1-32

33-66

67-84

85-100

1   1

```
function shili01
h0=figure('toolbar','none',...
    'position',[198 56 350 300],...
    'name','    01');
h1=axes('parent',h0,...
    'visible','off');
x=-pi:0.05:pi;
y=sin(x);
plot(x,y);
xlabel('        X');
ylabel('        Y');
title('SIN( )          ');
```

grid on

2   2

```
function shili02
h0=figure('toolbar','none',...
    'position',[200 150 450 350],...
    'name','    02');
x=-pi:0.05:pi;
y=sin(x)+cos(x);
plot(x,y,'-*r','linewidth',1);
grid on
xlabel('        X');
ylabel('        Y');
title('            ');
```

3

```
function shili03
h0=figure('toolbar','none',...
    'position',[200 150 450 350],...
    'name','    03');
x=-pi:0.05:pi;
y1=sin(x);
y2=cos(x);
plot(x,y1,...
```

```
        '-*r',...
        x,y2,...
        '--og');
grid on
xlabel('      X');
ylabel('      Y');
title('          ');
        4     y


function shili04
h0=figure('toolbar','none',...
        'position',[200 150 450 250],...
        'name','    04');
x=0:900;a=1000;b=0.005;
y1=2*x;
y2=cos(b*x);
[haxes,hline1,hline2]=plotyy(x,y1,x,y2,'semilogy','plot');
axes(haxes(1))
ylabel('semilog plot');
axes(haxes(2))
ylabel('linear plot');
        5


function shili05
h0=figure('toolbar','none',...
```

```matlab
        'position',[200 150 450 250],...
        'name','    05');
t=0:pi/10:2*pi;
[x,y]=meshgrid(t);
subplot(2,2,1)
plot(sin(t),cos(t))
axis equal

subplot(2,2,2)
z=sin(x)-cos(y);
plot(t,z)
axis([0 2*pi -2 2])

subplot(2,2,3)
h=sin(x)+cos(y);
plot(t,h)
axis([0 2*pi -2 2])

subplot(2,2,4)
g=(sin(x).^2)-(cos(y).^2);
plot(t,g)
axis([0 2*pi -1 1])
```

6

```matlab
function shili06
```

```matlab
h0=figure('toolbar','none',...
    'position',[200 150 450 400],...
    'name','        06');
t=0:pi/10:2*pi;
h=plot(t,sin(t));
xlabel('t=0    2\pi','fontsize',16);
ylabel('sin(t)','fontsize',16);
title('\it{        0to2\pi                }','fontsize',16)
x=get(h,'xdata');
y=get(h,'ydata');
imin=find(min(y)==y);
imax=find(max(y)==y);
text(x(imin),y(imin),...
    ['\leftarrow            =',num2str(y(imin))],...
    'fontsize',16)
text(x(imax),y(imax),...
    ['\leftarrow            =',num2str(y(imax))],...
    'fontsize',16)


        7


function shili07
h0=figure('toolbar','none',...
    'position',[200 150 450 350],...
    'name','        07');
```

```matlab
tiao1=[562 548 224 545 41 445 745 512];

tiao2=[47 48 57 58 54 52 65 48];

t=0:7;

bar(t,tiao1)

xlabel('X   ');

ylabel('TIAO1   ');

h1=gca;

h2=axes('position',get(h1,'position'));

plot(t,tiao2,'linewidth',3)

set(h2,'yaxislocation','right','color','none','xticklabel',[])
```

8

```matlab
function shili08
h0=figure('toolbar','none',...
       'position',[200 150 450 250],...
       'name','        08');
x=91:95;

profits1=[88 75 84 93 77];

profits2=[51 64 54 56 68];

profits3=[42 54 34 25 24];

profits4=[26 38 18 15 4];

area(x,profits1,'facecolor',[0.5 0.9 0.6],...
       'edgecolor','b',...
       'linewidth',3)
hold on
```

```
area(x,profits2,'facecolor',[0.9 0.85 0.7],...
    'edgecolor','y',...
    'linewidth',3)
hold on
area(x,profits3,'facecolor',[0.3 0.6 0.7],...
    'edgecolor','r',...
    'linewidth',3)
hold on
area(x,profits4,'facecolor',[0.6 0.5 0.9],...
    'edgecolor','m',...
    'linewidth',3)
hold off
set(gca,'xtick',[91:95])
set(gca,'layer','top')
gtext('\leftarrow              ')
gtext('\leftarrow              ')
gtext('\leftarrow              ')
gtext('\leftarrow              ')
xlabel('   ','fontsize',16);
ylabel('          ','fontsize',16);
        9


function shili09
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
```

```matlab
    'name','     09');
t=[54 21 35;
    68 54 35;
    45 25 12;
    48 68 45;
    68 54 69];
x=sum(t);
h=pie(x);
textobjs=findobj(h,'type','text');
str1=get(textobjs,{'string'});
val1=get(textobjs,{'extent'});
oldext=cat(1,val1{:});
names={'      ';'      ';'      '};
str2=strcat(names,str1);
set(textobjs,{'string'},str2)
val2=get(textobjs,{'extent'});
newext=cat(1,val2{:});
offset=sign(oldext(:,1)).*(newext(:,3)-oldext(:,3))/2;
pos=get(textobjs,{'position'});
textpos=cat(1,pos{:});
textpos(:,1)=textpos(:,1)+offset;
set(textobjs,{'position'},num2cell(textpos,[3,2]))
    10


function shili10
```

```matlab
h0=figure('toolbar','none',...
    'position',[200 150 450 400],...
    'name','        10');
a=0.01;
b=0.5;
t=0:10;
f=exp(-a*t).*sin(b*t);
stairs(t,f)
hold on
plot(t,f,':*')
hold off
glabel='      e^{-(\alpha*t)}sin\beta*t            ';
gtext(glabel,'fontsize',16)
xlabel('t=0:10','fontsize',16)
axis([0 10 -1.2 1.2])
```

        11


```matlab
function shili11
h0=figure('toolbar','none',...
    'position',[200 150 450 350],...
    'name','     11');
x=0:pi/20:2*pi;
y1=sin(x);
y2=cos(x);
h1=stem(x,y1+y2);
```

```
hold on

h2=plot(x,y1,'^r',x,y2,'*g');

hold off

h3=[h1(1);h2];

legend(h3,'y1+y2','y1=sin(x)','y2=cos(x)')

xlabel('          X');

ylabel('          Y');

title('                                ');
```

          12


```
function shili12

h0=figure('toolbar','none',...

       'position',[200 150 450 250],...

       'name','     12');

winddirection=[54 24 65 84

       256 12 235 62

       125 324 34 254];

windpower=[2 5 5 3

       6 8 12 7

       6 14 10 8];

rdirection=winddirection*pi/180;

[x,y]=pol2cart(rdirection,windpower);

compass(x,y);

desc={'              ',

              '              ',
```

```
            '10   1   0   00  ',
            '10   1   12   00'};
gtext(desc)
            13


function shili13
h0=figure('toolbar','none',...
        'position',[200 150 450 250],...
        'name','        13');
[th,r]=meshgrid((0:10:360)*pi/180,0:0.05:1);
[x,y]=pol2cart(th,r);
z=x+i*y;
f=(z.^4-1).^(0.25);
contour(x,y,abs(f),20)
axis equal
xlabel('      ','fontsize',16);
ylabel('      ','fontsize',16);
h=polar([0 2*pi],[0 1]);
delete(h)
hold on
contour(x,y,abs(f),20)
            14


function shili14
h0=figure('toolbar','none',...
```

```matlab
        'position',[200 150 450 250],...
        'name','        14');
axis([0 10 0 10]);
hold on
x=[];
y=[];
n=0;
disp('                           ');
disp('                             ');
but=1;
while but==1
    [xi,yi,but]=ginput(1);
    plot(xi,yi,'bo')
    n=n+1;
    disp('                          ');
    x(n,1)=xi;
    y(n,1)=yi;
end
t=1:n;
ts=1:0.1:n;
xs=spline(t,x,ts);
ys=spline(t,y,ts);
plot(xs,ys,'r-');
hold off
        14
```

```
function shili14

h0=figure('toolbar','none',...

        'position',[200 150 450 250],...

        'name','        14');

axis([0 10 0 10]);

hold on

x=[];

y=[];

n=0;

disp('                                ');

disp('                                    ');

but=1;

while but==1

        [xi,yi,but]=ginput(1);

        plot(xi,yi,'bo')

        n=n+1;

        disp('                                ');

        x(n,1)=xi;

        y(n,1)=yi;

end

t=1:n;

ts=1:0.1:n;

xs=spline(t,x,ts);

ys=spline(t,y,ts);
```

```matlab
plot(xs,ys,'r-');
hold off
```

15

```matlab
function shili15
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','        15');
axis equal
m=moviein(20,gcf);
set(gca,'nextplot','replacechildren')
h=uicontrol('style','slider','position',...
    [100 10 500 20],'min',1,'max',20)
for j=1:20
    plot(fft(eye(j+16)))
    set(h,'value',j)
    m(:,j)=getframe(gcf);
end
clf;
axes('position',[0 0 1 1]);
movie(m,30)
```

16

```matlab
function shili15
h0=figure('toolbar','none',...
```

```matlab
        'position',[200 150 450 250],...
        'name','       15');
axis equal
m=moviein(20,gcf);
set(gca,'nextplot','replacechildren')
h=uicontrol('style','slider','position',...
        [100 10 500 20],'min',1,'max',20)
for j=1:20
        plot(fft(eye(j+16)))
        set(h,'value',j)
        m(:,j)=getframe(gcf);
end
clf;
axes('position',[0 0 1 1]);
movie(m,30)
```

17

```matlab
function shili17
h0=figure('toolbar','none',...
        'position',[200 150 450 250],...
        'name','       17');
t=(1:2:15)*pi/8;
x=sin(t);
y=cos(t);
fill(x,y,'r')
```

```matlab
axis square off
text(0,0,'STOP',...
    'color',[1 1 1],...
    'fontsize',50,...
    'horizontalalignment','center')
  18


function shili18
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','        18');
subplot(2,2,1)
x=-3:0.2:3;
y=exp(-x.*x);
bar(x,y)
title('2-D Bar Chart')


subplot(2,2,2)
x=-3:0.2:3;
y=exp(-x.*x);
bar3(x,y,'r')
title('3-D Bar Chart')


subplot(2,2,3)
x=-3:0.2:3;
```

```matlab
y=exp(-x.*x);

stairs(x,y)

title('Stair Chart')


subplot(2,2,4)

x=-3:0.2:3;

y=exp(-x.*x);

barh(x,y)

title('Horizontal Bar Chart')
```

19


```matlab
function shili19

h0=figure('toolbar','none',...

        'position',[200 150 450 400],...

        'name','     19');

subplot(2,1,1)

x=linspace(0,2*pi);

y1=sin(x);

y2=cos(x);

y3=sin(x)+cos(x);

z1=zeros(size(x));

z2=0.5*z1;

z3=z1;

plot3(x,y1,z1,x,y2,z2,x,y3,z3)

grid on
```

```
xlabel('X   ');

ylabel('Y   ');

zlabel('Z   ');

title('Figure1:3-D Plot')


subplot(2,1,2)

x=linspace(0,2*pi);

y1=sin(x);

y2=cos(x);

y3=sin(x)+cos(x);

z1=zeros(size(x));

z2=0.5*z1;

z3=z1;

plot3(x,z1,y1,x,z2,y2,x,z3,y3)

grid on

xlabel('X   ');

ylabel('Y   ');

zlabel('Z   ');

title('Figure2:3-D Plot')
        20


function shili20

h0=figure('toolbar','none',...

    'position',[200 150 450 300],...

    'name','      20');
```

```matlab
subplot(1,2,1)

[x,y,z]=sphere(10);

mesh(x,y,z)

axis off

title('Figure1:Opaque')

hidden on


subplot(1,2,2)

[x,y,z]=sphere(10);

mesh(x,y,z)

axis off

title('Figure2:Transparent')

hidden off
```

21PEAKS

```matlab
function shili21

h0=figure('toolbar','none',...

    'position',[200 100 450 450],...

    'name','    21');

[x,y,z]=peaks(30);

subplot(2,1,1)

x=x(1,:);

y=y(:,1);

i=find(y>0.8&y<1.2);

j=find(x>-0.6&x<0.5);
```

```
z(i,j)=nan*z(i,j);

surfc(x,y,z)

xlabel('X   ');

ylabel('Y   ');

zlabel('Z   ');

title('Figure1:surfc                 ')


subplot(2,1,2)

x=x(1,:);

y=y(:,1);

i=find(y>0.8&y<1.2);

j=find(x>-0.6&x<0.5);

z(i,j)=nan*z(i,j);

surfl(x,y,z)

xlabel('X   ');

ylabel('Y   ');

zlabel('Z   ');

title('Figure2:surfl                 ')
      22


function shili22

h0=figure('toolbar','none',...

     'position',[200 150 550 350],...

     'name','      22');
```

```
subplot(1,2,1)

x=rand(1,20);

y=rand(1,20);

z=peaks(x,y*pi);

t=delaunay(x,y);

trimesh(t,x,y,z)

hidden off

title('Figure1:Triangular Surface Plot');


subplot(1,2,2)

x=rand(1,20);

y=rand(1,20);

z=peaks(x,y*pi);

t=delaunay(x,y);

trisurf(t,x,y,z)

title('Figure1:Triangular Surface Plot');
        23

function shili23

h0=figure('toolbar','none',...

    'position',[200 150 450 350],...

    'name','    23');

x=-5:0.5:5;

[x,y]=meshgrid(x);

r=sqrt(x.^2+y.^2)+eps;
```

```
z=sin(r)./r;

subplot(2,2,1)

surf(x,y,z)

xlabel('X-axis')

ylabel('Y-axis')

zlabel('Z-axis')

title('Figure1')

view(-37.5,30)


subplot(2,2,2)

surf(x,y,z)

xlabel('X-axis')

ylabel('Y-axis')

zlabel('Z-axis')

title('Figure2')

view(-37.5+90,30)


subplot(2,2,3)

surf(x,y,z)

xlabel('X-axis')

ylabel('Y-axis')

zlabel('Z-axis')

title('Figure3')

view(-37.5,60)
```

```matlab
subplot(2,2,4)

surf(x,y,z)

xlabel('X-axis')

ylabel('Y-axis')

zlabel('Z-axis')

title('Figure4')

view(180,0)
```

        24


```matlab
function shili24

h0=figure('toolbar','none',...

        'position',[200 150 450 350],...

        'name','        24');

subplot(2,2,1)

z=peaks;

ribbon(z)

title('Figure1')


subplot(2,2,2)

[x,y,z]=peaks(15);

[dx,dy]=gradient(z,0.5,0.5);

contour(x,y,z,10)

hold on

quiver(x,y,dx,dy)

hold off
```

```matlab
title('Figure2')

subplot(2,2,3)
[x,y,z]=peaks(15);
[nx,ny,nz]=surfnorm(x,y,z);
surf(x,y,z)
hold on
quiver3(x,y,z,nx,ny,nz)
hold off
title('Figure3')

subplot(2,2,4)
x=rand(3,5);
y=rand(3,5);
z=rand(3,5);
c=rand(3,5);
fill3(x,y,z,c)
grid on
title('Figure4')
```

25

```matlab
function shili25
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','    25');
```

```matlab
vert=[1 1 1;1 2 1;
      2 2 1;2 1 1;
      1 1 2;1 2 2;
      2 2 2;2 1 2];
fac=[1 2 3 4;2 6 7 3;
     4 3 7 8;1 5 8 4;
     1 2 6 5;5 6 7 8];
grid off
sphere(36)
h=findobj('type','surface');
set(h,'facelighting','phong',...
    'facecolor',...
    'interp',...
    'edgecolor',[0.4 0.4 0.4],...
    'backfacelighting',...
    'lit')
hold on
patch('faces',fac,'vertices',vert,...
    'facecolor','y');
light('position',[1 3 2]);
light('position',[-3 -1 3]);
material shiny
axis vis3d off
hold off
```

26

```matlab
function shili26
h0=figure('toolbar','none',...
        'position',[200 50 450 450],...
        'name','       26');
subplot(2,1,1)
x=[5 2 1
      8 7 3
      9 8 6
      5 5 5
      4 3 2];
bar(x)
xlabel('X   ');
ylabel('Y   ');
title('              ');

subplot(2,1,2)
y=[5 2 1
      8 7 3
      9 8 6
      5 5 5
      4 3 2];
barh(y)
xlabel('X   ');
ylabel('Y   ');
```

title('   ');

      27

```matlab
function shili27
h0=figure('toolbar','none',...
        'position',[200 150 450 350],...
        'name','        27');
subplot(2,2,1)
sphere
shading flat
camlight left
camlight right
lighting flat
colorbar
axis off
title('Figure1')

subplot(2,2,2)
sphere
shading flat
camlight left
camlight right
lighting gouraud
colorbar
axis off
```

```
title('Figure2')

subplot(2,2,3)
sphere
shading interp
camlight right
camlight left
lighting phong
colorbar
axis off
title('Figure3')

subplot(2,2,4)
sphere
shading flat
camlight left
camlight right
lighting none
colorbar
axis off
title('Figure4')
```

28

```
function shili28
h0=figure('toolbar','none',...
```

```matlab
    'position',[200 150 450 350],...
    'name','        28');
subplot(2,1,1)
alpha=90:-10:0;
r=ones(size(alpha));
m=alpha*pi/180;
n=r*10;
[u,v]=pol2cart(m,n);
feather(u,v)
title('          ')
axis([0 20 0 10])

subplot(2,1,2)
t=0:0.5:10;
x=0.05+i;
y=exp(-x*t);
feather(y)
title('                 ')
```

29   1

```matlab
function shili29
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','        29');
[x,y,z]=meshgrid(-2:0.1:2,...
```

```matlab
        -2:0.1:2,...
        -2:0.1:2);
v=x.*exp(-x.^2-y.^2-z.^2);
grid on
for i=-2:0.5:2;
    h1=surf(linspace(-2,2,20),...
            linspace(-2,2,20),...
            zeros(20)+i);
    rotate(h1,[1 -1 1],30)
    dx=get(h1,'xdata');
    dy=get(h1,'ydata');
    dz=get(h1,'zdata');
    delete(h1)
    slice(x,y,z,v,[-2 2],2,-2)
    hold on
    slice(x,y,z,v,dx,dy,dz)
    hold off
    axis tight
    view(-5,10)
    drawnow
end
        30              2

function shili30
h0=figure('toolbar','none',...
```

```matlab
        'position',[200 150 450 250],...
        'name','         30');
[x,y,z]=meshgrid(-2:0.1:2,...
        -2:0.1:2,...
        -2:0.1:2);
v=x.*exp(-x.^2-y.^2-z.^2);
[dx,dy,dz]=cylinder;
slice(x,y,z,v,[-2 2],2,-2)
for i=-2:0.2:2
        h=surface(dx+i,dy,dz);
        rotate(h,[1 0 0],90)
        xp=get(h,'xdata');
        yp=get(h,'ydata');
        zp=get(h,'zdata');
        delete(h)
        hold on
        hs=slice(x,y,z,v,xp,yp,zp);
        axis tight
        xlim([-3 3])
        view(-10,35)
        drawnow
        delete(hs)
        hold off
end
```

```
function shili31
h0=figure('toolbar','none',...
        'position',[200 150 550 250],...
        'name','        31');
subplot(1,2,1)
x=rand(100,1)*16-8;
y=rand(100,1)*16-8;
r=sqrt(x.^2+y.^2)+eps;
z=sin(r)./r;
xlin=linspace(min(x),max(x),33);
ylin=linspace(min(y),max(y),33);
[X,Y]=meshgrid(xlin,ylin);
Z=griddata(x,y,z,X,Y,'cubic');
mesh(X,Y,Z)
axis tight
hold on
plot3(x,y,z,'.','Markersize',20)

subplot(1,2,2)
k=5;
n=2^k-1;
theta=pi*(-n:2:n)/n;
phi=(pi/2)*(-n:2:n)'/n;
X=cos(phi)*cos(theta);
```

```matlab
Y=cos(phi)*sin(theta);

Z=sin(phi)*ones(size(theta));

colormap([0 0 0;1 1 1])

C=hadamard(2^k);

surf(X,Y,Z,C)

axis square
```

32

```matlab
h0=figure('toolbar','none',...

     'position',[198 56 408 468],...

     'name','        32');

h1=axes('parent',h0,...

     'position',[0.15 0.45 0.7 0.5],...

     'visible','on');

t=0:pi/24:4*pi;

y=sin(t);

plot(t,y,'b')

n=length(t);

h=line('color',[0 0.5 0.5],...

     'linestyle','.',...

     'markersize',25,...

     'erasemode','xor');

k1=uicontrol('parent',h0,...

     'style','pushbutton',...

     'position',[80 100 50 30],...
```

```matlab
        'string','         ',...
        'callback',[...
            'i=1;',...
            'k=1;,',...
            'm=0;,',...
            'while 1,',...
            'if k==0,',...
            'break,',...
            'end,',...
            'if k~=0,',...
            'set(h,"xdata",t(i),"ydata",y(i)),',...
            'drawnow;,',...
            'i=i+1;,',...
            'if i>n,',...
            'm=m+1;,',...
            'i=1;,',...
            'end,',...
            'end,',...
            'end']);
k2=uicontrol('parent',h0,...
        'style','pushbutton',...
        'position',[180 100 50 30],...
        'string','         ',...
        'callback',[...
            'k=0;,',...
```

```matlab
                'set(e1,"string",m),',...
                'p=get(h,"xdata");,',...
                'q=get(h,"ydata");,',...
                'set(e2,"string",p);,',...
                'set(e3,"string",q)']);
k3=uicontrol('parent',h0,...
        'style','pushbutton',...
        'position',[280 100 50 30],...
        'string','       ',...
        'callback','close');
e1=uicontrol('parent',h0,...
        'style','edit',...
        'position',[60 30 60 20]);
t1=uicontrol('parent',h0,...
        'style','text',...
        'string','         ',...
        'position',[60 50 60 20]);
e2=uicontrol('parent',h0,...
        'style','edit',...
        'position',[180 30 50 20]);
t2=uicontrol('parent',h0,...
        'style','text',...
        'string','        X        ',...
        'position',[155 50 100 20]);
e3=uicontrol('parent',h0,...
```

```matlab
        'style','edit',...
        'position',[300 30 50 20]);
t3=uicontrol('parent',h0,...
        'style','text',...
        'string','         Y         ',...
        'position',[275 50 100 20]);
        33


h0=figure('toolbar','none',...
        'position',[200 150 450 250],...
        'name','      33');
x=0:0.5:2*pi;
y=sin(x);
h=plot(x,y);
grid on
huidiao=[...
        'if i==1,',...
        'i=0;,',...
        'y=cos(x);,',...
        'delete(h),',...
        'set(hm,"string","         "),',...
        'h=plot(x,y);,',...
        'grid on,',...
        'else if i==0,',...
        'i=1;,',...
```

```matlab
    'y=sin(x);,',...
    'set(hm,"string","              "),',...
    'delete(h),',...
    'h=plot(x,y);,',...
    'grid on,',...
    'end,',...
    'end'];
hm=uicontrol(gcf,'style','pushbutton',...
    'string','              ',...
    'callback',huidiao);
i=1;
set(hm,'position',[250 20 60 20]);
set(gca,'position',[0.2 0.2 0.6 0.6])
title('              ')
hold on
```

