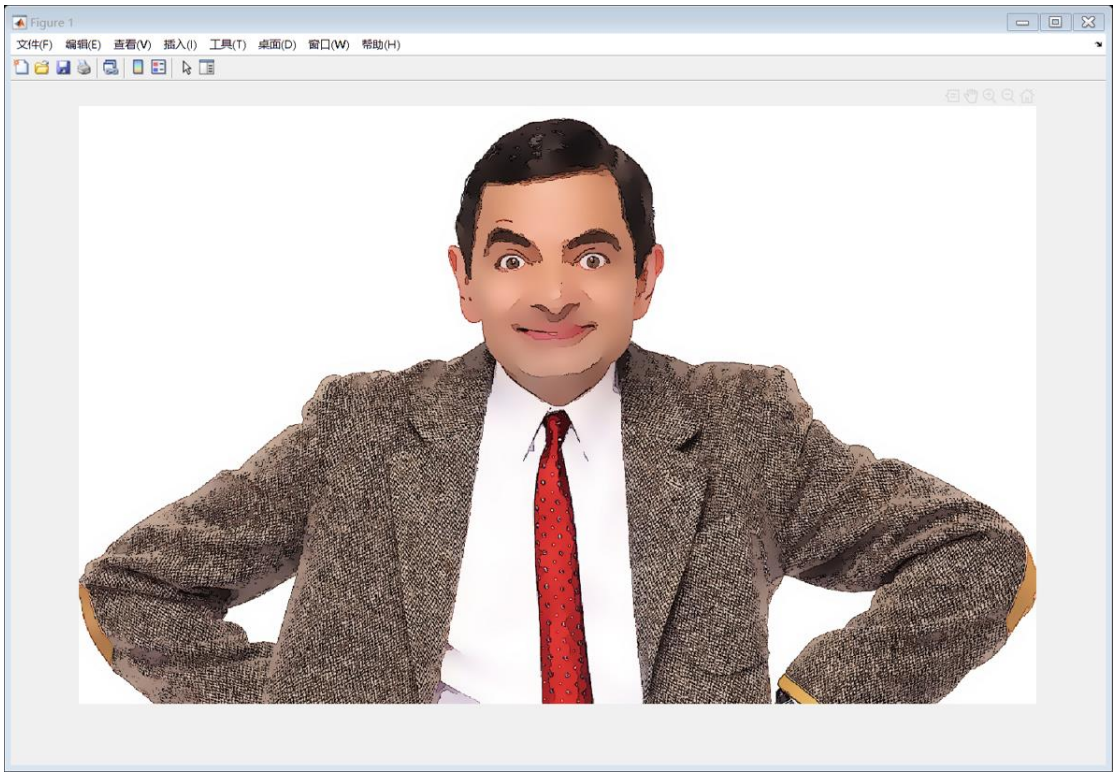
```
            end
        end
    end
    se1 = strel('square',2);
    mg=imerode(mg,se1);
    mg=bwareaopen(mg,20);
    mg=~bwareaopen(~mg,20);
    for j=448:(448+48)
        for i=102:(102+45)
            if m1(i,j,:)~=0 & mg(i,j)==1
                reslmg(i,j,:)=m1(i,j,:)*255;
            end
        end
    end
    figure,imshow(reslmg);
    end


    %图 4
    function reslmg=pic4(srclmg)
    srclmg=imcrop(srclmg,[444.5 0.5 994 1200]);
    [h1,w1,d1] = size(srclmg);
    xs1 = [1 w1 1 w1]';
    ys1 = [1 1 h1 h1]';

    reslmg = imread('..\pic\输入\targetImage4.jpg');
    [h2,w2,d2] = size(reslmg);
    xs2=[370;795;243;653];
    ys2=[80;185;706;794];
```

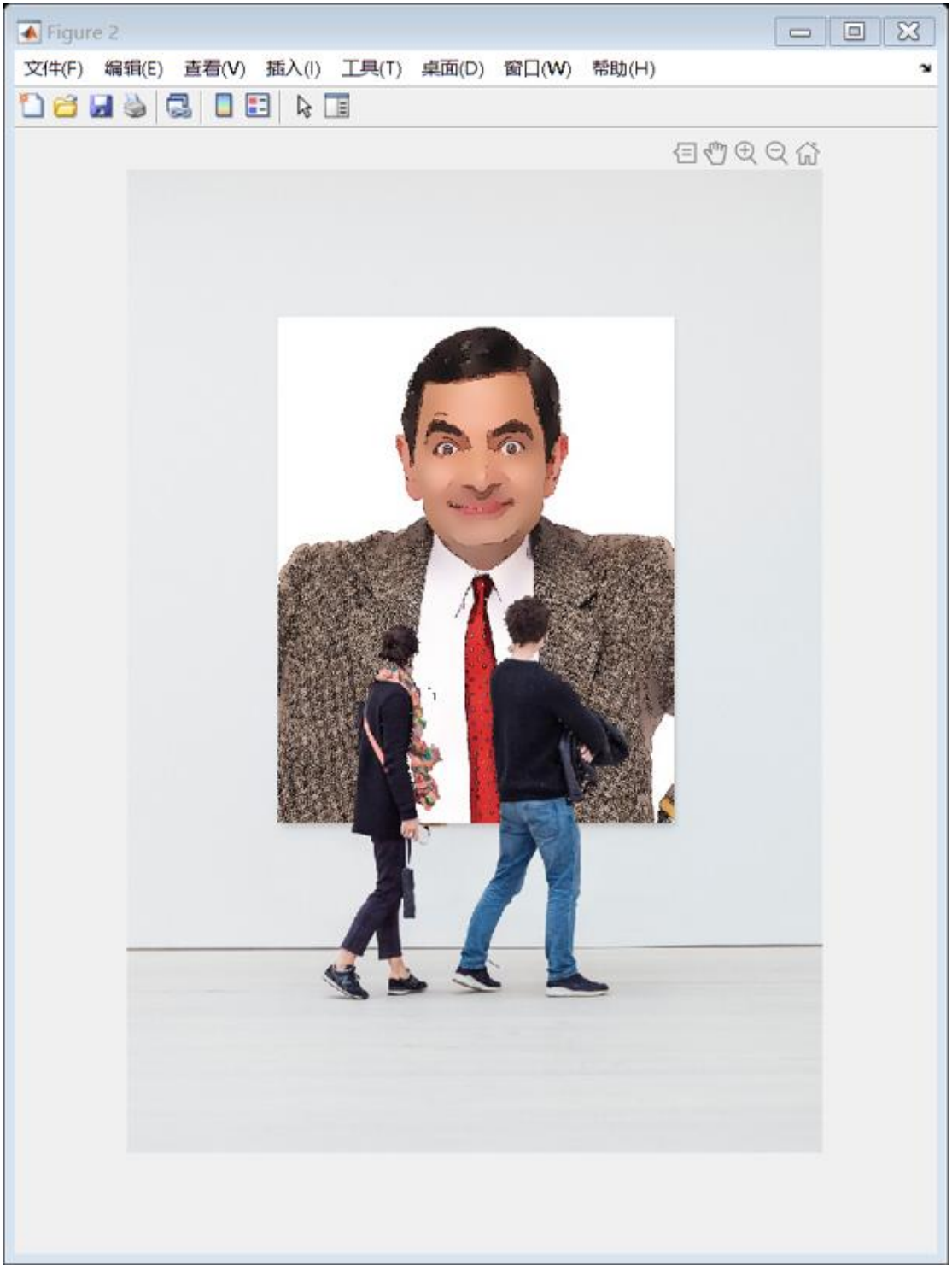
```
tform = fitgeotrans([xs1 ys1],[xs2 ys2],'projective');
src_registered = imwarp(srcImg,tform,'OutputView',imref2d(size(resImg)));
mask = sum(src_registered,3)~=0;
idx = find(mask);
resImg(idx) = src_registered(idx);
resImg(idx+h2*w2) = src_registered(idx+h2*w2);
resImg(idx+2*h2*w2) = src_registered(idx+2*h2*w2);


m1=imread('..\pic\输入\e.jpg');
m1=rgb2hsv(m1);
for i=1:h2
    for j=1:w2
        if m1(i,j,2)==1
            m1(i,j,:)=0;
        end
    end
end

m1=hsv2rgb(m1);

mg=rgb2gray(m1);
for i=1:h2
    for j=1:w2
        if mg(i,j)~=0
            mg(i,j)=1;
        end
    end
end
se1 = strel('square',3);
```

```
mg=imerode(mg,se1);
mg=imdilate(mg,se1);
mg=bwareaopen(mg,50);
mg=~bwareaopen(~mg,50);
for j=202:202+606
    for i=265:265+509
        if m1(i,j,:)~=0 & mg(i,j)==1
            reslmg(i,j,:)=m1(i,j,:)*255;
        end
    end
end
figure,imshow(reslmg);
end

%图 5
function reslmg=pic5(srclmg)
[h1,w1,d1] = size(srclmg);
xs1 = [1 w1 1 w1]';
ys1 = [1 1 h1 h1]';

reslmg = imread('..\pic\输入\targetImage5.jpg');
[h2,w2,d2] = size(reslmg);
xs2=[98;708;96;719];
ys2=[107;174;560;577];

tform = fitgeotrans([xs1 ys1],[xs2 ys2],'projective');
src_registered = imwarp(srclmg,tform,'OutputView',imref2d(size(reslmg)));
