

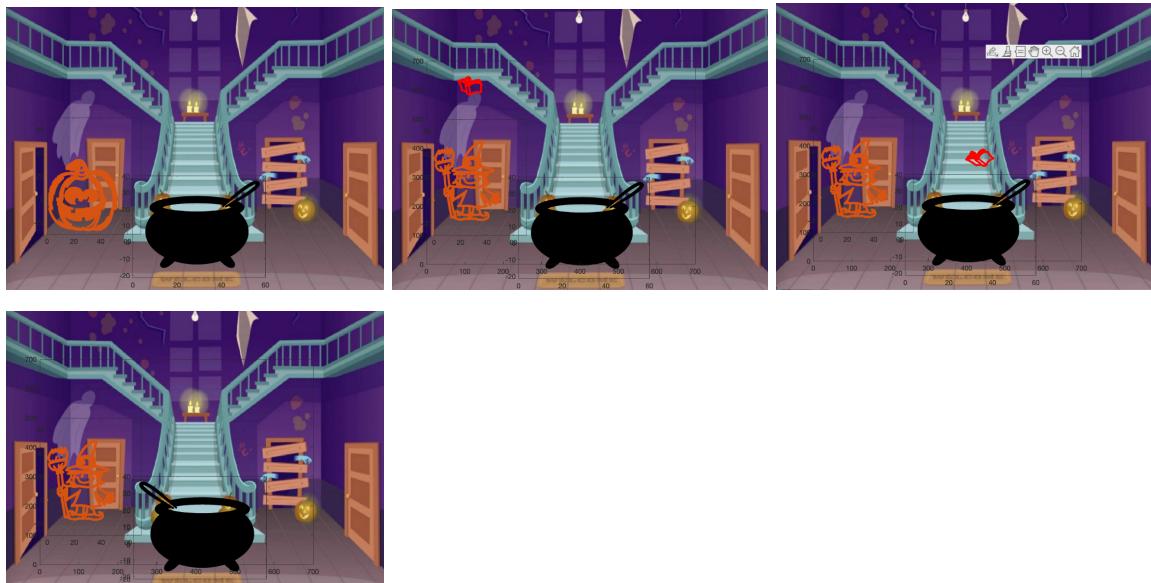
Story Summary and Pictures:

Part 1: Chiara Antonioli

Motion 1: The jack o'lantern morphs into the witch

Motion 2: The magic book appears and flies over to the cauldron, then falls while spinning into the cauldron. The book disappears in the cauldron.

Motion 3: The cauldron reflects over its center line, appearing to stir magically

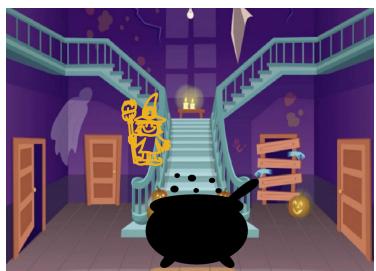


Part 2: Anushreeya

Motion 1: Mouse flies out of pot



Motion 2: Witch and mouse chase



Motion 3: Mouse and Witch run off the screen



```

function [out_flag] = projpt2(win, coldrun, mouse)
[foley,fs]=audioread('C:\Users\Anu5h\OneDrive\Documents\math 645.01\wand.mp3')

wand=audioplayer(foley,fs);
%draw witch%%%%%%%%%%%%%
hb = axes('position',[0.12 0.2 0.24 0.4]);
witch1 = plot(hb, win(1,:), win(2,:),'.', 'Color', '#EDB120');

set(hb, 'color', 'none', 'handlevisibility', 'on', 'visible', 'off')
hold on
%Make the cauldron%%%%%%%%%%%%%
[m,n]=size(coldrun);
coldrun = 0.075*coldrun;
coldrun = coldrun - [0;0;20]*ones(1,n);
caul_orig = coldrun;

cb = axes('position',[0.34 0.05 0.34 0.35]);
crr = plot(cb,coldrun(1,:), coldrun(2,:),'k.');
axis([0 60 0 60])
set(gca, 'color', 'none', 'handlevisibility', 'on', 'visible', 'off')
hold off

%make mickmouse fly out of coldron%%%%%%%%%%%%%
color = {'y.', 'm.', 'c.', 'r.', 'g.', 'b.', 'k.'};
mouse = [.1 0 0; 0 .1 0; 0 0 1]*mouse;

play(wand);
for j=1:9
    %pause();
    %R = [cos(j) -sin(j) 0; sin(j) cos(j) 0; 0 0 1]
    Shift = [1.3 0 10; 0 1.3 5; 0 0 1];
    mouse = Shift*mouse;
    mouse = [-1 0 1; 0 1 1; 0 0 1]*mouse;
    D1 = mouse(1:2,:);
    x = 1+ mod(j, length(color))
    cb = axes('position',[0.1 0.25 0.9 0.9]);
    crr = plot(cb, D1(1,:),D1(2,:),color{x})
    axis([-3000 3000 0 2400])