        34


```matlab
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','      34');
x=0:0.5:2*pi;
y=sin(x);
plot(x,y)
huidiao1=[...
        'set(h_toggle2,"value",0),',...
```

```matlab
                'grid on,',...
                ];
huidiao2=[...
                'set(h_toggle1,"value",0),',...
                'grid off,',...
                ];
h_toggle1=uicontrol(gcf,'style','togglebutton',...
        'string','grid on',...
        'value',0,...
        'position',[20 45 50 20],...
        'callback',huidiao1);


h_toggle2=uicontrol(gcf,'style','togglebutton',...
        'string','grid off',...
        'value',0,...
        'position',[20 20 50 20],...
        'callback',huidiao2);
set(gca,'position',[0.2 0.2 0.6 0.6])
title('                     ')
        35

h0=figure('toolbar','none',...
        'position',[200 150 350 250],...
        'name','        35');
f='Please input the letter';
```

```
huidiao1=[...
        'g=upper(f);,',...
        'set(h2_edit,"string",g),',...
    ];
huidiao2=[...
        'g=lower(f);,',...
        'set(h2_edit,"string",g),',...
    ];
h1_edit=uicontrol(gcf,'style','edit',...
    'position',[100 200 100 50],...
    'HorizontalAlignment','left',...
    'string','Please input the letter',...
    'callback','f=get(h1_edit,"string");',...
    'background','w',...
    'max',5,...
    'min',1);
h2_edit=uicontrol(gcf,'style','edit',...
    'HorizontalAlignment','left',...
    'position',[100 100 100 50],...
    'background','w',...
    'max',5,...
    'min',1);
h1_button=uicontrol(gcf,'style','pushbutton',...
    'string','              ',...
    'position',[100 45 100 20],...
```

```matlab
        'callback',huidiao1);
h2_button=uicontrol(gcf,'style','pushbutton',...
        'string','                   ',...
        'position',[100 20 100 20],...
        'callback',huidiao2);
        36


h0=figure('toolbar','none',...
        'position',[200 150 450 250],...
        'name','      36');
x=0:0.5:2*pi;
y=sin(x);
h=plot(x,y);
grid on
hm=uicontrol(gcf,'style','popupmenu',...
        'string',...
        'sin(x)|cos(x)|sin(x)+cos(x)|exp(-sin(x))',...
        'position',[250 20 50 20]);
set(hm,'value',1)
huidiao=[...
            'v=get(hm,''value'');,',...
            'switch v,',...
            'case 1,',...
            'delete(h),',...
            'y=sin(x);,',...
```

```matlab
        'h=plot(x,y);,',...
        'grid on,',...
        'case 2,',...
        'delete(h),',...
        'y=cos(x);,',...
        'h=plot(x,y);,',...
          'grid on,',...
        'case 3,',...
        'delete(h),',...
        'y=sin(x)+cos(x);,',...
        'h=plot(x,y);,',...
          'grid on,',...
        'case 4,',...
        'delete(h),',...
        'y=exp(-sin(x));,',...
        'h=plot(x,y);,',...
          'grid on,',...
        'end'];
set(hm,'callback',huidiao)
set(gca,'position',[0.2 0.2 0.6 0.6])
title('                    ')
```

37

```matlab
h0=figure('toolbar','none',...
      'position',[200 150 450 250],...
```

```matlab
    'name','        37');
[x,y]=meshgrid(-8:0.5:8);
r=sqrt(x.^2+y.^2)+eps;
z=sin(r)./r;
h0=mesh(x,y,z);
h1=axes('position',...
        [0.2 0.2 0.5 0.5],...
        'visible','off');
htext=uicontrol(gcf,...
        'units','points',...
        'position',[20 30 45 15],...
        'string','brightness',...
        'style','text');
hslider=uicontrol(gcf,...
        'units','points',...
        'position',[10 10 300 15],...
        'min',-1,...
        'max',1,...
        'style','slider',...
        'callback',...
        'brighten(get(hslider,"value"))');
        38

h0=figure('toolbar','none',...
        'position',[200 150 450 250],...
```

```matlab
    'name','      38');
[x,y]=meshgrid(-8:0.5:8);
r=sqrt(x.^2+y.^2)+eps;
z=sin(r)./r;
h0=mesh(x,y,z);
hlist=uicontrol(gcf,'style','listbox',...
    'string','default|spring|summer|autumn|winter',...
    'max',5,...
    'min',1,...
    'position',[20 20 80 100],...
    'callback',[...
        'k=get(hlist,"value");,',...
        'switch k,',...
        'case 1,',...
        'colormap default,',...
        'case 2,',...
        'colormap spring,',...
        'case 3,',...
        'colormap summer,',...
        'case 4,',...
        'colormap autumn,',...
        'case 5,',...
        'colormap winter,',...
        'end']);
    39
```

```matlab
h0=figure('toolbar','none',...
      'position',[200 150 450 250],...
      'name','     39');
x=0:0.5:2*pi;
y=cos(x);
h=plot(x,y);
grid on
set(gcf,'toolbar','none')
hm=uimenu('label','example');
huidiao1=[...
          'set(hm_gridon,"checked","on"),',...
          'set(hm_gridoff,"checked","off"),',...
          'grid on'];
huidiao2=[...
          'set(hm_gridoff,"checked","on"),',...
          'set(hm_gridon,"checked","off"),',...
          'grid off'];
hm_gridon=uimenu(hm,'label','grid on',...
      'checked','on',...
      'callback',huidiao1);
hm_gridoff=uimenu(hm,'label','grid off',...
      'checked','off',...
      'callback',huidiao2);
      40   UIMENU
```

```
h0=figure('toolbar','none',...
        'position',[200 150 450 250],...
        'name','          40');
h1=uimenu(gcf,'label','        ');
h11=uimenu(h1,'label','           ',...
        'callback',[...
                'set(h31,"checked","on"),',...
                'set(h32,"checked","off"),',...
                '[x,y,z]=peaks;,',...
                'contour3(x,y,z,30)']);
h12=uimenu(h1,'label','             ',...
        'callback',[...
                'set(h31,"checked","on"),',...
                'set(h32,"checked","off"),',...
                'mesh(peaks);,',...
                'axis tight']);
h13=uimenu(h1,'label','Sinc      ',...
        'callback',[...
                'set(h31,"checked","on"),',...
                'set(h32,"checked","off"),',...
                '[x,y]=meshgrid(-8:0.5:8);,',...
                'r=sqrt(x.^2+y.^2)+eps;,',...
                'z=sin(r)./r;,',...
                'mesh(x,y,z)']);
```

```matlab
h2=uimenu(gcf,'label','        ');
hl2(1)=uimenu(h2,'label','Default',...
     'checked','on',...
     'callback',...
     [...
          'set(hl2,''checked'',''off''),',...
          'set(hl2(1),''checked'',''on''),',...
          'colormap(''default'')']);
hl2(2)=uimenu(h2,'label','spring',...
     'callback',...
     [...
          'set(hl2,''checked'',''off''),',...
          'set(hl2(2),''checked'',''on''),',...
          'colormap(spring)']);
hl2(3)=uimenu(h2,'label','Summer',...
     'callback',...
     [...
          'set(hl2,''checked'',''off''),',...
          'set(hl2(3),''checked'',''on''),',...
          'colormap(summer)']);
hl2(4)=uimenu(h2,'label','Autumn',...
     'callback',...
     [...
          'set(hl2,''checked'',''off''),',...
          'set(hl2(4),''checked'',''on''),',...
```

```
            'colormap(autumn)']);
hl2(5)=uimenu(h2,'label','Winter',...
        'callback',...
        [...
                'set(hl2,"checked","off"),',...
                'set(hl2(5),"checked","on"),',...
                'colormap(winter)']);
h3=uimenu(gcf,'label','          ');
h31=uimenu(h3,'label','Axis on',...
        'callback',...
        [...
                'axis on,',...
                'set(h31,"checked","on"),',...
                'set(h32,"checked","off")']);
h32=uimenu(h3,'label','Axis off',...
        'callback',...
        [...
                'axis off,',...
                'set(h32,"checked","on"),',...
                'set(h31,"checked","off")']);
        41

h=figure('toolbar','none',...
        'position',[200 150 450 250],...
        'name','     41');
```

```matlab
h1=uicontrol(gcf,'style','edit',...
       'position',[80 200 100 20],...
       'HorizontalAlignment','right',...
       'callback',['m=get(h1,"string");,',...
            'a=str2num(m);']);
h2=uicontrol(gcf,'style','edit',...
       'HorizontalAlignment','right',...
       'position',[80 150 100 20],...
       'callback',['n=get(h2,"string");,',...
            'b=str2num(n);']);
h3=uicontrol(gcf,'style','text',...
       'string','           ',...
       'position',[80 230 100 20]);
h4=uicontrol(gcf,'style','edit',...
       'position',[80 50 100 20]);
h5=uicontrol(gcf,'style','pushbutton',...
      'position',[80 100 100 20],...
      'string','=',...
      'callback',[...
            'if b==0,',...
            'h7=errordlg("          0   ","error","on");,',...
            'else,',...
            'k=a/b;,',...
            'c=num2str(k);,',...
            'set(h4,"string",c),',...
```

```matlab
        'end']);
h8=uicontrol(gcf,'style','text',...
        'string','        ',...
        'position',[80 175 100 20]);
h9=uicontrol(gcf,'style','text',...
        'string','    ',...
        'position',[80 75 100 20]);
        42


h0=figure('toolbar','none',...
        'position',[200 150 450 250],...
        'name','        42');
x=0:0.5:2*pi;
y=sin(x);
plot(x,y)
grid on
set(gcf,'toolbar','none')
g=set(gca,'position',[0.2 0.2 0.6 0.6]);
huidiao1=[...
            'grid on,',...
            'set(box_on,''value'',1),',...
            'set(box_off,''value'',0),'];
huidiao2=[...
            'grid off,',...
            'set(box_off,''value'',1),',...
```

```matlab
                'set(box_on,"value",0),'];
box_on=uicontrol(gcf,'style','radio',...
        'position',[5 50 50 20],...
        'string','grid on',...
        'value',1,...
        'callback',huidiao1);
box_off=uicontrol(gcf,'style','radio',...
        'position',[5 20 50 20],...
        'string','grid off',...
        'value',0,...
        'callback',huidiao2);
title('                    ')
        43


h0=figure('toolbar','none',...
        'position',[198 56 450 468],...
        'name','      43');
h1=axes('parent',h0,...
        'position',[0.15 0.45 0.7 0.5],...
        'visible','off');
sphere
h=findobj('type','surface');
shading interp
axis equal
l=light('position',[0 -2 1]);
```

```
k(1)=get(h,'specularstrength');

k(2)=get(h,'diffusestrength');

k(3)=get(h,'specularexponent');

k(4)=get(h,'specularcolorreflectance');

u1=uimenu('parent',h0,...

        'label','                ',...

        'tag','u1',...

        'backgroundcolor',[0.75 0.75 0.75]);

u11=uimenu('parent',u1,...

        'label','gouraud',...

        'tag','u11',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'callback',[...

                'set(u11,"checked","on");,',...

                'set(u12,"checked","off");,',...

                'set(h,"facelighting","gouraud")']);

u12=uimenu('parent',u1,...

        'label','phong',...

        'tag','u12',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'callback',[...

                'set(u11,"checked","off");,',...

                'set(u12,"checked","on");,',...

                'set(h,"facelighting","gouraud")']);

u2=uimenu('parent',h0,...
```

```matlab
        'label','               ',...
        'tag','u2',...
        'backgroundcolor',[0.75 0.75 0.75]);
u21=uimenu('parent',u2,...
        'label','reverselit',...
        'tag','u21',...
        'checked','on',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'callback',[...
                'set(u21,"checked","on");,',...
                'set(u22,"checked","off");,',...
                'set(h,"backfacelighting","reverselit")']);
u22=uimenu('parent',u2,...
        'label','reverselit',...
        'tag','u22',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'callback',[...
                'set(u21,"checked","off");,',...
                'set(u22,"checked","on");,',...
                'set(h,"backfacelighting","reverselit")']);
s1=uicontrol('parent',h0,...
        'units','points',...
        'style','slider',...
        'tag','s1',...
        'min',0,...
```

```
        'max',1,...

        'value',k(1),...

        'position',[20 80 100 15],...

        'callback',[...

                's1value=get(s1,"value");,',...

                'set(h,"specularstrength",s1value)']);
t1=uicontrol('parent',h0,...

        'units','points',...

        'style','text',...

        'tag','t1',...

        'string','                    ',...

        'position',[20 97 100 15]);
s2=uicontrol('parent',h0,...

        'units','points',...

        'style','slider',...

        'tag','s2',...

        'min',0,...

        'max',1,...

        'value',k(2),...

        'position',[20 30 100 15],...

        'callback',[...

                's2value=get(s2,"value");,',...

                'set(h,"diffusestrength",s2value)']);
t2=uicontrol('parent',h0,...

        'units','points',...
```

```
        'style','text',...

        'tag','t2',...

        'string','                    ',...

        'position',[20 47 100 15]);
s3=uicontrol('parent',h0,...

        'units','points',...

        'style','slider',...

        'tag','s3',...

        'min',0.1,...

        'max',1,...

        'value',k(3)/20,...

        'position',[220 80 100 15],...

        'callback',[...

                's3value=get(s3,"value")+eps;,',...

                'set(h,"specularexponent",20*s3value)']);
t3=uicontrol('parent',h0,...

        'units','points',...

        'style','text',...

        'tag','t3',...

        'string','              ',...

        'position',[220 97 100 15]);
s4=uicontrol('parent',h0,...

        'units','points',...

        'style','slider',...

        'tag','s4',...
```

```matlab
        'min',0,...

        'max',1,...

        'value',k(4),...

        'position',[220 30 100 15],...

        'callback',[...

                's4value=get(s4,"value");,',...

                'set(h,"specularcolorreflectance",s4value)']);
t4=uicontrol('parent',h0,...

        'units','points',...

        'style','text',...

        'tag','t1',...

        'string','                     ',...

        'position',[220 47 100 15]);
b1=uicontrol('parent',h0,...

        'units','points',...

        'style','pushbutton',...

        'tag','b1',...

        'string','        ',...

        'position',[145 45 50 30],...

        'callback','close');

        44


h0=figure('toolbar','none',...

        'position',[198 56 408 468],...

        'name','      44');
```

```matlab
h1=axes('parent',h0,...
    'position',[0.15 0.45 0.7 0.5],...
    'visible','on');
e1=uicontrol('parent',h0,...
    'style','edit',...
    'string',1,...
    'position',[50 120 50 20]);
t1=uicontrol('parent',h0,...
    'style','text',...
    'string','X          ',...
    'position',[35 150 80 20]);
e2=uicontrol('parent',h0,...
    'style','edit',...
    'string',5,...
    'position',[50 60 50 20]);
t2=uicontrol('parent',h0,...
    'style','text',...
    'string','X           ',...
    'position',[35 90 80 20]);
e3=uicontrol('parent',h0,...
    'style','edit',...
    'string',1,...
    'position',[150 120 50 20]);
t3=uicontrol('parent',h0,...
    'style','text',...
```

```matlab
        'string','Y              ',...
        'position',[135 150 80 20]);
e4=uicontrol('parent',h0,...
        'style','edit',...
        'string',5,...
        'position',[150 60 50 20]);
t4=uicontrol('parent',h0,...
        'style','text',...
        'string','Y            ',...
        'position',[135 90 80 20]);
e5=uicontrol('parent',h0,...
        'style','edit',...
        'string',20,...
        'position',[250 120 50 20]);
t5=uicontrol('parent',h0,...
        'style','text',...
        'horizontalalignment','left',...
        'string','        ',...
        'position',[250 150 30 20]);
b1=uicontrol('parent',h0,...
        'style','pushbutton',...
        'string','        ',...
        'position',[250 60 60 40],...
        'callback',[...
                'a=str2num(get(e1,"string"));,',...
```

```
'b=str2num(get(e2,"string"));,',...
'c=str2num(get(e3,"string"));,',...
'd=str2num(get(e4,"string"));,',...
'n=str2num(get(e5,"string"));,',...
'xgrid=linspace(-abs(a),abs(a),n);,',...
'ygrid=linspace(-abs(b),abs(b),n);,',...
'[x,y]=meshgrid(xgrid,ygrid);,',...
'z=c*sqrt(d-y.*y/b/b-x.*x/a/a);,',...
'u=1;,',...
'z1=real(z);,',...
'for k=2:n-1,',...
'for j=2:n-1,',...
'if imag(z(k,j))~=0,',...
'z1(k,j)=0;,',...
'end,',...
'if all(imag(z([k-1:k+1],[j-1:j+1])))~=0,',...
'z1(k,j)=nan;,',...
'end,',...
'end,',...
'end,',...
'surf(x,y,z1),',...
'hold on,',...
'if u==1,',...
'z2=-z1;,',...
'surf(x,y,z2),',...
```

```
            'axis([-abs(a),abs(a),-abs(b),abs(b),-abs(c),abs(c)]);,',...

            'end,',...

            'xlabel("x");,',...

            'ylabel("y");,',...

            'zlabel("z");,',...

            'hold off']);
b2=uicontrol('parent',h0,...

      'style','pushbutton',...

      'string','      ',...

      'position',[150 10 60 20],...

      'callback','close');

      45


h1=uicontrol(gcf,'style','radio',...

      'string','    ',...

      'value',1,...

      'position',[20 150 40 20],...

      'callback',[...

            'k=1;,',...

            'set(h1,"value",1),',...

            'set(h2,"value",0),',...

            'set(h3,"value",0)']);
h2=uicontrol(gcf,'style','radio',...

      'string','    ',...

      'position',[20 110 40 20],...
```

```matlab
        'callback',[...
                'k=2;,',...
                'set(h2,"value",1),',...
                'set(h1,"value",0),',...
                'set(h3,"value",0)']);
h3=uicontrol(gcf,'style','radio',...
        'string','    ',...
        'position',[20 70 40 20],...
        'callback',[...
                'k=3;,',...
                'set(h3,"value",1),',...
                'set(h2,"value",0),',...
                'set(h1,"value",0)']);
e1=uicontrol(gcf,'style','edit',...
        'position',[80 150 100 20]);
e2=uicontrol(gcf,'style','edit',...
        'position',[80 110 100 20]);
e3=uicontrol(gcf,'style','edit',...
        'position',[80 70 100 20]);
b1=uicontrol(gcf,'style','pushbutton',...
        'string','      ',...
        'position',[200 150 80 30],...
        'callback',[...
                'x=str2num(get(e1,"string"));,',...
                'y=str2num(get(e2,"string"));,',...
```

```
            'switch k,',...
            'case 1,',...
            'z=x+y;,',...
            'case 2,',...
            'z=x-y;,',...
            'case 3,',...
            'z=x*y;,',...
            'end,',...
            'set(e3,"string",num2str(z))']);
b2=uicontrol(gcf,'style','pushbutton',...
      'string','        ',...
      'position',[200 100 80 30],...
      'callback','close');
      46


h0=figure('toolbar','none',...
      'position',[198 56 408 468],...
      'name','my second gui');
h1=axes('parent',h0,...
      'position',[0.15 0.45 0.7 0.5],...
      'visible','on');
x=0:0.1:2*pi;
k=plot(x,sin(x));
xlabel('        X');
ylabel('        Y');
```

```
title('                  ');
p1=uicontrol('parent',h0,...
        'style','pushbutton',...
        'backgroundcolor','r',...
        'position',[60 100 50 30],...
        'callback','set(k,"color","r")');
p2=uicontrol('parent',h0,...
        'style','pushbutton',...
        'backgroundcolor','g',...
        'position',[170 100 50 30],...
        'callback','set(k,"color","g")');
p3=uicontrol('parent',h0,...
        'style','pushbutton',...
        'backgroundcolor','b',...
        'position',[280 100 50 30],...
        'callback','set(k,"color","b")');
p4=uicontrol('parent',h0,...
        'style','pushbutton',...
        'backgroundcolor',[1 1 1],...
        'fontsize',20,...
        'fontweight','demi',...
        'string','        ',...
        'position',[150 30 80 60],...
        'callback','close');
t1=uicontrol('parent',h0,...
```

```matlab
        'style','text',...

        'string','        ',...

        'fontsize',12,...

        'fontweight','demi',...

        'position',[60 120 50 20]);
t2=uicontrol('parent',h0,...

        'style','text',...

        'string','        ',...

        'fontsize',12,...

        'fontweight','demi',...

        'position',[170 120 50 20]);
t3=uicontrol('parent',h0,...

        'style','text',...

        'string','        ',...

        'fontsize',12,...

        'fontweight','demi',...

        'position',[280 120 50 20]);
```