mask = sum(src_registered,3)~=0;
idx = find(mask);
```

```
reslmg(idx) = src_registered(idx);
reslmg(idx+h2*w2) = src_registered(idx+h2*w2);
reslmg(idx+2*h2*w2) = src_registered(idx+2*h2*w2);
figure,
imshow(reslmg);
end

%图 6
function reslmg=pic6(srclmg)
srclmg=imcrop(srclmg,[400 0.5 1050 1200]);
[h1,w1,d1] = size(srclmg);
xs1 = [1 w1 1 w1]';
ys1 = [1 1 h1 h1]';

reslmg = imread('..\pic\输入\targetImage6.jpg');
[h2,w2,d2] = size(reslmg);
xs2=[627;974;662;1018];
ys2=[112;78;495;458];

tform = fitgeotrans([xs1 ys1],[xs2 ys2],'projective');
src_registered = imwarp(srclmg,tform,'OutputView',imref2d(size(reslmg)));
mask = sum(src_registered,3)~=0;
idx = find(mask);
reslmg(idx) = src_registered(idx);
reslmg(idx+h2*w2) = src_registered(idx+h2*w2);
reslmg(idx+2*h2*w2) = src_registered(idx+2*h2*w2);
figure,
imshow(reslmg);
end
```

警告：图像太大，无法在屏幕上显示；将以 67% 显示





风格函数

```
%油画风格

function reslmg=youhua(l)
```

```
[L,N] = superpixels(I,2000);
reslmg = zeros(size(I),'like',I);
idx = label2idx(L);
R=size(I,1);
C=size(I,2);
for label = 1:N
    redIdx = idx{label};
    greenIdx = idx{label}+R*C;
    blueIdx = idx{label}+2*R*C;
    reslmg(redIdx) = mean(I(redIdx));
    reslmg(greenIdx) = mean(I(greenIdx));
    reslmg(blueIdx) = mean(I(blueIdx));
end
h=fspecial('disk',3);
reslmg=imfilter(reslmg,h);
figure
imshow(reslmg,'InitialMagnification',67);
end

% 动漫风格
function reslmg=dongman(I)
imLAB = rgb2lab(I);
degreeOfSmoothing = 15;
spatialSigma = 5;
nFigure = 1;
for k = 1:15
    fprintf('%d,',k)
    imLAB = imbilatfilt(imLAB,degreeOfSmoothing,spatialSigma);
    if k==1 || mod(k,5)==0
```

```
            smImg = lab2rgb(imLAB,'Out','uint8');
            nFigure = nFigure + 1;
        end
    end
    h1=[1 1 1; 1 -8 1; 1 1 1];
    J=imfilter(smImg,h1);
    reslmg=smImg-J;

    figure,
    imshow(reslmg);
    end

    %简笔画风格
    function reslmg=jianbi(I)
    [PPG]=colorgrad(I);
    ppg=im2uint8(PPG);
    ppgf=255-ppg;