```

```

set(gca,'color','none','handlevisibility','on','visible','off')
pause(.5);
if j <= 9
    cla;
end;

end

pause(.01)

delete(witch1);
%witch and mickey chase each other%%%%%%%%%%%%%
B = mouse;
A = [-1 0 1; 0 1 1; 0 0 1] * mouse;
keep = 0;
keepw = 0;
for i=0:1/6:1
    C = (1-i)*B + i*A
    keep = C;
    new = C(1:2,:);
    cb = axes('position',[0.3 0.60 0.5 0.3]);

    heh = plot(cb, new(1,:),new(2,:),'k.')
    axis([-900 900 1000 2400])
    set(gca,'color','none','handlevisibility','on','visible','off');
    pause(.1);
    if i <= 1
        cla;
    end;

Shift = [.9 0 200; 0 .9 200; 0 0 1];
win = Shift*win;
keepw = win;
D1 = win(1:2,:);
cb = axes('position',[0.12 0.2 0.75 0.75]);

```

```

crr = plot(cb, D1(1,:),D1(2,:),'.', 'color', '#EDB120')
axis([0 2600 0 1800])
set(gca, 'color','none','handlevisibility','on','visible','off')
pause(.1);
if i <= 1
    cla;
end;

end
C = keep;
win = keepw;
%witch and micky runn off the screen%%%%%%%%%%%%%
for j=1:9

Shift = [1 0 100; 0 1 0; 0 0 1];
C = Shift*C;
D1 = C(1:2,:);
cb = axes('position',[0.3 0.60 0.5 0.3]);
crr = plot(cb, D1(1,:),D1(2,:),'k.')
axis([-900 900 1000 2400])
set(gca, 'color','none','handlevisibility','on','visible','off')
pause(.1);
if j <= 10
    cla;
end;

S = [1 0 200; 0 1 0; 0 0 1];
win = S*win;
D1 = win(1:2,:);
cb = axes('position',[0.12 0.2 0.75 0.75]);
crr = plot(cb, D1(1,:),D1(2,:),'.', 'color', '#EDB120')
axis([0 2600 0 1800])
set(gca, 'color','none','handlevisibility','on','visible','off')
pause(.1);
if j <= 10

```

```

    Cld;
end;

end
out_flag = 1;
end

```

Part 3: Jake

(the matrices that will be used include the relevant sprite matrices and the transformation matrices)

Both run left on screen:

Either use homogeneous matrix transformation or + constant vector

Witch casts spell:

Oscillate witch with wand back and forth

Mickey Mouse morphs into ghost:

Just morph him

Ghost flies away:

Move back and forth horizontally, move up vertically

Part 4: Cole

Zoom out to whole world

Fly around

Land in north pole

Part 5: Nivedha

Lands in north pole

- Plot background of North Pole with ghost in scene

Turns into gingerbread man

- Morph ghost --> gingerbread man

The end

- Happy holiday sign

FUNCTIONS:

Functions

[matrix] = sheer(matrix, sheerfactor)

[matrix] = rotation(matix, degree)

```
[matrix] = shift(matrix, steps/direction)
```

Pos steps will go right,
Neg steps will go left

Morph

```
function [A, B, M] = morprphp(A, B, M)
% morph input A into B with option to translate with additional matrix M
% if you dont intent to translate make M the identity matrix
N = A;
[Br, Bc] = size(B);
[Ar, Ac] = size(A);
if (Bc < Ac)
    Dif = abs(Ac - Bc);
    Z = zeros(3, Dif);
    B = [B Z];
else
    Dif = abs(Bc - Ac);
    Z = zeros(3, Dif);
    A = [A Z];
end
```

```
for k=0:1/20:1
```

```
P = (1-k)*B+ k*A;
P = M*P
plot(P(1,:),P(2,:),'.')

pause(0.1);
plot(P(1,:),P(2,:),'','color','w')
end
```

Translate

```
function [newrat, A] = Move(N,A)
%takes in a set of points and a matrix, moves it to the center and
%multiplies by matrix then moves back
```

```
[Nr, Nc] = size(N);
Ax = 0
```

```
Ay = 0
for i = (1:Nc)
    Ax = Ax + N(1,i)
    Ay = Ay + N(2,i)

end
Ax1 = Ax/Nc
Ay1 = Ay/Nc
N1 = [1 0 -Ax1; 0 1 -Ay1; 0 0 1]*N;
N2 = A*N1;
N3 = [1 0 Ax1; 0 1 Ay1; 0 0 1]*N2;

A = A;
newrat = N3;

end
```