47

```matlab
h0=figure('toolbar','none',...

        'position',[198 56 408 468],...

        'name','my second gui');
h1=axes('parent',h0,...
```

```
        'position',[0.15 0.45 0.7 0.5],...

        'visible','on');
x=0:0.1:2*pi;
k=plot(x,sin(x),'*');
xlabel('          X');
ylabel('          Y');
title('                    ');
p1=uicontrol('parent',h0,...

        'style','pushbutton',...

        'string','+',...

        'fontsize',20,...

        'foregroundcolor',[1 1 1],...

        'backgroundcolor',[0 0 0],...

        'position',[60 100 50 20],...

        'callback','set(k,"marker","+")');
p2=uicontrol('parent',h0,...

        'style','pushbutton',...

        'string','o',...

        'fontsize',20,...

        'foregroundcolor',[1 1 1],...

        'backgroundcolor',[0 0 0],...

        'position',[170 100 50 20],...

        'callback','set(k,"marker","o")');
p3=uicontrol('parent',h0,...

        'style','pushbutton',...
```

```matlab
        'string','x',...
        'fontsize',20,...
        'foregroundcolor',[1 1 1],...
        'backgroundcolor',[0 0 0],...
        'position',[280 100 50 20],...
        'callback','set(k,"marker","x")');
p4=uicontrol('parent',h0,...
        'style','pushbutton',...
        'backgroundcolor',[1 1 1],...
        'fontsize',20,...
        'fontweight','demi',...
        'string','       ',...
        'position',[150 30 80 60],...
        'callback','close');
t1=uicontrol('parent',h0,...
        'style','text',...
        'string','      ',...
        'fontsize',12,...
        'fontweight','demi',...
        'position',[60 120 50 20]);
t2=uicontrol('parent',h0,...
        'style','text',...
        'string','      ',...
        'fontsize',12,...
        'fontweight','demi',...
```

```matlab
        'position',[170 120 50 20]);
t3=uicontrol('parent',h0,...
        'style','text',...
        'string','        ',...
        'fontsize',12,...
        'fontweight','demi',...
        'position',[280 120 50 20]);
        48


h0=figure('toolbar','none',...
        'position',[198 56 408 468],...
        'name','        48');
h1=axes('parent',h0,...
        'position',[0.15 0.45 0.7 0.5],...
        'visible','on');
x=0:0.1:2*pi;
k=plot(x,sin(x));
xlabel('        X');
ylabel('        Y');
title('                ');
p1=uicontrol('parent',h0,...
        'style','pushbutton',...
        'string','-.',...
        'fontsize',20,...
        'foregroundcolor',[1 1 1],...
```

```matlab
            'backgroundcolor',[0 0 0],...

            'position',[60 100 50 20],...

            'callback','set(k,"linestyle","-.")');
p2=uicontrol('parent',h0,...

            'style','pushbutton',...

            'string',':',...

            'fontsize',20,...

            'foregroundcolor',[1 1 1],...

            'backgroundcolor',[0 0 0],...

            'position',[170 100 50 20],...

            'callback','set(k,"linestyle",":")');
p3=uicontrol('parent',h0,...

            'style','pushbutton',...

            'string','-',...

            'fontsize',20,...

            'foregroundcolor',[1 1 1],...

            'backgroundcolor',[0 0 0],...

            'position',[280 100 50 20],...

            'callback','set(k,"linestyle","-")');
p4=uicontrol('parent',h0,...

            'style','pushbutton',...

            'backgroundcolor',[1 1 1],...

            'fontsize',20,...

            'fontweight','demi',...

            'string','        ',...
```

```matlab
        'position',[150 30 80 60],...
        'callback','close');
t1=uicontrol('parent',h0,...
        'style','text',...
        'string','           ',...
        'fontsize',12,...
        'fontweight','demi',...
        'position',[60 120 50 20]);
t2=uicontrol('parent',h0,...
        'style','text',...
        'string','        ',...
        'fontsize',12,...
        'fontweight','demi',...
        'position',[170 120 50 20]);
t3=uicontrol('parent',h0,...
        'style','text',...
        'string','        ',...
        'fontsize',12,...
        'fontweight','demi',...
        'position',[280 120 50 20]);
        49

h0=figure('toolbar','none',...
        'position',[198 56 408 468],...
        'name','         49');
```

```matlab
h1=axes('parent',h0,...
        'position',[0.15 0.45 0.7 0.5],...
        'visible','on');
x=0:0.1:2*pi;
y=sin(x);
plot(x,y);
xlabel('X');
ylabel('Y');
title('                      ');
h=get(gca,'xlim');
k=get(gca,'ylim');
e1=uicontrol('parent',h0,...
        'style','edit',...
        'string',eval(num2str(h(1))),...
        'horizontalalignment','right',...
        'position',[80 120 100 20]);
t1=uicontrol('parent',h0,...
        'style','text',...
        'string','X           ',...
        'position',[100 145 80 20]);
e2=uicontrol('parent',h0,...
        'style','edit',...
        'string',eval(num2str(h(2))),...
        'horizontalalignment','right',...
        'position',[80 60 100 20]);
```

```matlab
t2=uicontrol('parent',h0,...
      'style','text',...
      'string','X            ',...
      'position',[100 85 80 20]);
e3=uicontrol('parent',h0,...
      'style','edit',...
      'string',eval(num2str(k(1))),...
      'horizontalalignment','right',...
      'position',[250 120 100 20]);
t3=uicontrol('parent',h0,...
      'style','text',...
      'string','Y            ',...
      'position',[270 145 80 20]);
e4=uicontrol('parent',h0,...
      'style','edit',...
      'string',eval(num2str(k(2))),...
      'horizontalalignment','right',...
      'position',[250 60 100 20]);
t4=uicontrol('parent',h0,...
      'style','text',...
      'string','X            ',...
      'position',[270 85 80 20]);
p1=uicontrol('parent',h0,...
      'style','pushbutton',...
      'string','        ',...
```

```
        'position',[105 10 50 30],...

        'callback',[...

            'a=str2num(get(e1,"string"));,',...

            'b=str2num(get(e2,"string"));,',...

            'c=str2num(get(e3,"string"));,',...

            'd=str2num(get(e4,"string"));,',...

            'axis([a b c d]),',...

            'drawnow']);

    p2=uicontrol('parent',h0,...

        'style','pushbutton',...

        'string','        ',...

        'position',[275 10 50 30],...

        'callback','close');

        50



    h0=figure('toolbar','none',...

        'position',[198 56 408 468],...

        'name','      50');

    h1=axes('parent',h0,...

        'position',[0.29 0.45 0.7 0.5],...

        'visible','on');

    f=uicontrol('parent',h0,...

        'style','frame',...

        'position',[5 50 90 400]);

    p1=uicontrol('parent',h0,...
```

```matlab
        'style','pushbutton',...
        'position',[150 100 60 40],...
        'string','       ',...
        'callback',[...
              'm=str2num(get(e1,"string"));,',...
              'n=str2num(get(e2,"string"));,',...
              'a=get(l1,"value");,',...
              'x=m:0.1:n;',...
              'if a==1,',...
              'plot(x,sin(x)),',...
              'end,',...
              'if a==2,',...
              'plot(x,cos(x)),',...
              'end,',...
              'if a==3,',...
              'plot(x,exp(x)),',...
              'end']);
p2=uicontrol('parent',h0,...
        'style','pushbutton',...
        'position',[270 100 60 40],...
        'string','       ',...
        'callback','close');
l1=uicontrol('parent',h0,...
        'style','listbox',...
        'position',[10 300 80 80],...
```

```matlab
        'string','sin(x)|cos(x)|exp(x)',...
        'value',1,...
        'max',0.5,...
        'min',0);
f2=uicontrol('parent',h0,...
        'style','text',...
        'string','              ',...
        'fontsize',10,...
        'position',[10 380 80 20]);
r1=uicontrol('style','radio',...
        'string','grid on',...
        'value',0,...
        'position',[10 100 60 20],...
        'callback',[...
                'grid on,',...
                'set(r1,"value",1);,',...
                'set(r2,"value",0)']);
r2=uicontrol('style','radio',...
        'string','grid off',...
        'position',[10 80 60 20],...
        'value',1,...
        'callback',[...
                'grid off,',...
                'set(r2,"value",1);,',...
                'set(r1,"value",0)']);
```

```matlab
e1=uicontrol('parent',h0,...
        'style','edit',...
        'string',0,...
        'position',[20 210 60 20],...
        'horizontalalignment','right');
e2=uicontrol('parent',h0,...
        'style','edit',...
        'string','3',...
        'position',[20 150 60 20],...
        'horizontalalignment','right');
t1=uicontrol('parent',h0,...
        'style','text',...
        'string','X from',...
        'fontsize',10,...
        'position',[20 230 60 20],...
        'horizontalalignment','center');
t2=uicontrol('parent',h0,...
        'style','text',...
        'string','To',...
        'fontsize',10,...
        'position',[20 170 60 20],...
        'horizontalalignment','center');
```

51

```matlab
h0=figure('toolbar','none',...
```

```
    'position',[198 56 408 468],...

    'name','          51');

h1=axes('parent',h0,...

    'position',[0.15 0.45 0.7 0.5],...

    'visible','off');

[x,y]=meshgrid(-8:0.5:8);

r=sqrt(x.^2+y.^2)+eps;

z=sin(r)./r;

f1=surf(x,y,z);

shading interp

view(-50,30)

camlight left

colormap([1 0 0])

fv=get(h0,'colormap');

ifv=fv;

p1=uicontrol('parent',h0,...

    'style','pushbutton',...

    'string','         ',...

    'position',[280 120 50 30],...

    'callback',[...

        'set(s1,"value",ifv(1));,',...

        'set(s2,"value",ifv(2));,',...

        'set(s3,"value",ifv(3));,',...

        'set(h0,"colormap",ifv)']);

p2=uicontrol('parent',h0,...
```

```
        'style','pushbutton',...

        'string','        ',...

        'position',[280 60 50 30],...

        'callback','close');
s1=uicontrol('parent',h0,...

        'style','slider',...

        'min',0,...

        'max',1,...

        'value',fv(1),...

        'position',[20 150 200 20],...

        'callback',[...

                's1k=get(s1,"value");,',...

                'fv(1)=s1k;,',...

                'set(h0,"colormap",fv);']);
t1=uicontrol('parent',h0,...

        'style','text',...

        'string','              ',...

        'position',[20 170 100 20]);
s2=uicontrol('parent',h0,...

        'style','slider',...

        'min',0,...

        'max',1,...

        'value',fv(2),...

        'position',[20 100 200 20],...

        'callback',[...
```

```matlab
                's2k=get(s2,"value");,',...
                'fv(2)=s2k;,',...
                'set(h0,"colormap",fv);']);
t2=uicontrol('parent',h0,...
        'style','text',...
        'string','                    ',...
        'position',[20 120 100 20]);
s3=uicontrol('parent',h0,...
        'style','slider',...
        'min',0,...
        'max',1,...
        'value',fv(3),...
        'position',[20 50 200 20],...
        'callback',[...
                's3k=get(s3,"value");,',...
                'fv(3)=s3k;,',...
                'set(h0,"colormap",fv);']);
t1=uicontrol('parent',h0,...
        'style','text',...
        'string','                    ',...
        'position',[20 70 100 20]);
        52


h0=figure('toolbar','none',...
        'position',[198 56 408 468],...
```

```matlab
        'name','        52');
h1=axes('parent',h0,...
        'position',[0.15 0.5 0.7 0.5],...
        'visible','off');
[x,y]=meshgrid(-8:0.5:8);
r=sqrt(x.^2+y.^2)+eps;
z=sin(r)./r;
fh=surf(x,y,z);
shading interp
view([-60 30])
fv=get(h1,'view');
fv2=fv;
camlight left
sh1=uicontrol('parent',h0,...
        'style','slider',...
        'max',1,...
        'min',-1,...
        'value',fv(1)/180,...
        'position',[20 150 200 20],...
        'callback',[...
                'fv(1)=90*get(sh1,"value");,',...
                'set(h1,"view",[fv(1) fv(2)]),',...
                'set(ed1,"string",fv(1))']);
text1=uicontrol('parent',h0,...
        'style','text',...
```

```matlab
    'string','                        ',...
    'position',[20 170 200 20]);
sh2=uicontrol('parent',h0,...
    'style','slider',...
    'max',1,...
    'min',-1,...
    'value',fv(2)/180,...
    'position',[20 90 200 20],...
    'callback',[...
        'fv(2)=90*get(sh2,"value");,',...
        'set(h1,"view",[fv(1) fv(2)]),',...
        'set(ed2,"string",fv(2))']);
text2=uicontrol('parent',h0,...
    'style','text',...
    'string','                    ',...
    'position',[20 110 200 20]);
ed1=uicontrol('parent',h0,...
    'style','edit',...
    'string',fv(1),...
    'position',[30 30 50 20]);
text3=uicontrol('parent',h0,...
    'style','text',...
    'string','                  ',...
    'position',[20 50 80 20]);
ed2=uicontrol('parent',h0,...
```

```matlab
        'style','edit',...
        'string',fv(2),...
        'position',[150 30 50 20]);
text4=uicontrol('parent',h0,...
        'style','text',...
        'string','             ',...
        'position',[135 50 80 20]);
pf1=uicontrol('parent',h0,...
        'style','pushbutton',...
        'string','      ',...
        'position',[280 120 50 30],...
        'callback',[...
                'set(h1,"view",fv2),',...
                'set(sh1,"value",fv2(1)/180),',...
                'set(sh2,"value",fv2(2)/180),',...
                'set(ed1,"string",fv2(1)),',...
                'set(ed2,"string",fv2(2))']);
pf2=uicontrol('parent',h0,...
        'style','pushbutton',...
        'string','      ',...
        'position',[280 60 50 30],...
        'callback','close');
```