    [M,N]=size(ppgf);
    T=140;
    reslmg=zeros(M,N);
    for i=1:M
        for j=1:N
            if ppgf(i,j)<T
                reslmg(i,j)=0;
            else
                reslmg(i,j)=235/(255-T)*(ppgf(i,j)-T);
            end
        end
    end
```

```
reslmg=uint8(reslmg);
figure,
imshow(reslmg);
end

function [PPG] = colorgrad(f)
sh = fspecial('sobel');
sv = sh';
Rx = imfilter(double(f(:,:,1)), sh, 'replicate');
Ry = imfilter(double(f(:,:,1)), sv, 'replicate');
Gx = imfilter(double(f(:,:,2)), sh, 'replicate');
Gy = imfilter(double(f(:,:,2)), sv, 'replicate');
Bx = imfilter(double(f(:,:,3)), sh, 'replicate');
By = imfilter(double(f(:,:,3)), sv, 'replicate');

RG = sqrt(Rx.^2 + Ry.^2);
GG = sqrt(Gx.^2 + Gy.^2);
BG = sqrt(Bx.^2 + By.^2);

PPG = mat2gray(RG + GG + BG);
end

%墙体风格
function reslmg=qiangti(I)
[r,c,dig]=size(I);
reslmg=I;
w=floor(r/18);
for i=w/2:w:18*w
    for j=1:c
```

```
            for z=-3:0
                reslmg(i+z,j,:)=l(i-1,j,:)-50;
            end
            for z=1:4
                reslmg(i+z,j,:)=l(i-1,j,:)+50;
            end
        end
    end
    figure;
    imshow(reslmg);
    end


    %星空
    function reslmg=xingkong(l)
    [r,c,dig]=size(l);
    J=imread('..\pic\输入\timg.jpg');
    J=imresize(J,[r,c],'Method','bicubic');
    mask=imread('..\pic\输入\d.jpg');
    reslmg = imlincomb(0.7,l,0.3,J);
    for i=1:r
        for j=1:c
            if mask(i,j,:)==0
                reslmg(i,j,:)=l(i,j,:);
            end
        end
    end
    figure;
    imshow(reslmg);
    end
```

```
%浮雕
function reslmg=fudiao(I)
f1=rgb2gray(I);
h1=[1 1 1; 1 -8 1; 1 1 1];
J=imfilter(f1,h1);
f1=f1-J;
f1=fftshift(fft2(f1));
P1 = angle(f1);

F1_phase = cos(P1) + 1i*sin(P1);
reslmg = real((ifft2(ifftshift(F1_phase))));
reslmg=imadjust(reslmg,[0,max(max(reslmg))],[0.2,0.95]);
figure,imshow(reslmg);
imwrite(reslmg,'..\pic\输入\pic6.jpg');
end
```

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