53

```matlab
h0=figure('toolbar','none',...
```

```matlab
        'position',[198 56 408 468],...
        'name','          53');
h1=axes('parent',h0,...
        'position',[0.15 0.5 0.7 0.5],...
        'visible','off');
[x,y]=meshgrid(-8:0.5:8);
r=sqrt(x.^2+y.^2)+eps;
z=sin(r)./r;
fh=surf(x,y,z);
shading interp
view([-60 30])
camlight left
lightk=light('position',[0 -2 1]);
button1=uicontrol('parent',h0,...
        'style','pushbutton',...
        'string','          ',...
        'position',[80 60 70 30],...
        'callback',[...
                'an1=inputdlg("          X          ");,',...
                'k1=str2num(an1{1});,',...
                'an2=inputdlg("          Y          ");,',...
                'k2=str2num(an2{1});,',...
                'an3=inputdlg("          Z          ");,',...
                'k3=str2num(an3{1});,',...
                'set(lightk,"position",[k1 k2 k3]);,',...
```

```
            'set(edit1,"string",["[",num2str(k1),"                    ",num2str(k2),"
",num2str(k3),"]"]);']);
button2=uicontrol('parent',h0,...
      'style','pushbutton',...
      'string','        ',...
      'position',[250 60 70 30],...
      'callback','close');
edit1=uicontrol('parent',h0,...
      'style','edit',...
      'max',2,...
      'min',0,...
      'fontsize',15,...
      'backgroundcolor',[1 1 1],...
      'string','[0 -2 1]',...
      'position',[80 110 220 30]);
text1=uicontrol('parent',h0,...
      'style','text',...
      'backgroundcolor',[0.75 0.75 0.75],...
      'fontsize',15,...
      'string','                ',...
      'position',[80 140 220 30]);
      54


h0=figure('toolbar','none',...
      'position',[200 50 300 350],...
```

```
        'name','      54');
h1=axes('parent',h0,...
        'position',[0.2 0.4 0.6 0.6],...
        'visible','off');
ezsurf('sin(sqrt(x.^2+y.^2))/sqrt(x.^2+y.^2)',[-6*pi,6*pi])
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
        'string','      ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[40 50 50 20],...
        'callback',[...
                'view(0,75);,',...
                'shading interp;,',...
                'lightangle(-45,30);,',...
                'k=findobj(gca,"type","surface");,'...
                'set(k,"facelighting","phong");,',...
                'set(k,"ambientstrength",0.3);,',...
                'set(k,"diffusestrength",0.8);,',...
                'set(k,"specularstrength",0.9);,',...
                'set(k,"specularexponent",25);,',...
                'set(k,"backfacelighting","unlit")']);
b2=uicontrol('parent',h0,...
        'units','points',...
```

```matlab
    'tag','b2',...
    'style','pushbutton',...
    'string','        ',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[120 50 50 20],...
    'callback','close');
    55


h0=figure('toolbar','none',...
    'position',[198 56 408 468],...
    'name','      55');
h1=axes('parent',h0,...
    'position',[0.15 0.5 0.7 0.5],...
    'visible','off');
huidiao=[...
        'yearnum=str2num(get(edit1,''string''));,',...
        'monthnum=str2num(get(edit2,''string''));,',...
        'daynum=str2num(get(edit3,''string''));,',...
        'monthday=[0 31 28 31 30 31 30 31 31 30 31 30 31];,',...
        'dyear=yearnum-2000;,',...
        'beishu=fix(dyear/4);,',...
        'yushu=rem(yearnum,4);,',...
        'if yushu==0,',...
        'monthday(3)=29;,',...
        'end,',...
```

```
'mday=0;,',...
'for i=1:monthnum,',...
'mday=monthday(i)+mday;,',...
'end,',...
'yearday=mday+daynum-1;,',...
'noweek=fix(yearday/7);,',...
'set(edit5,"string",["    ",num2str(noweek),"    "]);,',...
'if dyear>0,',...
'if yushu==0,',...
'beishu=beishu-1;,',...
'end,',...
'dday=yearday+365*dyear+beishu+1;,',...
'end,',...
'if dyear<=0,',...
'dday=365*dyear+yearday+beishu;,',...
'end,',...
'mweek=rem(dday,7)+7;,',...
'if mweek==8,',...
'set(edit4,"string","Sunday");,',...
'end,',...
'if mweek==9,',...
'set(edit4,"string","Monday");,',...
'end,',...
'if mweek==10,',...
'set(edit4,"string","Tuesday");,',...
```

```
'end,',...
'if mweek==11,',...
'set(edit4,"string","Wednesday");,',...
'end,',...
'if mweek==12,',...
'set(edit4,"string","Thursday");,',...
'end,',...
'if mweek==13,',...
'set(edit4,"string","Friday");,',...
'end,',...
'if mweek==7,',...
'set(edit4,"string","Saturday");,',...
'end,',...
'if mweek==6,',...
'set(edit4,"string","Friday");,',...
'end,',...
'if mweek==5,',...
'set(edit4,"string","Thursday");,',...
'end,',...
'if mweek==4,',...
'set(edit4,"string","Wednesday");,',...
'end,',...
'if mweek==3,',...
'set(edit4,"string","Tuesday");,',...
'end,',...
```

```
        'if mweek==2,',...

        'set(edit4,"string","Monday");,',...

        'end,',...

        'if mweek==1,',...

        'set(edit4,"string","Sunday");,',...

        'end'];
edit1=uicontrol('parent',h0,...

    'style','edit',...

    'horizontalalignment','right',...

    'position',[40 300 50 20]);
text1=uicontrol('parent',h0,...

    'style','text',...

    'string','    ',...

    'horizontalalignment','left',...

    'position',[90 300 50 20]);
edit2=uicontrol('parent',h0,...

    'style','edit',...

    'horizontalalignment','right',...

    'position',[160 300 50 20]);
text2=uicontrol('parent',h0,...

    'style','text',...

    'string','    ',...

    'horizontalalignment','left',...

    'position',[210 300 50 20]);
edit3=uicontrol('parent',h0,...
```

```
        'style','edit',...

        'horizontalalignment','right',...

        'position',[280 300 50 20]);
text3=uicontrol('parent',h0,...

        'style','text',...

        'string','    ',...

        'horizontalalignment','left',...

        'position',[330 300 50 20]);
edit4=uicontrol('parent',h0,...

        'style','edit',...

        'horizontalalignment','left',...

        'position',[210 200 120 20]);
text4=uicontrol('parent',h0,...

        'style','text',...

        'string','              ',...

        'horizontalalignment','right',...

        'position',[110 200 100 20]);
edit5=uicontrol('parent',h0,...

        'style','edit',...

        'horizontalalignment','left',...

        'position',[210 100 120 20]);
text1=uicontrol('parent',h0,...

        'style','text',...

        'string','          ',...

        'horizontalalignment','left',...
```

```matlab
        'position',[160 100 50 20]);
button1=uicontrol('parent',h0,...
        'style','pushbutton',...
        'position',[80 40 80 30],...
        'string','       ',...
        'callback',huidiao);
button2=uicontrol('parent',h0,...
        'style','pushbutton',...
        'position',[220 40 80 30],...
        'string','       ',...
        'callback','close');
        56                  1


h0=figure('toolbar','none',...
        'position',[198 56 450 468],...
        'name','       56');
h1=axes('parent',h0,...
        'position',[0.3 0.45 0.5 0.5],...
        'visible','off');
l1=uimenu(gcf,'label','Draw figure',...
        'tag','l1');
huidiao=[...
                'if get(r1,''value'')==1,',...
                'shading faceted,',...
                'end,',...
```

```matlab
        'if get(r2,"value")==1,',...
        'shading flat,',...
        'end,',...
        'if get(r3,"value")==1,',...
        'shading interp,',...
        'end,',...
        'k=get(p1,"value");,',...
        'switch k,',...
        'case 1,',...
        'colormap("cool"),',...
        'case 2,',...
        'colormap("spring"),',...
        'case 3,',...
        'colormap("summer"),',...
        'case 4,',...
        'colormap("autumn"),',...
        'case 5,',...
        'colormap("winter"),',...
        'end'];
l11=uimenu('parent',l1,...
    'label','Surface',...
    'tag','l11',...
    'callback',[...
        '[x,y]=meshgrid(-8:0.5:8);,',...
        'r=sqrt(x.^2+y.^2)+eps;,',...
```

```matlab
        'z=sin(r)./r;,',...
        'surf(x,y,z),',...
        huidiao]);
l12=uimenu('parent',l1,...
    'label','Mesh',...
    'tag','l12',...
    'callback',[...
        'mesh(peaks),',...
        huidiao]);
l13=uimenu('parent',l1,...
    'label','Membrane',...
    'tag','l13',...
    'callback',[...
        'mesh(membrane),',...
        huidiao]);
f1=uicontrol('parent',h0,...
    'units','points',...
    'listboxtop',0,...
    'position',[12 6 100 101],...
    'style','frame',...
    'tag','f1');
r1=uicontrol('parent',h0,...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...
```

```
        'position',[19.5 58.5 72.75 16.5],...

        'string','shading faceted',...

        'style','radiobutton',...

        'tag','r1',...

        'value',1,...

        'callback',[...

                'shading faceted,',...

                'set(r1,"value",1);,',...

                'set(r2,"value",0);,',...

                'set(r3,"value",0);']);

r2=uicontrol('parent',h0,...

        'units','points',...

        'backgroundcolor',[0.753 0.753 0.753],...

        'listboxtop',0,...

        'position',[19.5 35.25 78.75 18.75],...

        'string','shading flat',...

        'style','radiobutton',...

        'tag','r2',...

        'value',0,...

        'callback',[...

                'shading flat,',...

                'set(r2,"value",1);,',...

                'set(r1,"value",0);,',...

                'set(r3,"value",0);']);

r3=uicontrol('parent',h0,...
```

```
        'units','points',...

        'backgroundcolor',[0.753 0.753 0.753],...

        'listboxtop',0,...

        'position',[19.5 12.75 71.25 18.75],...

        'string','shading interp',...

        'style','radiobutton',...

        'tag','r3',...

        'value',0,...

        'callback',[...

                'shading interp,',...

                'set(r3,"value",1);,',...

                'set(r1,"value",0);,',...

                'set(r2,"value",0);']);

t1=uicontrol('parent',h0,...

        'units','points',...

        'backgroundcolor',[0.753 0.753 0.753],...

        'fontsize',12,...

        'listboxtop',0,...

        'position',[14.25 75.75 90.75 22.5],...

        'string','                 ',...

        'style','text',...

        'tag','t1');

t2=uicontrol('parent',h0,...

        'units','points',...

        'backgroundcolor',[0.753 0.753 0.753],...
```

```
        'fontsize',12,...

        'listboxtop',0,...

        'position',[117 69 72.75 17.5],...

        'string','              ',...

        'style','text',...

        'tag','t2');
p1=uicontrol('parent',h0,...

        'units','points',...

        'backgroundcolor',[0.753 0.753 0.753],...

        'listboxtop',0,...

        'position',[116.25 39 72.75 20.25],...

        'string','Cool|Spring|Summer|Autumn|Winter',...

        'style','popupmenu',...

        'tag','p1',...

        'value',1,...

        'callback',[...

                'k=get(p1,''value'');,',...

                'switch k,',...

                'case 1,',...

                'colormap(''cool''),',...

                'case 2,',...

                'colormap(''spring''),',...

                'case 3,',...

                'colormap(''summer''),',...

                'case 4,',...
```

```matlab
        'colormap("autumn"),',...

        'case 5,',...

        'colormap("winter"),',...

        'end']);

b1=uicontrol('parent',h0,...

    'units','points',...

    'backgroundcolor',[0.753 0.753 0.753],...

    'listboxtop',0,...

    'position',[12 243 72.75 30.75],...

    'string','      ',...

    'tag','b1',...

    'callback','close');

b2=uicontrol('parent',h0,...

    'units','points',...

    'backgroundcolor',[0.753 0.753 0.753],...

    'listboxtop',0,...

    'position',[216.75 67.5 83.25 18.75],...

    'string','Colorbar',...

    'tag','b2',...

    'callback','colorbar');

    57


h0=figure('toolbar','none',...

    'position',[168 94.5 315 289.5],...

    'name','      57');
```

```
h1=axes('parent',h0,...

        'position',[0.4 0.4 0.5 0.5],...

        'visible','off');

f1=uicontrol('parent',h0,...

        'style','frame',...

        'position',[15 10 80 70],...

        'string','dull',...

        'units','points',...

        'backgroundcolor',[0.753 0.753 0.753],...

        'listboxtop',0,...

        'tag','r1',...

        'value',1,...

        'callback',[...

                'set(r1,"value",1);,',...

                'set(r2,"value",0);,',...

                'set(r3,"value",0);,',...

                'material dull']);

r1=uicontrol('parent',h0,...

        'style','radiobutton',...

        'position',[19.5 58.5 72.75 16.5],...

        'string','dull',...

        'units','points',...

        'backgroundcolor',[0.753 0.753 0.753],...

        'listboxtop',0,...

        'tag','r1',...
```

```
        'value',1,...
        'callback',[...
                'set(r1,"value",1);,',...
                'set(r2,"value",0);,',...
                'set(r3,"value",0);,',...
                'material dull']);
r2=uicontrol('parent',h0,...
        'style','radiobutton',...
        'position',[19.5 35.25 72.75 16.5],...
        'string','metal',...
        'units','points',...
        'backgroundcolor',[0.753 0.753 0.753],...
        'listboxtop',0,...
        'tag','r2',...
        'value',0,...
        'callback',[...
                'set(r2,"value",1);,',...
                'set(r1,"value",0);,',...
                'set(r3,"value",0);,',...
                'material metal']);
r3=uicontrol('parent',h0,...
        'style','radiobutton',...
        'position',[19.5 12.75 72.75 16.5],...
        'string','shiny',...
        'units','points',...
```

```
        'backgroundcolor',[0.753 0.753 0.753],...

        'listboxtop',0,...

        'tag','r3',...

        'value',0,...

        'callback',[...

                'set(r3,"value",1);,',...

                'set(r1,"value",0);,',...

                'set(r2,"value",0);,',...

                'material shiny']);
u1=uimenu('parent',h0,...

        'label','        ',...

        'backgroundcolor',[0.753 0.753 0.753],...

        'tag','u1',...

        'callback',[...

                '[x,y]=meshgrid(-8:0.5:8);,',...

                'r=sqrt(x.^2+y.^2)+eps;,',...

                'z=sin(r)./r;,',...

                'surf(x,y,z),',...

                'shading interp']);
b1=uicontrol('parent',h0,...

        'style','pushbutton',...

        'position',[19.5 150 60 20],...

        'string','light',...

        'units','points',...

        'backgroundcolor',[0.753 0.753 0.753],...
```

```matlab
        'listboxtop',0,...

        'tag','b1',...

        'callback','camlight headlight');
b2=uicontrol('parent',h0,...

        'style','pushbutton',...

        'position',[19.5 100 60 20],...

        'string','         ',...

        'units','points',...

        'backgroundcolor',[0.753 0.753 0.753],...

        'listboxtop',0,...

        'tag','b2',...

        'callback','close');

        58


h0=figure('toolbar','none',...

        'position',[198 56 350 468],...

        'name','        58');
h1=axes('parent',h0,...

        'position',[0.25 0.45 0.5 0.5],...

        'visible','off');
t=0:0.1:4*pi;

x=sin(t);

y=cos(t);

plot(x,y)

axis equal
```

```matlab
axis off

h=line('color',[1 0 0],...
        'linestyle','.',...
        'xdata',0,...
        'ydata',1,...
        'markersize',20,...
        'erasemode','xor');
n=length(t);
i=1;
speed=0.01;
k=0;
b1huidiao=[...
            'k=0;,',...
            'while 1,',...
            'set(h,''xdata'',x(i),''ydata'',y(i));,',...
            'drawnow,',...
            'pause(speed),',...
            'i=i+1;,',...
            'if i>n,',...
            'i=1;,',...
            'end,',...
            'if k==1,',...
            'break,',...
            'end,',...
            'end'];
```

```
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
        'string','         ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[30 80 50 20],...
        'callback',b1huidiao);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'style','pushbutton',...
        'string','        ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[100 80 50 20],...
        'callback','k=1;');
b3=uicontrol('parent',h0,...
        'units','points',...
        'tag','b3',...
        'style','pushbutton',...
        'string','        ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[170 80 50 20],...
        'callback',[...
                'k=1;,',...
```

```matlab
                    'close']);
s1=uicontrol('parent',h0,...
        'units','points',...
        'tag','s1',...
        'style','slider',...
        'value',50*speed,...
        'max',1,...
        'min',0,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[30 115 190 20],...
        'callback',[...
                'm=get(s1,''value'');,',...
                'speed=m/50;']);
t1=uicontrol('parent',h0,...
        'units','points',...
        'tag','t1',...
        'style','text',...
        'fontsize',15,...
        'string','                 ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[30 135 190 20]);
        59


h0=figure('name','      59');
h1=axes('parent',h0,...
```

```matlab
        'position',[0.3 0.45 0.5 0.5],...
        'visible','off');
u1=uimenu('parent',h0,...
        'label','        ',...
        'backgroundcolor',[0.753 0.753 0.753],...
        'tag','u1',...
        'callback',[...
                '[x,y]=meshgrid(-8:0.5:8);,',...
                'r=sqrt(x.^2+y.^2)+eps;,',...
                'z=sin(r)./r;,',...
                'mesh(x,y,z),',...
                'shading interp,',...
                'axis normal']);
f1=uicontrol('parent',h0,...
        'units','points',...
        'listboxtop',0,...
        'position',[12 6 100 150],...
        'style','frame',...
        'tag','f1');
t1=uicontrol('parent',h0,...
        'units','points',...
        'backgroundcolor',[0.753 0.753 0.753],...
        'listboxtop',0,...
        'position',[19.5 130 72.75 16.5],...
        'string','                ',...
```

```
            'style','text',...

            'tag','t1');
r1=uicontrol('parent',h0,...

            'units','points',...

            'backgroundcolor',[0.753 0.753 0.753],...

            'listboxtop',0,...

            'position',[19.5 110 72.75 16.5],...

            'string','axis equal',...

            'style','radiobutton',...

            'tag','r1',...

            'value',1,...

            'callback',[...

                    'set(r1,"value",1);,',...

                    'set(r2,"value",0);,',...

                    'set(r3,"value",0);,',...

                    'set(r4,"value",0);,',...

                    'set(r5,"value",0);,',...

                    'axis equal']);
r2=uicontrol('parent',h0,...

            'units','points',...

            'backgroundcolor',[0.753 0.753 0.753],...

            'listboxtop',0,...

            'position',[19.5 85 72.75 16.5],...

            'string','axis square',...

            'style','radiobutton',...
```

```
        'tag','r2',...

        'value',0,...

        'callback',[...

                'set(r2,"value",1);,',...

                'set(r1,"value",0);,',...

                'set(r3,"value",0);,',...

                'set(r4,"value",0);,',...

                'set(r5,"value",0);,',...

                'axis square']);

r3=uicontrol('parent',h0,...

        'units','points',...

        'backgroundcolor',[0.753 0.753 0.753],...

        'listboxtop',0,...

        'position',[19.5 60 72.75 16.5],...

        'string','axis image',...

        'style','radiobutton',...

        'tag','r3',...

        'value',0,...

        'callback',[...

                'set(r3,"value",1);,',...

                'set(r2,"value",0);,',...

                'set(r1,"value",0);,',...

                'set(r4,"value",0);,',...

                'set(r5,"value",0);,',...

                'axis image']);
```

```matlab
r4=uicontrol('parent',h0,...
        'units','points',...
        'backgroundcolor',[0.753 0.753 0.753],...
        'listboxtop',0,...
        'position',[19.5 35 72.75 16.5],...
        'string','axie vis3d',...
        'style','radiobutton',...
        'tag','r4',...
        'value',0,...
        'callback',[...
                'set(r4,"value",1);,',...
                'set(r2,"value",0);,',...
                'set(r3,"value",0);,',...
                'set(r1,"value",0);,',...
                'set(r5,"value",0);,',...
                'axis vis3d']);
r5=uicontrol('parent',h0,...
        'units','points',...
        'backgroundcolor',[0.753 0.753 0.753],...
        'listboxtop',0,...
        'position',[19.5 10 72.75 16.5],...
        'string','axis auto',...
        'style','radiobutton',...
        'tag','r5',...
        'value',0,...
```

```matlab
        'callback',[...
                'set(r5,"value",1);,',...
                'set(r2,"value",0);,',...
                'set(r3,"value",0);,',...
                'set(r4,"value",0);,',...
                'set(r1,"value",0);,',...
                'axis auto']);
b1=uicontrol('parent',h0,...
        'units','points',...
        'backgroundcolor',[0.753 0.753 0.753],...
        'listboxtop',0,...
        'position',[12 243 72.75 30.75],...
        'string','        ',...
        'tag','b1',...
        'callback','close');
b2=uicontrol('parent',h0,...
        'units','points',...
        'backgroundcolor',[0.753 0.753 0.753],...
        'listboxtop',0,...
        'position',[216.75 67.5 83.25 18.75],...
        'string','Colorbar',...
        'tag','b2',...
        'callback','colorbar');
```

60

```matlab
h0=figure('toolbar','none',...
        'position',[198 56 350 468],...
        'name','        60');
h1=axes('parent',h0,...
        'position',[0.25 0.45 0.5 0.5],...
        'visible','off');
str1='                  ';
z=0.52;
t=0:0.1:10;
y=step(1,[1 2*z 1],t);
hline=plot(t,y);
grid on
r1=uicontrol('parent',h0,...
        'units','points',...
        'tag','r1',...
        'style','radio',...
        'string','grid on',...
        'position',[30 120 60 20],...
        'backgroundcolor',[0.75 0.75 0.75],...
        'value',1,...
        'callback',[...
                'grid on,',...
                'set(r1,"value",1);,',...
                'set(r2,"value",0)']);
r2=uicontrol('parent',h0,...
```

```matlab
        'units','points',...

        'tag','r2',...

        'style','radio',...

        'string','grid on',...

        'position',[30 95 60 20],...

          'backgroundcolor',[0.75 0.75 0.75],...

        'value',0,...

        'callback',[...

                'grid off,',...

                'set(r2,"value",1);,',...

                'set(r1,"value",0)']);
s1=uicontrol('parent',h0,...

        'units','points',...

        'tag','s1',...

        'style','slider',...

        'value',z,...

        'position',[100 95 150 20],...

          'backgroundcolor',[0.75 0.75 0.75],...

        'max',1,...

        'min',0,...

        'callback',[...

                'z=get(s1,"value");,',...

                'set(t1,"string",[str1,sprintf("%1.4g\",z)]);,',...

                'delete(hline),',...

                'y=step(1,[1 2*z 1],t);,',...
```

```matlab
        'hline=plot(t,y);,',...
        'if get(r1,"value")==1,',...
        'grid on,',...
        'end,',...
        'if get(r2,"value")==1,',...
        'grid off,',...
        'end']);
t1=uicontrol('parent',h0,...
    'units','points',...
    'tag','t1',...
    'style','text',...
    'string',[str1,sprintf('%1.4g\',z)],...
    'position',[100 120 150 20],...
    'backgroundcolor',[0.75 0.75 0.75]);
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','        ',...
    'position',[80 50 80 30],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'fontsize',15,...
    'callback','close');
```

61

```
h0=figure('toolbar','none',...

      'position',[198 56 450 468],...

      'name','       61');

h1=axes('parent',h0,...

      'position',[0.3 0.45 0.5 0.5],...

      'visible','off');

[x,y,z,v]=flow;

xmin=min(x(:));

ymin=min(y(:));

zmin=min(z(:));

xmax=max(x(:));

ymax=max(y(:));

zmax=max(z(:));

u1=uimenu('parent',h0,...

      'tag','u1',...

      'label','        ',...

      'background',[0.75 0.75 0.75]);

u11=uimenu('parent',u1,...

      'tag','u11',...

      'label','    X          -45    ',...

      'background',[0.75 0.75 0.75],...

      'callback',[...

            'cla,',...


'hslice=surf(linspace(xmin,xmax,100),linspace(ymin,ymax,100),zeros(100));,
```

```matlab
',...
            'rotate(hslice,[-1,0,0],-45),',...
            'xd=get(hslice,"xdata");,',...
            'yd=get(hslice,"ydata");,',...
            'zd=get(hslice,"zdata");']);
u12=uimenu('parent',u1,...
    'tag','u12',...
    'label','    Y        -45   ',...
    'background',[0.75 0.75 0.75],...
    'callback',[...
            'cla,',...


'hslice=surf(linspace(xmin,xmax,100),linspace(ymin,ymax,100),zeros(100));,
',...
            'rotate(hslice,[0,-1,0],-45),',...
            'xd=get(hslice,"xdata");,',...
            'yd=get(hslice,"ydata");,',...
            'zd=get(hslice,"zdata");']);
b1=uicontrol('parent',h0,...
    'style','pushbutton',...
    'units','points',...
    'tag','b1',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','               ',...
    'position',[50 120 60 25],...
```

```matlab
        'callback',[...

            'delete(hslice),',...

            'h=slice(x,y,z,v,xd,yd,zd);,',...


'set(h,"facecolor","interp","edgecolor","none","diffusestrength",0.8)']);
b2=uicontrol('parent',h0,...

    'style','pushbutton',...

    'units','points',...

    'tag','b2',...

    'backgroundcolor',[0.75 0.75 0.75],...

    'string','                1',...

    'position',[240 120 60 25],...

    'callback',[...

            'hold on,',...

            'hx=slice(x,y,z,v,xmax,[],[]);,',...

            'set(hx,"facecolor","interp","edgecolor","none")']);
b3=uicontrol('parent',h0,...

    'style','pushbutton',...

    'units','points',...

    'tag','b3',...

    'backgroundcolor',[0.75 0.75 0.75],...

    'string','                2',...

    'position',[240 70 60 20],...

    'callback',[...

            'hold on,',...
```

```
        'hy=slice(x,y,z,v,ymax,[],[]);,',...

        'set(hy,"facecolor","interp","edgecolor","none")']);

b4=uicontrol('parent',h0,...

    'style','pushbutton',...

    'units','points',...

    'tag','b4',...

    'backgroundcolor',[0.75 0.75 0.75],...

    'string','              3',...

    'position',[240 20 60 20],...

    'callback',[...

        'hold on,',...

        'hz=slice(x,y,z,v,zmax-1,[],[]);,',...

        'set(hz,"facecolor","interp","edgecolor","none")']);

b5=uicontrol('parent',h0,...

    'style','pushbutton',...

    'units','points',...

    'tag','b5',...

    'backgroundcolor',[0.75 0.75 0.75],...

    'string','              ',...

    'position',[50 70 60 20],...

    'callback',[...

        'daspect([1 1 1]),',...

        'axis tight,',...

        'box on,',...

        'view(-38.5,16),',...
```

```
                'camzoom(1.4),',...

                'camproj perspective,',...

                'lightangle(-45,45)']);
b6=uicontrol('parent',h0,...

        'style','pushbutton',...

        'units','points',...

        'tag','b6',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'string','colorbar',...

        'position',[50 20 60 20],...

        'callback','colorbar("horiz")');
b7=uicontrol('parent',h0,...

        'style','pushbutton',...

        'units','points',...

        'tag','b7',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'string','          ',...

        'fontsize',14,...

        'position',[145 75 60 20],...

        'callback','close');

        62


h0=figure('toolbar','none',...

        'position',[200 60 220 240],...

        'name','          62');
```

```
b0=uicontrol('parent',h0,...
        'units','points',...
        'tag','b0',...
        'style','pushbutton',...
        'string','0',...
        'fontsize',12,...
        'position',[5 15 35 20],...
        'backgroundcolor',[0.75 0.75 0.75],...
        'callback',[...
                'if k=="0"&i==0,',...
                'errordlg("                              0"),',...
                'else,',...
                'k=[k,"0"];,',...
                'if k=="00",',...
                'k="0";,',...
                'end,',...
                'set(e1,"string",k);,',...
                'end']);
b15=uicontrol('parent',h0,...
        'units','points',...
        'tag','b15',...
        'style','pushbutton',...
        'string','=',...
        'fontsize',12,...
        'position',[45 15 35 20],...
```

```matlab
            'backgroundcolor',[0.75 0.75 0.75],...
            'callback',[...
                'k=get(e1,"string");,',...
                'if g=="+",',...
                'm=m+str2num(k);,',...
                'end,',...
                'if g=="-",',...
                'm=m-str2num(k);,',...
                'end,',...
                'if g=="*",',...
                'm=m*str2num(k);,',...
                'end,',...
                'if g=="/",',...
                'if k=="0",',...
                'errordlg("            0");,',...
                'end,',...
                'm=m/str2num(k);,',...
                'end,',...
                'set(e1,"string",num2str(m));,',...
                'i=0;']);
b11=uicontrol('parent',h0,...
        'units','points',...
        'tag','b11',...
        'style','pushbutton',...
        'string','+',...
```

```
'fontsize',12,...

'position',[85 15 35 20],...

'backgroundcolor',[0.75 0.75 0.75],...

'callback',[...

        'i=i+1;,',...

        'if i==1,',...

        'm=str2num(k);,',...

        'set(e1,"string","0");,',...

        'end,',...

        'if i>1,',...

        'k=get(e1,"string");,',...

        'if g=="+",',...

        'm=m+str2num(k);,',...

        'end,',...

        'if g=="-",',...

        'm=m-str2num(k);,',...

        'end,',...

        'if g=="*",',...

        'm=m*str2num(k);,',...

        'end,',...

        'if g=="/",',...

        'if k=="0",',...

        'errordlg("                    0");,',...

        'end,',...

        'm=m/str2num(k);,',...
```

```matlab
            'end,',...

            'set(e1,"string",num2str(m));,',...

            'i=1;,',...

            'end,',...

            'k="0";,',...

            'g="+";']);
b16=uicontrol('parent',h0,...

        'units','points',...

        'tag','b16',...

        'style','pushbutton',...

        'string','        ',...

        'fontsize',12,...

        'position',[125 15 35 20],...

        'backgroundcolor',[0.75 0.75 0.75],...

        'callback','close');
b1=uicontrol('parent',h0,...

        'units','points',...

        'tag','b1',...

        'style','pushbutton',...

        'string','1',...

        'fontsize',12,...

        'position',[5 45 35 20],...

        'backgroundcolor',[0.75 0.75 0.75],...

        'callback',[...

            'if k=="0",',...
```

```
                    'k="";,',...

                    'end,',...

                    'k=[k,"1"];,',...

                    'set(e1,"string",k);']);
    b2=uicontrol('parent',h0,...

            'units','points',...

            'tag','b2',...

            'style','pushbutton',...

            'string','2',...

            'fontsize',12,...

            'position',[45 45 35 20],...

            'backgroundcolor',[0.75 0.75 0.75],...

            'callback',[...

                    'if k=="0",',...

                    'k="";,',...

                    'end,',...

                    'k=[k,"2"];,',...

                    'set(e1,"string",k);']);
    b3=uicontrol('parent',h0,...

            'units','points',...

            'tag','b3',...

            'style','pushbutton',...

            'string','3',...

            'fontsize',12,...

            'position',[85 45 35 20],...
```

```matlab
            'backgroundcolor',[0.75 0.75 0.75],...
            'callback',[...
                'if k=="0",',...
                'k="";,',...
                'end,',...
                'k=[k,"3"];,',...
                'set(e1,"string",k);']);
b14=uicontrol('parent',h0,...
        'units','points',...
        'tag','b14',...
        'style','pushbutton',...
        'string','/',...
        'fontsize',12,...
        'position',[125 45 35 20],...
        'backgroundcolor',[0.75 0.75 0.75],...
        'callback',[...
                'i=i+1;,',...
                'if i==1,',...
                'm=str2num(k);,',...
                'set(e1,"string","0");,',...
                'end,',...
                'if i>1,',...
                'k=get(e1,"string");,',...
                'if k=="0",',...
                'errordlg("                0");,',...
```

```matlab
            'end,',...
            'if ~(k=="0"),',...
            'if g=="+",',...
            'm=m+str2num(k);,',...
            'end,',...
            'if g=="-",',...
            'm=m-str2num(k);,',...
            'end,',...
            'if g=="*",',...
            'm=m*str2num(k);,',...
            'end,',...
            'if g=="/",',...
            'm=m/str2num(k);,',...
            'end,',...
            'set(e1,"string",num2str(m));,',...
            'end,',...
            'i=1;,',...
            'end,',...
            'k="0";,',...
            'g="/";']);
b4=uicontrol('parent',h0,...
        'units','points',...
        'tag','b4',...
        'style','pushbutton',...
        'string','4',...
```

```
        'fontsize',12,...

        'position',[5 75 35 20],...

        'backgroundcolor',[0.75 0.75 0.75],...

        'callback',[...

                'if k=="0",',...

                'k="";,',...

                'end,',...

                'k=[k,"4"];,',...

                'set(e1,"string",k);']);

b5=uicontrol('parent',h0,...

        'units','points',...

        'tag','b5',...

        'style','pushbutton',...

        'string','5',...

        'fontsize',12,...

        'position',[45 75 35 20],...

        'backgroundcolor',[0.75 0.75 0.75],...

        'callback',[...

                'if k=="0",',...

                'k="";,',...

                'end,',...

                'k=[k,"5"];,',...

                'set(e1,"string",k);']);

b6=uicontrol('parent',h0,...

        'units','points',...
```

```
        'tag','b6',...

        'style','pushbutton',...

        'string','6',...

        'fontsize',12,...

        'position',[85 75 35 20],...

        'backgroundcolor',[0.75 0.75 0.75],...

        'callback',[...

                'if k=="0",',...

                'k="";,',...

                'end,',...

                'k=[k,"6"];,',...

                'set(e1,"string",k);']);
b13=uicontrol('parent',h0,...

        'units','points',...

        'tag','b13',...

        'style','pushbutton',...

        'string','*',...

        'fontsize',12,...

        'position',[125 75 35 20],...

        'backgroundcolor',[0.75 0.75 0.75],...

        'callback',[...

                'i=i+1;,',...

                'if i==1,',...

                'm=str2num(k);,',...

                'set(e1,"string","0");,',...
```

```
        'end,',...
        'if i>1,',...
        'k=get(e1,"string");,',...
        'if g=="+",',...
        'm=m+str2num(k);,',...
        'end,',...
        'if g=="-",',...
        'm=m-str2num(k);,',...
        'end,',...
        'if g=="*",',...
        'm=m*str2num(k);,',...
        'end,',...
        'if g=="/",',...
        'if k=="0",',...
        'errordlg("              0");,',...
        'end,',...
        'm=m/str2num(k);,',...
        'end,',...
        'set(e1,"string",num2str(m));,',...
        'i=1;,',...
        'end,',...
        'k="0";,',...
        'g="*";']);
    b7=uicontrol('parent',h0,...
        'units','points',...
```

```
        'tag','b7',...

        'style','pushbutton',...

        'string','7',...

        'fontsize',12,...

        'position',[5 105 35 20],...

      'backgroundcolor',[0.75 0.75 0.75],...

        'callback',[...

            'if k=="0",',...

            'k="";,',...

            'end,',...

            'k=[k,"7"];,',...

            'set(e1,"string",k);']);

b8=uicontrol('parent',h0,...

        'units','points',...

        'tag','b8',...

        'style','pushbutton',...

        'string','8',...

        'fontsize',12,...

        'position',[45 105 35 20],...

        'backgroundcolor',[0.75 0.75 0.75],...

        'callback',[...

            'if k=="0",',...

            'k="";,',...

            'end,',...

            'k=[k,"8"];,',...
```

```
                'set(e1,"string",k);']);
b9=uicontrol('parent',h0,...
        'units','points',...
        'tag','b9',...
        'style','pushbutton',...
        'string','9',...
        'fontsize',12,...
        'position',[85 105 35 20],...
        'backgroundcolor',[0.75 0.75 0.75],...
        'callback',[...
                'if k=="0",',...
                'k="";,',...
                'end,',...
                'k=[k,"9"];,',...
                'set(e1,"string",k);']);
b12=uicontrol('parent',h0,...
        'units','points',...
        'tag','b12',...
        'style','pushbutton',...
        'string','-',...
        'fontsize',12,...
        'position',[125 105 35 20],...
        'backgroundcolor',[0.75 0.75 0.75],...
        'callback',[...
                'i=i+1;,',...
```

```
'if i==1,',...
'm=str2num(k);,',...
'set(e1,"string","0");,',...
'end,',...
'if i>1,',...
'k=get(e1,"string");,',...
'if g=="+",',...
'm=m+str2num(k);,',...
'end,',...
'if g=="-",',...
'm=m-str2num(k);,',...
'end,',...
'if g=="*",',...
'm=m*str2num(k);,',...
'end,',...
'if g=="/",',...
'if k=="0",',...
'errordlg("                0");,',...
'end,',...
'm=m/str2num(k);,',...
'end,',...
'set(e1,"string",num2str(m));,',...
'i=1;,',...
'end,',...
'k="0";,',...
```

```matlab
        'g="-";']);
e1=uicontrol('parent',h0,...
        'units','points',...
        'tag','e1',...
        'style','edit',...
        'horizontalalignment','right',...
        'fontsize',12,...
        'string','0',...
        'position',[45 135 115 20],...
        'backgroundcolor',[1 1 1]);
k=get(e1,'string');
i=0;
m=0;
        63


h0=figure('toolbar','none',...
        'position',[200 150 350 200],...
        'name','      63');
choose=1;
e1=uicontrol('parent',h0,...
        'units','points',...
        'tag','e1',...
        'style','edit',...
        'backgroundcolor',[1 1 1],...
        'min',0,...
```

```matlab
        'max',2,...

        'fontsize',12,...

        'horizontalalignment','left',...

        'position',[20 20 120 100]);
t1=uicontrol('parent',h0,...

        'units','points',...

        'tag','t1',...

        'style','text',...

        'string','                                  ',...

        'fontsize',10,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[20 125 120 15]);
b1=uicontrol('parent',h0,...

        'units','points',...

        'tag','b1',...

        'style','pushbutton',...

        'string','              ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[180 100 60 20],...

        'callback',[...

                's=get(e1,''string'');,',...

                'n=length(s);,',...

                'jb=0;,',...

                'jl=0;,',...

                'for i=1:n,',...
```

```matlab
    'if (abs(s(i))>64)&(abs(s(i))<91),',...
    'jb=jb+1;,',...
    'end,',...
    'if (abs(s(i))>96)&(abs(s(i))<123),',...
    'jl=jl+1;,',...
    'end,',...
    'end,',...
    'j=jb+jl;,',...
    'if choose==1,',...
    'msgbox(["            ",num2str(j),"        ","
",num2str(jb),"      "],"            "),',...
    'end,',...
    'if choose==2,',...
    'msgbox(["            ",num2str(j),"        ","
",num2str(jl),"      "],"            ");,',...
    'end']);
u1=uimenu('parent',h0,...
    'label','          ',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'tag','u1');
u11=uimenu('parent',u1,...
    'label','          ',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'tag','u11',...
    'checked','on',...
```

```matlab
        'callback',[...
                'set(u11,"checked","on");,',...
                'set(u12,"checked","off");,',...
                'choose=1;']);
u12=uimenu('parent',u1,...
        'label','            ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'tag','u12',...
          'callback',[...
                'set(u12,"checked","on");,',...
                'set(u11,"checked","off");,',...
                'choose=2;']);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'style','pushbutton',...
        'string','      ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[180 60 60 20],...
        'callback','set(e1,"string","")');
b3=uicontrol('parent',h0,...
        'units','points',...
        'tag','b3',...
        'style','pushbutton',...
        'string','      ',...
```

```matlab
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[180 20 60 20],...
        'callback','close');
        64


h0=figure('toolbar','none',...
        'position',[200 150 300 150],...
        'name','     64');
now=fix(clock);
e1=uicontrol('parent',h0,...
        'units','points',...
        'tag','e1',...
        'style','edit',...
        'backgroundcolor',[1 1 1],...
        'horizontal','right',...
        'fontsize',12,...
        'position',[20 80 30 20],...
        'string',num2str(now(1)));
t1=uicontrol('parent',h0,...
        'units','points',...
        'tag','t1',...
        'style','text',...
        'string','   ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'fontsize',14,...
```

```matlab
        'position',[55 80 20 20]);
e2=uicontrol('parent',h0,...
        'units','points',...
        'tag','e2',...
        'style','edit',...
        'backgroundcolor',[1 1 1],...
        'horizontal','right',...
        'fontsize',12,...
        'position',[80 80 30 20],...
        'string',num2str(now(2)));
t2=uicontrol('parent',h0,...
        'units','points',...
        'tag','t2',...
        'style','text',...
        'string','    ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'fontsize',14,...
        'position',[115 80 20 20]);
e3=uicontrol('parent',h0,...
        'units','points',...
        'tag','e3',...
        'style','edit',...
        'horizontal','right',...
        'backgroundcolor',[1 1 1],...
        'fontsize',12,...
```

```matlab
        'position',[140 80 30 20],...
        'string',num2str(now(3)));
t3=uicontrol('parent',h0,...
        'units','points',...
        'tag','t3',...
        'style','text',...
        'string','    ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'fontsize',14,...
        'position',[175 80 20 20]);
e4=uicontrol('parent',h0,...
        'units','points',...
        'tag','e4',...
        'style','edit',...
        'backgroundcolor',[1 1 1],...
        'horizontal','right',...
        'fontsize',12,...
        'position',[20 30 100 20],...
        'string',[num2str(now(4)),'    ',num2str(now(5)),'    ',num2str(now(6))]);
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'string','        ',...
```

```matlab
        'fontsize',12,...
        'position',[150 30 50 20],...
        'callback',[...
            'k=1;,',...
            'close']);
k=0;
while find(get(0,'children'))==h0
    now1=fix(clock)
    set(e1,'string',num2str(now1(1)));
    set(e2,'string',num2str(now1(2)));
    set(e3,'string',num2str(now1(3)));
    set(e4,'string',[num2str(now1(4)),'          ',num2str(now1(5)),'
',num2str(now1(6))]);
    pause(1)
    if k==1
        break
    end
end
    65

h0=figure('toolbar','none',...
    'position',[200 150 300 250],...
    'name','       65');
huidiao=[...
        'k=0;,',...
```

```matlab
'fyear=str2num(get(e1,"string"));,',...
'fmonth=str2num(get(e2,"string"));,',...
'fday=str2num(get(e3,"string"));,',...
'syear=str2num(get(e4,"string"));,',...
'smonth=str2num(get(e5,"string"));,',...
'sday=str2num(get(e6,"string"));,',...
'month=[0 31 28 31 30 31 30 31 31 30 31 30 31];,',...
'k=fix(fyear/4);,',...
'if rem(fyear,4)==0,',...
'month(3)=29;,',...
'else,',...
'k=k+1;,',...
'month(3)=28;,',...
'end,',...
'sum=0;,',...
'for i=1:fmonth,',...
'sum=sum+month(i);,',...
'end,',...
'fdday=fyear*365+sum+fday+k;,',...
'l=fix(syear/4);,',...
'if rem(syear,4)==0,',...
'month(3)=29;,',...
'else,',...
'l=l+1;,',...
'month(3)=28;,',...
```

```matlab
        'end,',...
        'ssum=0;,',...
        'for i=1:smonth,',...
        'ssum=ssum+month(i);,',...
        'end,',...
        'sdday=syear*365+ssum+sday+l;,',...
        'dday=abs(fdday-sdday);,',...
        'set(e7,"string",[num2str(dday),"    "]);'];
t0=uicontrol('parent',h0,...
    'units','points',...
    'tag','t0',...
    'style','text',...
    'string','               ',...
    'horizontalalignment','right',...
    'fontsize',15,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[10 160 80 20]);
t8=uicontrol('parent',h0,...
    'units','points',...
    'tag','t8',...
    'style','text',...
    'string','               ',...
    'horizontalalignment','right',...
    'fontsize',15,...
    'backgroundcolor',[0.75 0.75 0.75],...
```

```matlab
        'position',[115 160 80 20]);
e1=uicontrol('parent',h0,...

        'units','points',...

        'tag','e1',...

        'style','edit',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[20 130 50 20]);
t1=uicontrol('parent',h0,...

        'units','points',...

        'tag','t1',...

        'style','text',...

        'string','    ',...

        'horizontalalignment','left',...

        'fontsize',15,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[75 130 20 20]);
e2=uicontrol('parent',h0,...

        'units','points',...

        'tag','e2',...

        'style','edit',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[20 100 50 20]);
t2=uicontrol('parent',h0,...
```

```
          'units','points',...

          'tag','t2',...

          'style','text',...

          'string','    ',...

          'horizontalalignment','left',...

          'fontsize',15,...

          'backgroundcolor',[0.75 0.75 0.75],...

          'position',[75 100 20 20]);
e3=uicontrol('parent',h0,...

          'units','points',...

          'tag','e3',...

          'style','edit',...

          'horizontalalignment','right',...

          'backgroundcolor',[1 1 1],...

          'position',[20 70 50 20]);
t3=uicontrol('parent',h0,...

          'units','points',...

          'tag','t3',...

          'style','text',...

          'string','    ',...

          'horizontalalignment','left',...

          'fontsize',15,...

          'backgroundcolor',[0.75 0.75 0.75],...

          'position',[75 70 20 20]);
e4=uicontrol('parent',h0,...
```

```matlab
        'units','points',...

        'tag','e4',...

        'style','edit',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[120 130 50 20]);
t4=uicontrol('parent',h0,...

        'units','points',...

        'tag','t4',...

        'style','text',...

        'string','    ',...

        'horizontalalignment','left',...

        'fontsize',15,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[175 130 20 20]);
e5=uicontrol('parent',h0,...

        'units','points',...

        'tag','e5',...

        'style','edit',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[120 100 50 20]);
t5=uicontrol('parent',h0,...

        'units','points',...

        'tag','t5',...
```

```matlab
        'style','text',...

        'string','     ',...

        'horizontalalignment','left',...

        'fontsize',15,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[175 100 20 20]);
e6=uicontrol('parent',h0,...

        'units','points',...

        'tag','e6',...

        'style','edit',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[120 70 50 20]);
t6=uicontrol('parent',h0,...

        'units','points',...

        'tag','t6',...

        'style','text',...

        'string','     ',...

        'horizontalalignment','left',...

        'fontsize',15,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[175 70 20 20]);
b1=uicontrol('parent',h0,...

        'units','points',...

        'tag','b1',...
```

```matlab
        'style','pushbutton',...
        'string','                ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[20 40 50 20],...
        'callback',huidiao);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'style','pushbutton',...
        'string','        ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[20 10 50 20],...
        'callback','close');
e7=uicontrol('parent',h0,...
        'units','points',...
        'tag','e7',...
        'style','edit',...
        'horizontalalignment','right',...
        'backgroundcolor',[1 1 1],...
        'position',[120 10 80 20]);
t7=uicontrol('parent',h0,...
        'units','points',...
        'tag','t7',...
        'style','text',...
        'string','                  ',...
```

```matlab
        'horizontalalignment','right',...
        'fontsize',15,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[100 30 110 20]);
        66


h0=figure('toolbar','none',...
        'position',[200 150 350 200],...
        'name','       66');
e1=uicontrol('parent',h0,...
        'units','points',...
        'tag','e1',...
        'style','edit',...
        'backgroundcolor',[1 1 1],...
        'position',[20 90 80 20],...
        'fontsize',12,...
        'horizontalalignment','right');
e2=uicontrol('parent',h0,...
        'units','points',...
        'tag','e2',...
        'style','edit',...
        'backgroundcolor',[1 1 1],...
        'position',[160 90 80 20],...
        'fontsize',12,...
        'horizontalalignment','right');
```

```matlab
t1=uicontrol('parent',h0,...
        'units','points',...
        'tag','t1',...
        'style','text',...
        'string','                              ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[15 110 90 20],...
        'fontsize',12,...
        'horizontalalignment','left');
t2=uicontrol('parent',h0,...
        'units','points',...
        'tag','t2',...
        'style','text',...
        'string','                ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[155 110 90 20],...
        'fontsize',12,...
        'horizontalalignment','left');
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
        'string','          ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[30 50 50 20],...
```

```matlab
        'callback',[...
                'k=get(e1,"string");,',...
                'k2=str2num(k);,',...
                'bk=dec2bin(k2);,',...
                'set(e2,"string",num2str(bk));']);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'style','pushbutton',...
        'string','        ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[170 50 50 20],...
        'callback',[...
                'set(e1,"string","");,',...
                'set(e2,"string","");']);
b3=uicontrol('parent',h0,...
        'units','points',...
        'tag','b3',...
        'style','pushbutton',...
        'string','            ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[30 15 50 20],...
        'callback',[...
                'k=get(e1,"string");,',...
                'k3=str2num(k);,',...
```

```matlab
        'hk=dec2hex(k3);,',...
        'set(e2,"string",num2str(hk));']);
b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'style','pushbutton',...
    'string','        ',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[170 15 50 20],...
    'callback','close');
    67


h0=figure('toolbar','none',...
    'position',[198 56 350 468],...
    'name','       67');
h1=axes('parent',h0,...
    'position',[0.2 0.45 0.6 0.5],...
    'visible','off');
I=imread('tire.tif');
imshow(I)
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
```

```matlab
        'string','                ',...
        'position',[30 100 50 20],...
        'callback',[...
             'cla,',...
             'I=imread("tire.tif");,',...
             'f=inline("max(x(:))");,',...
             'I2=nlfilter(I,[2 2],f);,',...
             'imshow(I2)']);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'style','pushbutton',...
        'string','                ',...
        'position',[100 100 50 20],...
        'callback',[...
             'cla,',...
             'I=imread("tire.tif");,',...
             'f=inline("uint8(round(mean2(x)*ones(size(x))))");,',...
             'I2=blkproc(I,[6 6],f);,',...
             'imshow(I2)']);
b3=uicontrol('parent',h0,...
        'units','points',...
        'tag','b3',...
        'backgroundcolor',[0.75 0.75 0.75],...
```

```matlab
        'style','pushbutton',...

        'string','                ',...

        'position',[170 100 50 20],...

        'callback',[...

                'cla,',...

                'I=imread("tire.tif");,',...

                'f=inline("uint8(round(mean2(x)*ones(size(x))))");,',...

                'I2=blkproc(I,[6 6],[3 3],f);,',...

                'imshow(I2)']);
b4=uicontrol('parent',h0,...

        'units','points',...

        'tag','b4',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'style','pushbutton',...

        'string','        ',...

        'fontsize',14,...

        'position',[90 50 70 30],...

        'callback','close');

        68


h0=figure('toolbar','none',...

        'position',[198 56 350 468],...

        'name','            ');
h1=axes('parent',h0,...

        'position',[0.3 0.45 0.5 0.5],...
```

```matlab
        'visible','off');
I=imread('blood1.tif');
imshow(I)
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'string','              ',...
        'position',[50 120 50 20],...
        'callback',[...
                'cla,',...
                'I=imread("blood1.tif");,',...
                'h=fspecial("average",6);,',...
                'I2=uint8(round(filter2(h,I)));,',...
                'imshow(I2)']);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'style','pushbutton',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'string','Sobel       ',...
        'position',[150 120 50 20],...
        'callback',[...
                'cla,',...
```

```matlab
            'I=imread("blood1.tif");,',...

            'h=fspecial("sobel");,',...

            'I2=filter2(h,I);,',...

            'imshow(I2,[])']);
b1=uicontrol('parent',h0,...

        'units','points',...

        'tag','b1',...

        'style','pushbutton',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'string','       ',...

        'position',[85 60 80 30],...

        'callback','close');

        69


h0=figure('toolbar','none',...

        'position',[198 56 350 468],...

        'name','           ');
h1=axes('parent',h0,...

        'position',[0.3 0.45 0.5 0.5],...

        'visible','off');
b=remez(10,[0 0.4 0.6 1],[1 1 0 0]);
h=ftrans2(b);
[H,W]=freqz(b,1,64,'whole');
colormap(jet(64))
plot(W/pi-1,fftshift(abs(H)))
```

```
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'style','pushbutton',...
        'string','            ',...
        'position',[30 100 50 20],...
        'callback',[...
                'cla,',...
                'b=remez(10,[0 0.4 0.6 1],[1 1 0 0]);,',...
                'h=ftrans2(b);,',...
                '[H,W]=freqz(b,1,64,''whole'');,',...
                'colormap(jet(64)),',...
                'freqz2(h,[32 32])']);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'style','pushbutton',...
        'string','            ',...
        'position',[100 100 50 20],...
        'callback',[...
                'cla,',...
                'Hd=zeros(11,11);,',...
                'Hd(4:8,4:8)=1;,',...
```

```
            '[f1,f2]=freqspace(11,"meshgrid");,',...

            'mesh(f1,f2,Hd),',...

            'axis([-1 1 -1 1 0 1.2]),',...

            'colormap(jet(64))']);
b3=uicontrol('parent',h0,...

      'units','points',...

      'tag','b3',...

      'backgroundcolor',[0.75 0.75 0.75],...

      'style','pushbutton',...

      'string','              ',...

      'position',[170 100 50 20],...

      'callback',[...

            'cla,',...

            'Hd=zeros(11,11);,',...

            'Hd(4:8,4:8)=1;,',...

            'H=fsamp2(Hd);,',...

            'freqz2(h,[32 32]),',...

            'axis([-1 1 -1 1 0 1.2]),',...

            'colormap(jet(64))']);
b4=uicontrol('parent',h0,...

      'units','points',...

      'tag','b4',...

      'backgroundcolor',[0.75 0.75 0.75],...

      'style','pushbutton',...

      'string','        ',...
```

```matlab
        'fontsize',15,...

        'position',[80 50 80 30],...

        'callback','close');

        70


h0=figure('toolbar','none',...

        'position',[198 56 350 468],...

        'name','              ');
h1=axes('parent',h0,...

        'position',[0.25 0.45 0.5 0.5],...

        'visible','off');
I=imread('cameraman.tif');

imshow(I)

b1=uicontrol('parent',h0,...

        'units','points',...

        'tag','b1',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'style','pushbutton',...

        'string','             ',...

        'position',[30 100 50 20],...

        'callback',[...

                'cla,',...

                'I=imread("cameraman.tif");,',...

                'I2=im2double(I);,',...

                'imshow(I2)']);
```

```matlab
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'style','pushbutton',...
        'string','           ',...
        'position',[100 100 50 20],...
        'callback',[...
                'cla,',...
                'I=imread("cameraman.tif");,',...
                'I=im2double(I);,',...
                'T=dctmtx(8);,',...
                'B=blkproc(I,[8 8],"P1*x*P2",T,T);,',...
                'mask=[1 1 1 1 0 0 0 0;,',...
                        '1 1 1 0 0 0 0 0;,',...
                        '1 1 0 0 0 0 0 0;,',...
                        '1 0 0 0 0 0 0 0;,',...
                        '0 0 0 0 0 0 0 0;,',...
                        '0 0 0 0 0 0 0 0;,',...
                        '0 0 0 0 0 0 0 0;,',...
                        '0 0 0 0 0 0 0 0];,',...
                'B2=blkproc(B,[8 8],"P1.*x",mask);,',...
                'I2=blkproc(B2,[8 8],"P1*x*P2",T',T);,',...
                'imshow(I2)']);
b3=uicontrol('parent',h0,...
```

```matlab
        'units','points',...

        'tag','b3',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'style','pushbutton',...

        'string','              ',...

        'position',[170 100 50 20],...

        'callback',[...

                'cla,',...

                'I=imread("cameraman.tif");,',...

                'BW=edge(I);,',...

                'imshow(BW)']);
b4=uicontrol('parent',h0,...

        'units','points',...

        'tag','b4',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'style','pushbutton',...

        'string','         ',...

        'fontsize',15,...

        'position',[80 50 80 30],...

        'callback','close');
        71   RADON


h0=figure('toolbar','none',...

        'position',[198 56 350 468],...

        'name','        71');
```

```matlab
h1=axes('parent',h0,...
      'position',[0.3 0.45 0.5 0.5],...
      'visible','off');
P=phantom(256);
imshow(P)
b1=uicontrol('parent',h0,...
      'units','points',...
      'tag','b1',...
      'style','pushbutton',...
      'string','           ',...
      'backgroundcolor',[0.75 0.75 0.75],...
      'position',[30 100 50 20],...
      'callback',[...
            'cla,',...
            'k=1;,',...
            'theta1=0:10:170;,',...
            'R1=radon(P,theta1);,',...
            'imagesc(R1),',...
            'colormap(hot),',...
            'colorbar']);
b2=uicontrol('parent',h0,...
      'units','points',...
      'tag','b2',...
      'style','pushbutton',...
      'string','           ',...
```

```matlab
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[100 100 50 20],...
        'callback',[...
                'cla,',...
                'k=2;,',...
                'theta2=0:5:175;,',...
                'R2=radon(P,theta2);,',...
                'imagesc(R2),',...
                'colormap(hot),',...
                'colorbar']);
b3=uicontrol('parent',h0,...
        'units','points',...
        'tag','b3',...
        'style','pushbutton',...
        'string','            ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[170 100 50 20],...
        'callback',[...
                'cla,',...
                'k=3;,',...
                'theta3=0:2:178;,',...
                'R3=radon(P,theta3);,',...
                'imagesc(R3),',...
                'colormap(hot),',...
                'colorbar']);
```

```matlab
b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'style','pushbutton',...
    'string','              ',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[50 50 70 30],...
    'callback',[...
        'cla,',...
        'if k==1,',...
        'I1=iradon(R1,10);,',...
        'imshow(I1),',...
        'end,',...
        'if k==2,',...
        'I2=iradon(R2,5);,',...
        'imshow(I2),',...
        'end,',...
        'if k==3,',...
        'I3=iradon(R3,2);,',...
        'imshow(I3),',...
        'end']);
b5=uicontrol('parent',h0,...
    'units','points',...
    'tag','b5',...
    'style','pushbutton',...
```

```matlab
    'string','          ',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[150 50 70 30],...
    'callback','close');



            72                  1


h0=figure('toolbar','none',...
    'position',[198 56 350 468],...
    'name','      72');
h1=axes('parent',h0,...
    'position',[0.25 0.45 0.5 0.5],...
    'visible','off');
I=imread('rice.tif');
imshow(I)
k=0;
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','            ',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[20 100 60 20],...
    'callback',[...
```

```matlab
            'cla,',...
            'k=1;,',...
            'I=imread("rice.tif");,',...
            'imcontour(I)']);
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'string','SOBEL        ',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[100 100 60 20],...
    'callback',[...
            'cla,',...
            'k=2;,',...
            'I=imread("rice.tif");,',...
            'BW=edge(I,"sobel");,',...
            'imshow(BW)']);
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','CANNY        ',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[180 100 60 20],...
    'callback',[...
```

```matlab
            'cla,',...

             'k=3;,',...

              'I=imread("rice.tif");,',...

              'BW=edge(I,"canny");,',...

              'imshow(BW)']);
b4=uicontrol('parent',h0,...

        'units','points',...

        'tag','b4',...

        'style','pushbutton',...

        'string','               ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[20 50 60 20],...

        'callback',[...

              'cla,',...

              'k=4;,',...

              'I=imread("rice.tif");,',...

              'J=imadjust(I,[0.15 0.9],[0 1]);,',...

              'imshow(J,64)']);
b5=uicontrol('parent',h0,...

        'units','points',...

        'tag','b5',...

        'style','pushbutton',...

        'string','               ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[180 50 60 20],...
```

```matlab
        'callback',[...
                'if k==0,',...
                'figure,',...
                'imhist(I,64),',...
                'end,',...
                'if k==1,',...
                'imhist(I,64),',...
                'end,',...
                'if k==2,',...
                'imhist(BW,64),',...
                'end,',...
                'if k==3,',...
                'imhist(BW,64),',...
                'end,',...
                'if k==4,',...
                'imhist(J),',...
                'end']);
b6=uicontrol('parent',h0,...
        'units','points',...
        'tag','b6',...
        'style','pushbutton',...
        'string','        ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[100 50 60 20],...
        'callback','close');
```

```
h0=figure('toolbar','none',...
    'position',[198 56 350 468],...
    'name','        73');
h1=axes('parent',h0,...
    'position',[0.25 0.45 0.5 0.5],...
    'visible','off');
I=imread('eight.tif');
imshow(I)
u1=uimenu('parent',h0,...
    'tag','u1',...
    'label','              ',...
    'backgroundcolor',[0.75 0.75 0.75]);
u11=uimenu('parent',u1,...
    'tag','u11',...
    'label','SALT&PEPPER   ',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...
        'set(u11,"checked","on");,',...
        'set(u12,"checked","off");,',...
        'cla,',...
        'I=imnoise(I,"salt & pepper",0.02);,',...
        'imshow(I)']);
u12=uimenu('parent',u1,...
```

```
        'tag','u12',...

        'label','GAUSSIAN    ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'callback',[...

                'set(u12,"checked","on");,',...

                'set(u11,"checked","off");,',...

                'cla,',...

                'I=imnoise(I,"gaussian",0,0.005);,',...

                'imshow(I)']);
b1=uicontrol('parent',h0,...

        'units','points',...

        'tag','b1',...

        'style','pushbutton',...

        'string','            ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[30 100 50 20],...

        'callback',[...

                'cla,',...

                'J=filter2(fspecial("average",3),I)/255;,',...

                'imshow(J)']);
b2=uicontrol('parent',h0,...

        'units','points',...

        'tag','b2',...

        'style','pushbutton',...

        'string','            ',...
```

```matlab
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[100 100 50 20],...
        'callback',[...
                'cla,',...
                'J=medfilt2(I,[3 3]);,',...
                'imshow(J)']);
b3=uicontrol('parent',h0,...
        'units','points',...
        'tag','b3',...
        'style','pushbutton',...
        'string','                    ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[170 100 50 20],...
        'callback',[...
                'cla,',...
                'J=wiener2(I,[5 5]);,',...
                'imshow(J)']);
b4=uicontrol('parent',h0,...
        'units','points',...
        'tag','b4',...
        'style','pushbutton',...
        'string','        ',...
        'fontsize',15,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[90 50 70 30],...
```

```
        'callback','close');

        74


h0=figure('toolbar','none',...

        'position',[198 56 350 468],...

        'name','        74');

h1=axes('parent',h0,...

        'position',[0.25 0.45 0.5 0.5],...

        'visible','off');

I=imread('trees.tif');

imshow(I)

b1=uicontrol('parent',h0,...

        'units','points',...

        'tag','b1',...

        'style','pushbutton',...

        'string','              ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[30 100 50 20],...

        'callback',[...

              'cla,',...

              'I=imread("trees.tif");,',...

              'imshow(I),',...

              'BW=roipoly;,',...

              'h=fspecial("unsharp");,',...

              'I2=roifilt2(h,I,BW);,',...
```

```matlab
            'imshow(I2)']);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'style','pushbutton',...
        'string','                ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[100 100 50 20],...
        'callback',[...
                'cla,',...
                'BW=imread("text.tif");,',...
                'f=inline("imadjust(x,[],[],0.01)");,',...
                'I2=roifilt2(I,BW,f);,',...
                'imshow(I2)']);
b3=uicontrol('parent',h0,...
        'units','points',...
        'tag','b3',...
        'style','pushbutton',...
        'string','              ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[170 100 50 20],...
        'callback',[...
                'cla,',...
                'load trees,',...
                'I=ind2gray(X,map);,',...
```

```matlab
            'imshow(I),',...
            'I2=roifill;,',...
            'imshow(I2)']);
b4=uicontrol('parent',h0,...
        'units','points',...
        'tag','b4',...
        'style','pushbutton',...
        'string','      ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[90 50 70 30],...
        'callback','close');
        75


h0=figure('toolbar','none',...
        'position',[198 56 350 468],...
        'name','     75');
h1=axes('parent',h0,...
        'position',[0.12 0.45 0.75 0.5],...
        'visible','off');
I=imread('flowers.tif');
imshow(I)
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
```

```matlab
        'string','                 ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[30 100 50 20],...
        'callback',[...
                'cla,',...
                '[X,map]=imread("flowers.tif");,',...
                '[Y,map2]=imapprox(X,map,64);,',...
                'image(Y),',...
                'colormap(map2)']);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'style','pushbutton',...
        'string','                 ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[100 100 50 20],...
        'callback',[...
                'cla,',...
                'I=imread("flowers.tif");,',...
                '[X,map]=rgb2ind(I,128,"nodither");,',...
                'imshow(X)']);
b3=uicontrol('parent',h0,...
        'units','points',...
        'tag','b3',...
        'style','pushbutton',...
```

```matlab
    'string','                 ',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[170 100 50 20],...
    'callback',[...
          'cla,',...
          'I=imread("flowers.tif");,',...
          'Y=rgb2ntsc(I);,',...
          'J=Y(:,:,1);,',...
          'imshow(J)']);
b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'style','pushbutton',...
    'string','         ',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[170 50 50 20],...
    'callback','close');
b5=uicontrol('parent',h0,...
    'units','points',...
    'tag','b5',...
    'style','pushbutton',...
    'string','                 ',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[100 50 50 20],...
    'callback',[...
```

```matlab
                'cla,',...

                'I=imread("flowers.tif");,',...

                'J=rgb2ycbcr(I);,',...

                'imshow(J)']);
b6=uicontrol('parent',h0,...

        'units','points',...

        'tag','b6',...

        'style','pushbutton',...

        'string','                    ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[30 50 50 20],...

        'callback',[...

                'cla,',...

                'I=imread("flowers.tif");,',...

                'J=rgb2hsv(I);,',...

                'imshow(J)']);
        76


h0=figure('toolbar','none',...

        'position',[198 56 500 500],...

        'name','        76');
h1=axes('parent',h0,...

        'position',[0.15 0.5 0.7 0.5],...

        'visible','off');
u1=uimenu('parent',h0,...
```

```
        'label','               ',...
        'backgroundcolor',[0.753 0.753 0.753],...
        'tag','u1',...
        'callback',[...
                '[X,map]=imread("800.jpg","jpg");,',...
                'Y=imresize(X,2);,',...
                'image(Y),',...
                'colormap(map),',...
                'axis image,',...
                'camva(camva/2.5),',...
                'disp("                              "),',...
                'disp("                                "),',...
                'while 1,',...
                '[x,y]=ginput(1);,',...
                'if ~strcmp(get(gcf,"selectiontype"),"normal"),',...
                'break,',...
                'end,',...
                'ct=camtarget;,',...
                'dx=x-ct(1);,',...
                'dy=y-ct(2);,',...
                'camdolly(dx,dy,ct(3),"movetarget","data"),',...
                'drawnow,',...
                'end']);
u2=uimenu('parent',h0,...
        'label','        ',...
```

```matlab
        'backgroundcolor',[0.753 0.753 0.753],...
        'tag','u2',...
        'callback','close');
        77


h0=figure('toolbar','none',...
        'position',[198 56 450 468],...
        'name','      77');
h1=axes('parent',h0,...
        'position',[0.3 0.45 0.5 0.5],...
        'visible','off');
load wind
b1huidiao=[...
            'cla,',...
            'xmin = min(x(:));,',...
            'xmax = max(x(:));,',...
            'ymax = max(y(:));,',...
            'zmin = min(z(:));,',...
            'wind_speed = sqrt(u.^2 + v.^2 + w.^2);,',...
            'hsurfaces                                    =
slice(x,y,z,wind_speed,[xmin,100,xmax],ymax,zmin);,',...
            'set(hsurfaces,"FaceColor","interp","EdgeColor","none"),',...
            'hcont                                        =
contourslice(x,y,z,wind_speed,[xmin,100,xmax],ymax,zmin);,',...
            'set(hcont,"EdgeColor",[.7,.7,.7],"LineWidth",.5),',...
```

```
        '[sx,sy,sz] = meshgrid(80,20:10:50,0:5:15);,',...

        'hlines = streamline(x,y,z,y,v,w,sx,sy,sz);,',...

        'set(hlines,"LineWidth",2,"Color","r"),',...

        'view(3),',...

        'daspect([2,2,1]),',...

        'axis tight'];

b2huidiao=[...

        'cla,',...

        'wind_speed = sqrt(u.^2 + v.^2 + w.^2);,',...

        'hiso = patch(isosurface(x,y,z,wind_speed,40));,',...

        'isonormals(x,y,z,wind_speed,hiso),',...

        'set(hiso,"FaceColor","red","EdgeColor","none");,',...

        'hcap                                              =
patch(isocaps(x,y,z,wind_speed,40),"FaceColor","interp","EdgeColor","non
e");,',...

        'colormap hsv,',...

        'daspect([1,1,1]);,',...

        '[f verts] = reducepatch(isosurface(x,y,z,wind_speed,30),0.07);,',...

        'h1 = coneplot(x,y,z,u,v,w,verts(:,1),verts(:,2),verts(:,3),3);,',...

        'set(h1,"FaceColor","blue","EdgeColor","none");,',...

        'xrange = linspace(min(x(:)),max(x(:)),10);,',...

        'yrange = linspace(min(y(:)),max(y(:)),10);,',...

        'zrange = 3:4:15;,',...

        '[cx,cy,cz] = meshgrid(xrange,yrange,zrange);,',...

        'h2 = coneplot(x,y,z,u,v,w,cx,cy,cz,2);,',...
```

```matlab
        'set(h2,"FaceColor","green","EdgeColor","none");,',...
        'axis tight,',...
        'box on,',...
        'camproj perspective,',...
        'camzoom(1.25),',...
        'view(65,45),',...
        'camlight(-45,45),',...
        'lighting phong,',...
        'set(hcap,"AmbientStrength",.6)'];
b1=uicontrol('parent',h0,...
    'style','pushbutton',...
    'units','points',...
    'tag','b1',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','        ',...
    'position',[50 100 60 20],...
    'callback',b1huidiao);
b2=uicontrol('parent',h0,...
    'style','pushbutton',...
    'units','points',...
    'tag','b2',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','        ',...
    'position',[200 100 60 20],...
    'callback',b2huidiao);
```

```matlab
b3=uicontrol('parent',h0,...
        'style','pushbutton',...
        'units','points',...
        'tag','b3',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'string','        ',...
        'position',[125 60 60 20],...
        'callback','close');
        78                2


h0=figure('toolbar','none',...
        'position',[198 56 350 468],...
        'name','        78');
h1=axes('parent',h0,...
        'position',[0.25 0.45 0.5 0.5],...
        'visible','off');
load imdemos flower
imshow(flower)
colormap(copper)
n=size(X,1);
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
        'string','        ',...
```

```
        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[30 100 50 20],...

        'callback',[...

                'cla,',...

                '[X,map]=imread("flowers.tif");,',...

                'X=double(flower);,',...

                'X=(0.25/256)*X;,',...

                'C=copper(35);,',...

                'set(gca,"colororder",C(21:35,:),"box","on");,',...

                'imcontour(X,3);,',...

                'axis([1 n 1 n]),',...

                'axis("ij"),',...

                'axis("square")']);
b2=uicontrol('parent',h0,...

        'units','points',...

        'tag','b2',...

        'style','pushbutton',...

        'string','            ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[100 100 50 20],...

        'callback',[...

                'cla,',...

                'D=-del2(X);,',...

                'pcolor(D),',...

                'axis([1 n 1 n]),',...
```

```
                'axis("ij"),',...

                'shading("flat")']);

b3=uicontrol('parent',h0,...

        'units','points',...

        'tag','b3',...

        'style','pushbutton',...

        'string','3D        ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[170 100 50 20],...

        'callback',[...

                'cla,',...

                'D=-del2(X);,',...

                'surf(X,D),',...

                'colormap(copper),',...

                'axis([1 n 1 n 0 1]),',...

                'axis("ij"),',...

                'shading("flat"),',...

                'view(-20,75);']);

b4=uicontrol('parent',h0,...

        'units','points',...

        'tag','b4',...

        'style','pushbutton',...

        'string','        ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[80 50 80 30],...
```

```matlab
        'callback','close');

        79


h0=figure('toolbar','none',...

        'position',[198 56 350 468],...

        'name','       79');

h1=axes('parent',h0,...

        'position',[0.25 0.45 0.5 0.5],...

        'visible','off');

load imdemos bacteria

imshow(bacteria)

k1=~(bacteria>100);

k2=filter2(fspecial('laplacian'),bacteria);

k3=(k2>-4)&k1;

k4=erode(k1)&(k3==0);

[r,c]=find(k4);

k5=bwselect(k1,c,r);

b1=uicontrol('parent',h0,...

        'units','points',...

        'tag','b1',...

        'style','pushbutton',...

        'string','              ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[30 110 50 20],...

        'callback',[...
```

```matlab
            'cla,',...

            'imshow(k1)']);
b2=uicontrol('parent',h0,...

    'units','points',...

    'tag','b2',...

    'style','pushbutton',...

    'string','          ',...

    'backgroundcolor',[0.75 0.75 0.75],...

    'position',[100 110 50 20],...

    'callback',[...

            'cla,',...

            'imshow(k2)']);
b3=uicontrol('parent',h0,...

    'units','points',...

    'tag','b3',...

    'style','pushbutton',...

    'string','          ',...

    'backgroundcolor',[0.75 0.75 0.75],...

    'position',[170 110 50 20],...

    'callback',[...

            'cla,',...

            'imshow(k3)']);
b4=uicontrol('parent',h0,...

    'units','points',...

    'tag','b4',...
```

```matlab
        'style','pushbutton',...
        'string','              ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[30 60 50 20],...
        'callback',[...
             'cla,',...
             'imshow(k4)']);
b5=uicontrol('parent',h0,...
        'units','points',...
        'tag','b5',...
        'style','pushbutton',...
        'string','                 ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[100 60 50 20],...
        'callback',[...
             'cla,',...
             'imshow(k5)']);
b6=uicontrol('parent',h0,...
        'units','points',...
        'tag','b6',...
        'style','pushbutton',...
        'string','       ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[170 60 50 20],...
        'callback','close');
```

```
h0=figure('toolbar','none',...

    'position',[198 56 350 450],...

    'name','      80');

h1=axes('parent',h0,...

    'position',[0.25 0.45 0.6 0.5],...

    'visible','off');


I=imread('flowers.tif');

imshow(I)

b1=uicontrol('parent',h0,...

    'units','points',...

    'tag','b1',...

    'style','pushbutton',...

    'string','       ',...

    'backgroundcolor',[0.75 0.75 0.75],...

    'position',[50 80 60 25],...

    'callback',[...

        'handlek=waitbar(0,''initializing......'');,',...

        'pause(0.5),',...

        'i=1;,',...

        'while    i<=100,',...

        'waitbar(i/100,handlek,[num2str(i),''%finished''],handlek),',...

        'i=i+1;,',...
```

```matlab
            'pause(0.05),',...
            'end,',...
            'pause(1.5),',...
            'cla,',...
            'delete(handlek),',...
            'Y=rgb2ntsc(I);,',...
            'J=Y(:,:,1);,',...
            'imshow(J)']);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'style','pushbutton',...
        'string','        ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[150 80 60 25],...
        'callback','close');
```

81   MRI

```matlab
load mri
D = squeeze(D);
h0=figure('toolbar','none',...
        'position',[198 56 450 468],...
        'name','        81');
h1=axes('parent',h0,...
        'position',[0.3 0.45 0.5 0.5],...
```

```matlab
        'visible','off');

image_num = 8;

image(D(:,:,image_num))

axis image

colormap(map)

x = xlim;

y = ylim;

b1=uicontrol('parent',h0,...

        'units','points',...

        'tag','b1',...

        'style','pushbutton',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[50 100 60 20],...

        'string','          ',...

        'callback',[...

                'cla,',...

                'contourslice(D,[],[],image_num),',...

                'axis ij,',...

                'xlim(x),',...

                'ylim(y),',...

                'daspect([1,1,1]),',...

                'colormap("default")']);

b2=uicontrol('parent',h0,...

        'units','points',...

        'tag','b2',...
```

```
        'style','pushbutton',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[250 100 60 20],...
        'string','          ',...
        'callback',[...
            'cla,',...
            'phandles = contourslice(D,[],[],[1,12,19,27],8);,',...
            'view(3);,',...
            'axis tight,',...
            'set(phandles,"LineWidth",2)']);
b3=uicontrol('parent',h0,...
        'units','points',...
        'tag','b3',...
        'style','pushbutton',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[50 50 60 20],...
        'string','          ',...
        'callback',[...
            'cla,',...
            'Ds = smooth3(D);,',...
            'hiso                                              =
patch(isosurface(Ds,5),"FaceColor",[1,.75,.65],"EdgeColor","none");,',...
            'hcap                                              =
patch(isocaps(D,5),"FaceColor","interp","EdgeColor","none");,',...
            'colormap(map),',...
```

```matlab
            'view(45,30),',...
            'axis tight,',...
            'daspect([1,1,.4]),',...
            'lightangle(45,30),',...
            'lighting phong,',...
            'isonormals(Ds,hiso),',...
            'set(hcap,"AmbientStrength",.6),',...

'set(hiso,"SpecularColorReflectance",0,"SpecularExponent",50)']);
b4=uicontrol('parent',h0,...
        'units','points',...
        'tag','b4',...
        'style','pushbutton',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[250 50 60 20],...
        'string','          ',...
        'callback','close');
        82

h0=figure('toolbar','none',...
        'position',[198 56 350 468],...
        'name','        82');
h1=axes('parent',h0,...
        'position',[0.2 0.45 0.5 0.5],...
        'visible','off');
```

```
load earth

clims = [10 60];

b1=uicontrol('parent',h0,...

        'units','points',...

        'tag','b1',...

        'style','pushbutton',...

        'string','              ',...

        'position',[30 120 50 20],...

        'callback',[...

                'cla,',...

                'imagesc(X,clims),',...

                'colormap(gray)']);

b2=uicontrol('parent',h0,...

        'units','points',...

        'tag','b2',...

        'style','pushbutton',...

        'string','              ',...

        'position',[100 120 50 20],...

        'callback',[...

                'cla,',...

                'image(X),',...

                'colormap(map),',...

                'axis image']);

b3=uicontrol('parent',h0,...

        'units','points',...
```

```
        'tag','b3',...

        'style','pushbutton',...

        'string','              ',...

        'position',[170 120 50 20],...

        'callback',[...

                'cla,',...

                'image(X),',...

                'axis image']);
b4=uicontrol('parent',h0,...

        'units','points',...

        'tag','b4',...

        'style','pushbutton',...

        'string','        ',...

        'position',[100 50 50 20],...

        'callback','close');

        83


h0=figure('toolbar','none',...

        'position',[198 56 350 468],...

        'name','       83');
h1=axes('parent',h0,...

        'position',[0.25 0.45 0.5 0.5],...

        'visible','off');
b1=uicontrol('parent',h0,...

        'units','points',...
```

```matlab
        'tag','b1',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'style','pushbutton',...
        'string','           ',...
        'position',[30 120 50 20],...
        'callback',[...
                'cla,',...
                'I = imread("plane.jpg");,',...
                'imshow(I),',...
                'colorbar']);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'style','pushbutton',...
        'position',[100 120 50 20],...
        'string','           ',...
        'callback',[...
                'cla,',...
                'load mri,',...
                'imshow(D(:,:,:,7))']);
b3=uicontrol('parent',h0,...
        'units','points',...
        'tag','b3',...
        'backgroundcolor',[0.75 0.75 0.75],...
```

```
        'style','pushbutton',...

        'string','              ',...

        'position',[30 60 50 20],...

        'callback',[...

                'cla,',...

                'load mri,',...

                'montage(D,map),',...

                'mov=immovie(D,map);,',...

                'colormap(map),',...

                'movie(mov)']);
b4=uicontrol('parent',h0,...

        'units','points',...

        'tag','b4',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'style','pushbutton',...

        'string','              ',...

        'position',[170 60 50 20],...

        'callback',[...

                'cla,',...

                '[x,y,z] = cylinder;,',...

                'I = imread("girls.jpg");,',...

                'warp(x,z,y,I);']);
b5=uicontrol('parent',h0,...

        'units','points',...

        'tag','b5',...
```

```matlab
            'backgroundcolor',[0.75 0.75 0.75],...

            'style','pushbutton',...

            'string','        ',...

            'position',[100 60 50 20],...

            'callback','close');
b6=uicontrol('parent',h0,...

            'units','points',...

            'tag','b6',...

            'backgroundcolor',[0.75 0.75 0.75],...

            'style','pushbutton',...

            'string','            ',...

            'position',[170 120 50 20],...

            'callback',[...

                    'cla,',...

                    'load mri,',...

                    'montage(D,map)']);
        84


h0=figure('toolbar','none',...

        'position',[198 56 400 468],...

        'name','      84');
h1=axes('parent',h0,...

        'position',[0.25 0.45 0.5 0.5],...

        'visible','off');
I=imread('plane.jpg','jpg');
```

```matlab
imshow(I)

b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'style','pushbutton',...
        'string','            ',...
        'position',[200 120 50 20],...
        'callback',[...
                'cla,',...
                'k=str2num(get(e1,"string"));,',...
                'I=imread("plane.jpg","jpg");,',...
                'J=imrotate(I,k,"bilinear");,',...
                'imshow(J)']);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'style','pushbutton',...
        'string','            ',...
        'position',[200 80 50 20],...
        'callback',[...
                'cla,',...
                'imshow plane.jpg,',...
                'I=imcrop;,',...
```

```matlab
            'imshow(I)']);
    b3=uicontrol('parent',h0,...
        'units','points',...
        'tag','b3',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'style','pushbutton',...
        'string','        ',...
        'position',[120 30 50 20],...
        'callback','close');
e1=uicontrol('parent',h0,...
        'units','points',...
        'tag','e1',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'style','edit',...
        'horizontalalignment','right',...
        'position',[50 80 100 20]);
t1=uicontrol('parent',h0,...
        'units','points',...
        'tag','t1',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'style','text',...
        'string','                    0    90      ',...
        'fontsize',12,...
        'position',[40 100 130 20]);
        85
```

```matlab
h0=figure('toolbar','none',...
      'position',[200 50 350 450],...
      'name','        85');
h1=axes('parent',h0,...
      'position',[0.10 0.45 0.8 0.5],...
      'visible','off');
x=0:0.2:2*pi;
y=sin(x);
plot(x,y)
b1=uicontrol('parent',h0,...
      'units','points',...
      'tag','b1',...
      'style','pushbutton',...
      'string','                   ',...
      'backgroundcolor',[0.75 0.75 0.75],...
      'position',[20 60 70 20],...
      'callback',[...
            'cla,',...
            'strn=get(e1,''string'');,',...
            'n=str2num(strn);,',...
            'i=1;,',...
            'x=0:0.2:2*pi;,',...
            'for t=0:0.2:2*pi,',...
            'y(i)=sin(t);,',...
```

```
        'L(i)=lag(t,n);,',...

        'i=i+1;,',...

        'end,',...

        'plot(x,y,"b*",x,L,"r-"),',...

        'legend("sin(x)","            ");,',...

        'axis([0 7 -1.5 1.5])']);
b2=uicontrol('parent',h0,...

    'units','points',...

    'tag','b2',...

    'style','pushbutton',...

    'string','           ',...

    'backgroundcolor',[0.75 0.75 0.75],...

    'position',[170 60 70 20],...

    'callback',[...

        'strn=get(e1,"string");,',...

        'n=str2num(strn);,',...

        'strm=get(e2,"string");,',...

        'm=str2num(strm);,',...

        'dd=abs(sin(m)-lag(m,n));,',...

        'msgbox(["         ",num2str(dd)],"             ")']);
e1=uicontrol('parent',h0,...

    'units','points',...

    'tag','e1',...

    'style','edit',...

    'fontsize',12,...
```

```matlab
        'string','5',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[50 100 40 20]);
e2=uicontrol('parent',h0,...

        'units','points',...

        'tag','e2',...

        'style','edit',...

        'fontsize',12,...

        'string','1.20',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[200 100 40 20]);
t1=uicontrol('parent',h0,...

        'units','points',...

        'tag','t1',...

        'style','text',...

        'string','          ',...

        'fontsize',12,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[20 100 30 20]);
t2=uicontrol('parent',h0,...

        'units','points',...

        'tag','t2',...

        'style','text',...
```

```matlab
        'string','             ',...
        'fontsize',12,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[160 100 40 20]);
b3=uicontrol('parent',h0,...
        'units','points',...
        'tag','b3',...
        'style','pushbutton',...
        'string','      ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[100 20 60 20],...
        'callback','close');
```

86

```matlab
h0=figure('toolbar','none',...
        'position',[200 50 350 450],...
        'name','     86');
h1=axes('parent',h0,...
        'position',[0.10 0.45 0.8 0.5],...
        'visible','off');
x=0:0.2:2*pi;
y=sin(x);
plot(x,y)
b1=uicontrol('parent',h0,...
        'units','points',...
```

```
        'tag','b1',...
        'style','pushbutton',...
        'string','                    ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[20 60 70 20],...
        'callback',[...
                'y=0,',...
                'sy=0,',...
                'strn1=get(e2,"string");,',...
                'n1=str2num(strn1);,',...
                'strn2=get(e3,"string");,',...
                'n2=str2num(strn2);,',...
                'x=n1:0.2:n2;,',...
                'i=1;,',...
                'for t=n1:0.2:n2,',...
                'y(i)=sin(t);,',...
                'sy(i)=san(t,n1,n2);,',...
                'i=i+1;,',...
                'end,',...
                'plot(x,y,"b*",x,sy,"r-"),',...
                'axis([0 7 -1.5 1.5]),',...
                'legend("sin(x)","N-Hermite        ")']);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
```

```
        'style','pushbutton',...
        'string','              ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[170 60 70 20],...
        'callback',[...
                'strdn1=get(e2,"string");,',...
                'n1=str2num(strdn1);,',...
                'strdn2=get(e3,"string");,',...
                'n2=str2num(strdn2);,',...
                'strdn=get(e1,"string");,',...
                'dn=str2num(strdn);,',...
                'dd=abs(sin(dn)-san(dn,n1,n2));,',...
                'msgbox(["            ",num2str(dd)],"            ")']);
e1=uicontrol('parent',h0,...
        'units','points',...
        'tag','e1',...
        'style','edit',...
        'fontsize',12,...
        'string','1.20',...
        'horizontalalignment','right',...
        'backgroundcolor',[1 1 1],...
        'position',[200 100 40 20]);
t1=uicontrol('parent',h0,...
        'units','points',...
        'tag','t1',...
```

```matlab
        'style','text',...

        'string','            ',...

        'fontsize',12,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[160 100 40 20]);
e2=uicontrol('parent',h0,...

        'units','points',...

        'tag','e2',...

        'style','edit',...

        'fontsize',12,...

        'string','1.00',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[20 85 40 20]);
t2=uicontrol('parent',h0,...

        'units','points',...

        'tag','t2',...

        'style','text',...

        'string','            ',...

        'fontsize',12,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[15 105 50 20]);
e3=uicontrol('parent',h0,...

        'units','points',...

        'tag','e3',...
```

```matlab
        'style','edit',...

        'fontsize',12,...

        'string','3.00',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[100 85 40 20]);
t3=uicontrol('parent',h0,...

        'units','points',...

        'tag','t3',...

        'style','text',...

        'string','                ',...

        'fontsize',12,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[95 105 50 20]);
b3=uicontrol('parent',h0,...

        'units','points',...

        'tag','b3',...

        'style','pushbutton',...

        'string','        ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[100 20 60 20],...

        'callback','close');
```

        87   NEWTON

```matlab
h0=figure('toolbar','none',...
```

```matlab
        'position',[200 50 350 450],...
        'name','        87');
h1=axes('parent',h0,...
        'position',[0.10 0.45 0.8 0.5],...
        'visible','off');
x=0:0.2:2*pi;
y=sin(x);
plot(x,y)
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
        'string','              ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[20 60 70 20],...
        'callback',[...
                'strn=get(e1,''string'');,',...
                'n=str2num(strn);,',...
                'x=0:0.2:2*pi;,',...
                'i=1;,',...
                'for t=0:0.2:2*pi,',...
                'y(i)=sin(t);,',...
                'ynt(i)=newton(t,n);,',...
                'i=i+1;,',...
                'end,',...
```

```
                    'plot(x,y,"b*",x,ynt,"r-"),',...

                    'axis([0 7 -1.5 1.5]),',...

                    'legend("sin(x)","                ")']);
b2=uicontrol('parent',h0,...

        'units','points',...

        'tag','b2',...

        'style','pushbutton',...

        'string','              ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[170 60 70 20],...

        'callback',[...

                'strn=get(e1,"string");,',...

                'n=str2num(strn);,',...

                'strdn=get(e2,"string");,',...

                'dn=str2num(strdn);,',...

                'dd=abs(sin(dn)-newton(dn,n));,',...

                'msgbox(["            ",num2str(dd)],"              ")']);
e1=uicontrol('parent',h0,...

        'units','points',...

        'tag','e1',...

        'style','edit',...

        'fontsize',12,...

        'string','5',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...
```

```matlab
        'position',[50 100 40 20]);
e2=uicontrol('parent',h0,...
        'units','points',...
        'tag','e2',...
        'style','edit',...
        'fontsize',12,...
        'string','1.20',...
        'horizontalalignment','right',...
        'backgroundcolor',[1 1 1],...
        'position',[200 100 40 20]);
t1=uicontrol('parent',h0,...
        'units','points',...
        'tag','t1',...
        'style','text',...
        'string','                <6   ',...
        'fontsize',12,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[10 100 40 30]);
t2=uicontrol('parent',h0,...
        'units','points',...
        'tag','t2',...
        'style','text',...
        'string','              ',...
        'fontsize',12,...
        'backgroundcolor',[0.75 0.75 0.75],...
```

```matlab
        'position',[160 100 40 20]);
b3=uicontrol('parent',h0,...
        'units','points',...
        'tag','b3',...
        'style','pushbutton',...
        'string','        ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[100 20 60 20],...
        'callback','close');
        88   hermite


h0=figure('toolbar','none',...
        'position',[200 50 350 450],...
        'name','      88');
h1=axes('parent',h0,...
        'position',[0.10 0.45 0.8 0.5],...
        'visible','off');
x=0:0.2:2*pi;
y=sin(x);
plot(x,y)
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
        'string','Hermite       ',...
```

```matlab
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[20 60 70 20],...
        'callback',[...
                'strn1=get(e2,"string");,',...
                'n1=str2num(strn1);,',...
                'strn2=get(e3,"string");,',...
                'n2=str2num(strn2);,',...
                'x=0:0.2:2*pi;,',...
                'i=1;,',...
                'for t=0:0.2:2*pi,',...
                'y(i)=sin(t);,',...
                'ynt(i)=hermite(t,n1,n2);,',...
                'i=i+1;,',...
                'end,',...
                'plot(x,y,"b*",x,ynt,"r-"),',...
                'axis([0 7 -1.5 1.5]),',...
                'legend("sin(x)","Hermite        ")']);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'style','pushbutton',...
        'string','              ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[170 60 70 20],...
        'callback',[...
```

```
                'strn1=get(e2,"string");,',...

                'n1=str2num(strn1);,',...

                'strn2=get(e3,"string");,',...

                'n2=str2num(strn2);,',...

                'dn=str2num(strdn);,',...

                'dd=abs(sin(dn)-hermite(dn,n1,n2));,',...

                'msgbox(["            ",num2str(dd)],"              ")']);
e1=uicontrol('parent',h0,...

        'units','points',...

        'tag','e1',...

        'style','edit',...

        'fontsize',12,...

        'string','1.20',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[200 100 40 20]);
t1=uicontrol('parent',h0,...

        'units','points',...

        'tag','t1',...

        'style','text',...

        'string','            ',...

        'fontsize',12,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[160 100 40 20]);
e2=uicontrol('parent',h0,...
```

```
        'units','points',...

        'tag','e2',...

        'style','edit',...

        'fontsize',12,...

        'string','1.00',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[20 85 40 20]);
t2=uicontrol('parent',h0,...

        'units','points',...

        'tag','t2',...

        'style','text',...

        'string','              ',...

        'fontsize',12,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[15 105 50 20]);
e3=uicontrol('parent',h0,...

        'units','points',...

        'tag','e3',...

        'style','edit',...

        'fontsize',12,...

        'string','3.00',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[100 85 40 20]);
```

```
t3=uicontrol('parent',h0,...
      'units','points',...
      'tag','t3',...
      'style','text',...
      'string','                ',...
      'fontsize',12,...
      'backgroundcolor',[0.75 0.75 0.75],...
      'position',[95 105 50 20]);
b3=uicontrol('parent',h0,...
      'units','points',...
      'tag','b3',...
      'style','pushbutton',...
      'string','      ',...
      'backgroundcolor',[0.75 0.75 0.75],...
      'position',[100 20 60 20],...
      'callback','close');
      89   mewton           hermite


h0=figure('toolbar','none',...
      'position',[200 50 350 450],...
      'name','      89');
h1=axes('parent',h0,...
      'position',[0.10 0.45 0.8 0.5],...
      'visible','off');
x=0:0.2:2*pi;
```

```matlab
y=sin(x);
plot(x,y)
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
        'string','N-Hermite        ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[20 60 70 20],...
        'callback',[...
                'strn1=get(e2,"string");,',...
                'n1=str2num(strn1);,',...
                'strn2=get(e3,"string");,',...
                'n2=str2num(strn2);,',...
                'x=0:0.2:2*pi;,',...
                'i=1;,',...
                'for t=0:0.2:2*pi,',...
                'y(i)=sin(t);,',...
                'ynh(i)=nhermite(t,n1,n2);,',...
                'i=i+1;,',...
                'end,',...
                'plot(x,y,"b*",x,ynh,"r-"),',...
                'axis([0 7 -1.5 1.5]),',...
                'legend("sin(x)","N-Hermite        ")']);
b2=uicontrol('parent',h0,...
```

```
        'units','points',...

        'tag','b2',...

        'style','pushbutton',...

        'string','              ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[170 60 70 20],...

        'callback',[...

                'strdn1=get(e2,"string");,',...

                'n1=str2num(strdn1);,',...

                'strdn2=get(e3,"string");,',...

                'n2=str2num(strdn2);,',...

                'strdn=get(e1,"string");,',...

                'dn=str2num(strdn);,',...

                'dd=abs(sin(dn)-nhermite(dn,n1,n2));,',...

                'msgbox(["              ",num2str(dd)],"              ")']);
e1=uicontrol('parent',h0,...

        'units','points',...

        'tag','e1',...

        'style','edit',...

        'fontsize',12,...

        'string','1.20',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[200 100 40 20]);
t1=uicontrol('parent',h0,...
```

```
        'units','points',...

        'tag','t1',...

        'style','text',...

        'string','              ',...

        'fontsize',12,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[160 100 40 20]);
e2=uicontrol('parent',h0,...

        'units','points',...

        'tag','e2',...

        'style','edit',...

        'fontsize',12,...

        'string','1.00',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[20 85 40 20]);
t2=uicontrol('parent',h0,...

        'units','points',...

        'tag','t2',...

        'style','text',...

        'string','               ',...

        'fontsize',12,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[15 105 50 20]);
e3=uicontrol('parent',h0,...
```

```
        'units','points',...

        'tag','e3',...

        'style','edit',...

        'fontsize',12,...

        'string','3.00',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[100 85 40 20]);
t3=uicontrol('parent',h0,...

        'units','points',...

        'tag','t3',...

        'style','text',...

        'string','               ',...

        'fontsize',12,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[95 105 50 20]);
b3=uicontrol('parent',h0,...

        'units','points',...

        'tag','b3',...

        'style','pushbutton',...

        'string','      ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[100 20 60 20],...

        'callback','close');
        90
```

```matlab
h0=figure('toolbar','none',...
     'position',[200 150 450 250]);
h1=axes('parent',h0,...
     'position',[0.05 0.15 0.65 0.6],...
     'visible','off');
I=imread('abmatrix.bmp','bmp');
image(I)
axis off
huidiao=[...
          'a=[1 0 3 0;0 2 1 2;3 1 15 0;0 2 0 4];,',...
          'b=[1 6 5 8]'';,',...
          'r=[a,b];,',...
          'n=4;,',...
          'tic,',...
          'x=ch(a,b,n);,',...
          'time1=toc;,',...
          'T=num2str(time1);,',...
          'set(e1,''string'',[T,''     '']);,',...
          'msgbox([''X
['',num2str(x(1)),num2str(x(2)),num2str(x(3)),num2str(x(4)),'']''],''
     '');'];
t1=uicontrol('parent',h0,...
     'units','points',...
     'tag','t1',...
```

```matlab
        'style','text',...

        'string','                   ',...

        'fontsize',15,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[20 150 100 20]);
e1=uicontrol('parent',h0,...

        'units','points',...

        'tag','e1',...

        'style','edit',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[290 100 30 20]);
t2=uicontrol('parent',h0,...

        'units','points',...

        'tag','t2',...

        'style','text',...

        'string','               ',...

        'fontsize',15,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[250 125 80 20]);
b1=uicontrol('parent',h0,...

        'units','points',...

        'tag','b1',...

        'style','pushbutton',...

        'string','            ',...
```

```matlab
        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[250 60 60 20],...

        'callback',huidiao);
b2=uicontrol('parent',h0,...

        'units','points',...

        'tag','b2',...

        'string','        ',...

        'style','pushbutton',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[250 30 60 20],...

        'callback','close');
        91   gauss


h0=figure('toolbar','none',...

        'position',[200 150 450 250],...

        'name','      91');
h1=axes('parent',h0,...

        'position',[0.05 0.15 0.65 0.6],...

        'visible','off');
I=imread('abmatrix.bmp','bmp');
image(I)
axis off
huidiao=[...

            'a=[1 2 4 1 7;2 3 0 1 8;4 1 7 6 1;1 1 0 2 1;1 3 0 1 1;];,',...

            'b=[15 14 19 5 6]'';,',...
```

```
        'r=[a,b];,',...

        'n=5;,',...

        'tic,',...

        'x=gauss(r,n);,',...

        'time1=toc;,',...

        'T=num2str(time1);,',...

        'set(e1,"string",[T,"    "]);,',...

        'msgbox(["X

["",num2str(x(1)),num2str(x(2)),num2str(x(3)),num2str(x(4)),num2str(x(5)),"

]"],"               ");'];

t1=uicontrol('parent',h0,...

        'units','points',...

        'tag','t1',...

        'style','text',...

        'string','                ',...

        'fontsize',15,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[20 150 100 20]);

e1=uicontrol('parent',h0,...

        'units','points',...

        'tag','e1',...

        'style','edit',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[290 100 30 20]);
```

```matlab
t2=uicontrol('parent',h0,...
        'units','points',...
        'tag','t2',...
        'style','text',...
        'string','              ',...
        'fontsize',15,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[250 125 80 20]);
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
        'string','GS       ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[250 60 60 20],...
        'callback',huidiao);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'string','     ',...
        'style','pushbutton',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[250 30 60 20],...
        'callback','close');
```

```matlab
h0=figure('toolbar','none',...
        'position',[200 150 450 250],...
        'name','      92');
h1=axes('parent',h0,...
        'position',[0.05 0.15 0.65 0.6],...
        'visible','off');
I=imread('abmatrix.bmp','bmp');
image(I)
axis off
huidiao=[...
            'a=[1 2 4 1 7;2 3 0 1 8;4 1 7 6 1;1 1 0 2 1;1 3 0 1 1;];,',...
            'b=[15 14 19 5 6]'';,',...
            'n=5;,',...
            'tic,',...
            'x=dirang(a,b,n);,',...
            'time1=toc;,',...
            'T=num2str(time1);,',...
            'set(e1,''string'',[T,''    '']);,',...
            'msgbox([''X
['',num2str(x(1)),num2str(x(2)),num2str(x(3)),num2str(x(4)),num2str(x(5)),''
]''],''              '');'];
t1=uicontrol('parent',h0,...
        'units','points',...
        'tag','t1',...
```

```matlab
        'style','text',...
        'string','                    ',...
        'fontsize',15,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[20 150 100 20]);
e1=uicontrol('parent',h0,...
        'units','points',...
        'tag','e1',...
        'style','edit',...
        'horizontalalignment','right',...
        'backgroundcolor',[1 1 1],...
        'position',[270 100 50 20]);
t2=uicontrol('parent',h0,...
        'units','points',...
        'tag','t2',...
        'style','text',...
        'string','                ',...
        'fontsize',15,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[250 125 80 20]);
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
        'string','                ',...
```

```matlab
        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[250 60 60 20],...

        'callback',huidiao);
b2=uicontrol('parent',h0,...

        'units','points',...

        'tag','b2',...

        'string','        ',...

        'style','pushbutton',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[250 30 60 20],...

        'callback','close');
        93    jacobi


h0=figure('toolbar','none',...

        'position',[200 150 450 250],...

        'name','      93');
h1=axes('parent',h0,...

        'position',[0.05 0.15 0.65 0.6],...

        'visible','off');
I=imread('abmatrix.bmp','bmp');
image(I)
axis off
huidiao=[...

            'a=[1 0 3 0;0 2 1 2;3 1 15 0;0 2 0 4;];,',...

            'b=[1 6 5 8]'';,',...
```

```
        'n=4;,',...

        'u=zeros(n,1);,',...

        'tic,',...

        '[x,k]=jac(a,b,n,u);,',...

        'time1=toc;,',...

        'T=num2str(time1);,',...

        'set(e1,"string",[T,"    "]);,',...

        'set(e2,"string",num2str(k));,',...

        'msgbox(["X            [",num2str(x(1)),"        ",num2str(x(2)),"

",num2str(x(3)),",",num2str(x(4)),"]"],"              ");'];

t1=uicontrol('parent',h0,...

    'units','points',...

    'tag','t1',...

    'style','text',...

    'string','              ',...

    'fontsize',15,...

    'backgroundcolor',[0.75 0.75 0.75],...

    'position',[20 150 100 20]);

e1=uicontrol('parent',h0,...

    'units','points',...

    'tag','e1',...

    'style','edit',...

    'horizontalalignment','right',...

    'backgroundcolor',[1 1 1],...

    'position',[295 130 35 20]);
```

```matlab
t2=uicontrol('parent',h0,...
        'units','points',...
        'tag','t2',...
        'style','text',...
        'string','                ',...
        'fontsize',10,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[240 130 50 20]);
e2=uicontrol('parent',h0,...
        'units','points',...
        'tag','e2',...
        'style','edit',...
        'horizontalalignment','right',...
        'backgroundcolor',[1 1 1],...
        'position',[295 100 35 20]);
t2=uicontrol('parent',h0,...
        'units','points',...
        'tag','t2',...
        'style','text',...
        'string','                ',...
        'fontsize',10,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[240 100 50 20]);
b1=uicontrol('parent',h0,...
        'units','points',...
```

```matlab
        'tag','b1',...

        'style','pushbutton',...

        'string','Jacobi          ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[250 60 60 20],...

        'callback',huidiao);
b2=uicontrol('parent',h0,...

        'units','points',...

        'tag','b2',...

        'string','        ',...

        'style','pushbutton',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[250 30 60 20],...

        'callback','close');

        94   gauss


h0=figure('toolbar','none',...

        'position',[200 150 450 250],...

        'name','      94');
h1=axes('parent',h0,...

        'position',[0.05 0.15 0.65 0.6],...

        'visible','off');
I=imread('abmatrix.bmp','bmp');
image(I)
axis off
```

```matlab
huidiao=[...
            'a=[1 0 3 0;0 2 1 2;3 1 15 0;0 2 0 4;];,',...
            'b=[1 6 5 8]'';,',...
            'n=4;,',...
            'u=zeros(n,1);,',...
            'tic,',...
            '[x,k]=gs(a,b,n,u);,',...
            'time1=toc;,',...
            'T=num2str(time1);,',...
            'set(e1,''string'',[T,''    '']);,',...
            'set(e2,''string'',num2str(k));,',...
            'msgbox([''X            ['',num2str(x(1)),''       '',num2str(x(2)),''
'',num2str(x(3)),'','',num2str(x(4)),'']''],''            '');'];
t1=uicontrol('parent',h0,...
        'units','points',...
        'tag','t1',...
        'style','text',...
        'string','            ',...
        'fontsize',15,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[20 150 100 20]);
e1=uicontrol('parent',h0,...
        'units','points',...
        'tag','e1',...
        'style','edit',...
```

```matlab
        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[295 130 35 20]);
t2=uicontrol('parent',h0,...

        'units','points',...

        'tag','t2',...

        'style','text',...

        'string','               ',...

        'fontsize',10,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[240 130 50 20]);
e2=uicontrol('parent',h0,...

        'units','points',...

        'tag','e2',...

        'style','edit',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[295 100 35 20]);
t2=uicontrol('parent',h0,...

        'units','points',...

        'tag','t2',...

        'style','text',...

        'string','              ',...

        'fontsize',10,...

        'backgroundcolor',[0.75 0.75 0.75],...
```

```matlab
        'position',[240 100 50 20]);
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
        'string','GS        ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[250 60 60 20],...
        'callback',huidiao);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'string','        ',...
        'style','pushbutton',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[250 30 60 20],...
        'callback','close');
        95    sor


h0=figure('toolbar','none',...
        'position',[200 150 450 250],...
        'name','      95');
h1=axes('parent',h0,...
        'position',[0.05 0.15 0.65 0.6],...
        'visible','off');
```

```
I=imread('abmatrix.bmp','bmp');

image(I)

axis off

huidiao=[...

            'a=[1 0 3 0;0 2 1 2;3 1 15 0;0 2 0 4;];,',...

            'b=[1 6 5 8]'';,',...

            'n=4;,',...

            'u=zeros(n,1);,',...

            'tic,',...

            '[x,k]=sor(a,b,n,u);,',...

            'time1=toc;,',...

            'T=num2str(time1);,',...

            'set(e1,''string'',[T,''     '']);,',...

            'set(e2,''string'',num2str(k));,',...

            'msgbox([''X            ['',num2str(x(1)),''        '',num2str(x(2)),''
'',num2str(x(3)),'','',num2str(x(4)),'']''],''              '');'];

t1=uicontrol('parent',h0,...

        'units','points',...

        'tag','t1',...

        'style','text',...

        'string','              ',...

        'fontsize',15,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[20 150 100 20]);

e1=uicontrol('parent',h0,...
```

```
        'units','points',...

        'tag','e1',...

        'style','edit',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[295 130 35 20]);
t2=uicontrol('parent',h0,...

        'units','points',...

        'tag','t2',...

        'style','text',...

        'string','                  ',...

        'fontsize',10,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[240 130 50 20]);
e2=uicontrol('parent',h0,...

        'units','points',...

        'tag','e2',...

        'style','edit',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[295 100 35 20]);
t2=uicontrol('parent',h0,...

        'units','points',...

        'tag','t2',...

        'style','text',...
```

```matlab
        'string','                 ',...
        'fontsize',10,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[240 100 50 20]);
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
        'string','SOR          ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[250 60 60 20],...
        'callback',huidiao);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'string','        ',...
        'style','pushbutton',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[250 30 60 20],...
        'callback','close');
        96

h0=figure('toolbar','none',...
        'position',[200 150 450 250],...
        'name','       96');
```

```matlab
h1=axes('parent',h0,...
    'position',[0.05 0.15 0.65 0.6],...
    'visible','off');
I=imread('abmatrix.bmp','bmp');
image(I)
axis off
huidiao=[...
        'a=[1 0 3 0;0 2 1 2;3 1 15 0;0 2 0 4;];,',...
        'b=[1 6 5 8]'';,',...
        'n=4;,',...
        'u=zeros(n,1);,',...
        'tic,',...
        '[x,k]=cg(a,b,n,u);,',...
        'time1=toc;,',...
        'T=num2str(time1);,',...
        'set(e1,"string",[T,"    "]);,',...
        'set(e2,"string",num2str(k));,',...
        'msgbox(["X          [",num2str(x(1)),"        ",num2str(x(2)),"
",num2str(x(3)),",",num2str(x(4)),"]"],"              ");'];
t1=uicontrol('parent',h0,...
    'units','points',...
    'tag','t1',...
    'style','text',...
    'string','              ',...
    'fontsize',15,...
```

```
        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[20 150 100 20]);
e1=uicontrol('parent',h0,...

        'units','points',...

        'tag','e1',...

        'style','edit',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[295 130 35 20]);
t2=uicontrol('parent',h0,...

        'units','points',...

        'tag','t2',...

        'style','text',...

        'string','                  ',...

        'fontsize',10,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[240 130 50 20]);
e2=uicontrol('parent',h0,...

        'units','points',...

        'tag','e2',...

        'style','edit',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[295 100 35 20]);
t2=uicontrol('parent',h0,...
```

```
        'units','points',...

        'tag','t2',...

        'style','text',...

        'string','                    ',...

        'fontsize',10,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[240 100 50 20]);
b1=uicontrol('parent',h0,...

        'units','points',...

        'tag','b1',...

        'style','pushbutton',...

        'string','                  ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[250 60 60 20],...

        'callback',huidiao);
b2=uicontrol('parent',h0,...

        'units','points',...

        'tag','b2',...

        'string','        ',...

        'style','pushbutton',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[250 30 60 20],...

        'callback','close');
        97
```

```matlab
h0=figure('toolbar','none',...

    'position',[200 150 450 250],...

    'name','        97');

h1=axes('parent',h0,...

    'position',[0.05 0.15 0.65 0.6],...

    'visible','off');

I=imread('abmatrix.bmp','bmp');

image(I)

axis off

huidiao=[...

        'a=[1 0 3 0;0 2 1 2;3 1 15 0;0 2 0 4;];,',...

        'b=[1 6 5 8]'';,',...

        'n=4;,',...

        'u=zeros(n,1);,',...

        'tic,',...

        '[x,k]=getd(a,b,n,u);,',...

        'time1=toc;,',...

        'T=num2str(time1);,',...

        'set(e1,''string'',[T,''     '']);,',...

        'set(e2,''string'',num2str(k));,',...

        'msgbox([''X                ['',num2str(x(1)),''        '',num2str(x(2)),''

',num2str(x(3)),'','',num2str(x(4)),'']''],''                ');'];

t1=uicontrol('parent',h0,...

    'units','points',...

    'tag','t1',...
```

```
        'style','text',...

        'string','                    ',...

        'fontsize',15,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[20 150 100 20]);
e1=uicontrol('parent',h0,...

        'units','points',...

        'tag','e1',...

        'style','edit',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[295 130 35 20]);
t2=uicontrol('parent',h0,...

        'units','points',...

        'tag','t2',...

        'style','text',...

        'string','                ',...

        'fontsize',10,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[240 130 50 20]);
e2=uicontrol('parent',h0,...

        'units','points',...

        'tag','e2',...

        'style','edit',...

        'horizontalalignment','right',...
```

```matlab
        'backgroundcolor',[1 1 1],...

        'position',[295 100 35 20]);
t2=uicontrol('parent',h0,...

        'units','points',...

        'tag','t2',...

        'style','text',...

        'string','                ',...

        'fontsize',10,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[240 100 50 20]);
b1=uicontrol('parent',h0,...

        'units','points',...

        'tag','b1',...

        'style','pushbutton',...

        'string','              ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[250 60 60 20],...

        'callback',huidiao);
b2=uicontrol('parent',h0,...

        'units','points',...

        'tag','b2',...

        'string','        ',...

        'style','pushbutton',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[250 30 60 20],...
```

```matlab
        'callback','close');
    98   mewton


h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','       98');
h1=axes('parent',h0,...
    'position',[0.05 0.15 0.65 0.6],...
    'visible','off');
I=imread('fabmatrix.bmp','bmp');
image(I)
axis off
huidiao=[...
            'n=3;,',...
            'u=zeros(n,1);,',...
            'tic,',...
            '[x,k]=nnewton(u,n);,',...
            'time1=toc;,',...
            'T=num2str(time1);,',...
            'set(e1,"string",[T,"   "]);,',...
            'set(e2,"string",num2str(k));,',...
            'msgbox(["X        [",num2str(x(1)),"      ",num2str(x(2)),"
",num2str(x(3)),"]"],"            ");'];
t1=uicontrol('parent',h0,...
    'units','points',...
```

```matlab
        'tag','t1',...
        'style','text',...
        'string','                        ',...
        'fontsize',15,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[20 150 150 20]);
e1=uicontrol('parent',h0,...
        'units','points',...
        'tag','e1',...
        'style','edit',...
        'horizontalalignment','right',...
        'backgroundcolor',[1 1 1],...
        'position',[295 130 35 20]);
t2=uicontrol('parent',h0,...
        'units','points',...
        'tag','t2',...
        'style','text',...
        'string','                ',...
        'fontsize',10,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[240 130 50 20]);
e2=uicontrol('parent',h0,...
        'units','points',...
        'tag','e2',...
        'style','edit',...
```

```matlab
        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[295 100 35 20]);
t2=uicontrol('parent',h0,...

        'units','points',...

        'tag','t2',...

        'style','text',...

        'string','                  ',...

        'fontsize',10,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[240 100 50 20]);
b1=uicontrol('parent',h0,...

        'units','points',...

        'tag','b1',...

        'style','pushbutton',...

        'string','Newton          ',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[250 60 60 20],...

        'callback',huidiao);
b2=uicontrol('parent',h0,...

        'units','points',...

        'tag','b2',...

        'string','        ',...

        'style','pushbutton',...

        'backgroundcolor',[0.75 0.75 0.75],...
```

```matlab
        'position',[250 30 60 20],...
        'callback','close');
        99   broyden


h0=figure('toolbar','none',...
        'position',[200 150 450 250],...
        'name','     99');
h1=axes('parent',h0,...
        'position',[0.05 0.15 0.65 0.6],...
        'visible','off');
I=imread('fabmatrix.bmp','bmp');
image(I)
axis off
huidiao=[...
            'n=3;,',...
            'u=zeros(n,1);,',...
            'tic,',...
            '[x,k]=broyden(u,n);,',...
            'time1=toc;,',...
            'T=num2str(time1);,',...
            'set(e1,"string",[T,"    "]);,',...
            'set(e2,"string",num2str(k));,',...
            'msgbox(["X              [",num2str(x(1)),"        ",num2str(x(2)),"
",num2str(x(3)),"]"],"             ");'];
t1=uicontrol('parent',h0,...
```

```matlab
        'units','points',...

        'tag','t1',...

        'style','text',...

        'string','                             ',...

        'fontsize',15,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[20 150 150 20]);
e1=uicontrol('parent',h0,...

        'units','points',...

        'tag','e1',...

        'style','edit',...

        'horizontalalignment','right',...

        'backgroundcolor',[1 1 1],...

        'position',[295 130 35 20]);
t2=uicontrol('parent',h0,...

        'units','points',...

        'tag','t2',...

        'style','text',...

        'string','               ',...

        'fontsize',10,...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[240 130 50 20]);
e2=uicontrol('parent',h0,...

        'units','points',...

        'tag','e2',...
```

```matlab
          'style','edit',...

          'horizontalalignment','right',...

          'backgroundcolor',[1 1 1],...

          'position',[295 100 35 20]);
t2=uicontrol('parent',h0,...

          'units','points',...

          'tag','t2',...

          'style','text',...

          'string','                  ',...

          'fontsize',10,...

          'backgroundcolor',[0.75 0.75 0.75],...

          'position',[240 100 50 20]);
b1=uicontrol('parent',h0,...

          'units','points',...

          'tag','b1',...

          'style','pushbutton',...

          'string','Broyden              ',...

          'backgroundcolor',[0.75 0.75 0.75],...

          'position',[250 60 60 20],...

          'callback',huidiao);
b2=uicontrol('parent',h0,...

          'units','points',...

          'tag','b2',...

          'string','        ',...

          'style','pushbutton',...
```

```matlab
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[250 30 60 20],...
        'callback','close');
        100      broyden


h0=figure('toolbar','none',...
        'position',[200 150 450 250],...
        'name','        100');
h1=axes('parent',h0,...
        'position',[0.05 0.15 0.65 0.6],...
        'visible','off');
I=imread('fabmatrix.bmp','bmp');
image(I)
axis off
huidiao=[...
            'n=3;,',...
            'u=zeros(n,1);,',...
            'tic,',...
            '[x,k]=fbroyden(u,n);,',...
            'time1=toc;,',...
            'T=num2str(time1);,',...
            'set(e1,"string",[T,"    "]);,',...
            'set(e2,"string",num2str(k));,',...
            'msgbox(["X               [",num2str(x(1)),"         ",num2str(x(2)),"
",num2str(x(3)),"]"],"                ");'];
```

```
t1=uicontrol('parent',h0,...
        'units','points',...
        'tag','t1',...
        'style','text',...
        'string','                        ',...
        'fontsize',15,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[20 150 150 20]);
e1=uicontrol('parent',h0,...
        'units','points',...
        'tag','e1',...
        'style','edit',...
        'horizontalalignment','right',...
        'backgroundcolor',[1 1 1],...
        'position',[295 130 35 20]);
t2=uicontrol('parent',h0,...
        'units','points',...
        'tag','t2',...
        'style','text',...
        'string','             ',...
        'fontsize',10,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[240 130 50 20]);
e2=uicontrol('parent',h0,...
        'units','points',...
```

```matlab
        'tag','e2',...
        'style','edit',...
        'horizontalalignment','right',...
        'backgroundcolor',[1 1 1],...
        'position',[295 100 35 20]);
t2=uicontrol('parent',h0,...
        'units','points',...
        'tag','t2',...
        'style','text',...
        'string','              ',...
        'fontsize',10,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[240 100 50 20]);
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
        'string','    Broyden          ',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[250 60 70 20],...
        'callback',huidiao);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'string','        ',...
```

```
        'style','pushbutton',...

        'backgroundcolor',[0.75 0.75 0.75],...

        'position',[250 30 70 20],...

        'callback','close');
XOR


function [x,st]=sor(a,b,n,x1)

D=zeros(n,n);

L=zeros(n,n);

U=zeros(n,n);

for i=1:n

    for j=1:n

        if j==i

            D(i,j)=a(i,j);

        end

        if j<i

            L(i,j)=-a(i,j);

        end

        if j>i

            U(i,j)=-a(i,j);

        end

    end

end

opt=oumiga(a);

Bsor=inv(D-opt*L)*[(1-opt)*D+opt*U];
```

```
fsor=opt*inv(D-opt*L)*b;

k=1;

x2=Bsor*x1+fsor;

e=x2-x1;

while norm(e,2)>1e-6

        k=k+1;

        x1=x2;

        x2=Bsor*x1+fsor;

        e=x2-x1;

end

x=x2;

st=k;
```