

Your Own Future Garden

Project Overview:

In this mid-term project, I would like to make an interactive program. The theme of my project is about future garden where people can create their own-style garden in my program. I come up with this idea because first, flower is a typical thing which has various colors and shapes; second, I want to use the simulation to break the limitation of time and space of flower bloom and growth. So this project gives everyone a chance to be a flower fairy to make magics via flowers.



Picture 1: Draft for my project

Technique Overview:

- **Animation**

OpenFrameworks will be my basic coding platform to achieve and visualize my idea. The animation will be mainly about the growth, bloom, swing and die of flowers. So I not only needs to make petals, leaves and scapes by different shapes such as circle, ellipse, triangle, rectangle and etc, but also using different functions such as trigonometric functions, noise function, vector and etc to animate things.

- Color

In terms of the color, I want to provide a relatively immersive and amazing visual experience to the audience. I have referred to some projects which were already done by TeamLab. I think the color they chose is very Japanese style that they used rose-red, bright-yellow and bright-green most. So, I want to draw Chinese flowers which uses faint-pink and faint-yellow more. However, I still think color plays an important role in this project, so I put a flower color chart in picture 3 in case I want to apply more color.



Picture 2: Screenshot from TeamLab's project called Flower Forest

<input type="checkbox"/> White	<input type="checkbox"/> Pinky Lavender	<input type="checkbox"/> True Red	<input type="checkbox"/> Pale Yellow	<input type="checkbox"/> Soft Blue	<input type="checkbox"/> Copper
<input type="checkbox"/> Ivory	<input type="checkbox"/> Lavender	<input type="checkbox"/> Coral	<input type="checkbox"/> Lime Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Multicolor
<input type="checkbox"/> Blush Pink	<input type="checkbox"/> True Purple	<input type="checkbox"/> Sunset	<input type="checkbox"/> Sage Green	<input type="checkbox"/> Black	<input type="checkbox"/> Farm Mixes
<input type="checkbox"/> Light Pink	<input type="checkbox"/> Royal Purple	<input type="checkbox"/> Peach	<input type="checkbox"/> True Green	<input type="checkbox"/> Brown	<input type="checkbox"/> Choose Your Colors
<input type="checkbox"/> True Pink	<input type="checkbox"/> Burgundy	<input type="checkbox"/> Dark Orange	<input type="checkbox"/> Forest Green	<input type="checkbox"/> Bronze	
<input type="checkbox"/> Hot Pink	<input type="checkbox"/> Marsala	<input type="checkbox"/> True Orange	<input type="checkbox"/> Emerald Green	<input type="checkbox"/> Champagne	
<input type="checkbox"/> Berry Pink	<input type="checkbox"/> Cranberry	<input type="checkbox"/> Dark Yellow	<input type="checkbox"/> Turquoise	<input type="checkbox"/> Gold	
<input type="checkbox"/> Purpleberry	<input type="checkbox"/> Terra Cotta	<input type="checkbox"/> True Yellow	<input type="checkbox"/> True Blue	<input type="checkbox"/> Silver	

Picture 3: Flower color chart reference

- Interaction

As the goal of this project is to let the audience create their own garden, so this program should be open that the audience can design their garden in any way they like. However, I am not going to simulate a real garden where starts from planting seeds, because I still want it to be

futuristic and magic. Thus the audience is not filling a blank space with different flowers but making a flower-style image they like. (This idea may sounds not clear now, but I am trying to figure it out.) Initially I want to use the camera as the interface to generate interaction, but due to that I currently have't learned about camera in OpenFrameworks, I will use mouse as the basic tool for interaction this time. So I will use different mouse function such as mousepressed(), mousemoved(), mouse released(), and etc.

Code Overview:

- **Variable**

I divided the variable I may use into three parts. The first one is the variables for shaping and coloring flowers and other decorations. The second one is the variables for flower motion. The third one is for interaction between flower and audience.

For the first part, the variables are mainly used to control the shape and color of flowers. The picture 4 and picture 5 are screenshots from my homework for week1. The picture 4 shows the visual effects of the simple version of my project where the context is set in garden and flowers is flying around whose color and size are changing according to time and collision. In my mid-term project, I will use more variables to make the shape of flowers more changeable and more real. For the color, I want to add brightness and darkness to flowers in order to create immersive feeling.



Picture 4:Screenshot from my work called cartoon garden

```

class Flower{
public:

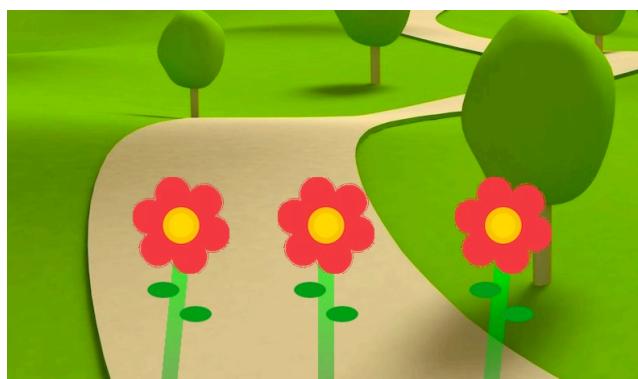
    Flower();
    void update();
    void draw();

    float radius;           // size
    float x, y;             // position
    float dirX, dirY;
    float red    = ofRandom(150,235);
    float green   = ofRandom(190,225);
    float blue   = ofRandom(150,200);
    float r=red;
    float g=green;
    float b=blue;
    float theta;
    int frames=90;
    int flowerrotating;
    ofColor colorcenter;
    ofColor colorpetal;
    ofColor colorheart;
}

```

Picture 5:Screenshot of the variable for cartoon garden

For the second part, the variables are used to simulate the motion of flowers. The picture 6 and picture 7 are screenshots from one of my homework for week2 which is simulating the swing of flowers. The picture 6 shows these flowers moving to left and right repeatedly just like they are swinging in the wind. The picture 7 shows I made this simulation based on trigonometric functions because they are repeated and have a certain range of results. For my mid-term projects, I need to consider about the growth of flower, so maybe interpolation and noise functions will be used.



Picture 6:Screenshot of my work simulating the swing of flowers

```

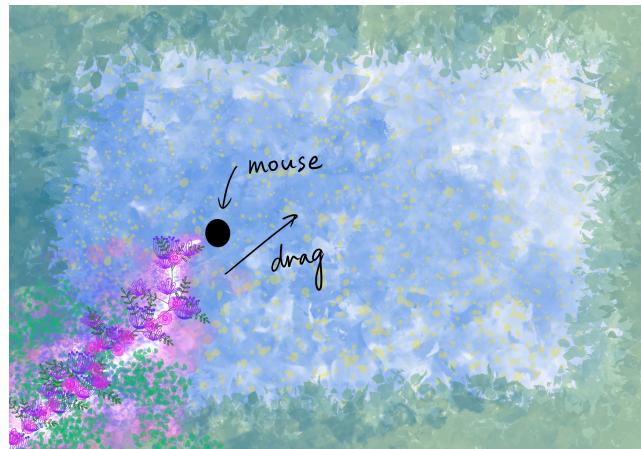
void ofApp::draw(){
    garden.draw(0,0);
    for(int i =0; i <=200; i++){
        a = ofMap(i, 0, 150, 5, 20);
        b = ofMap(i, 0, 150, 0, 100);
        c = windvolume;
        ofSetColor(50-b/4, 155+b, 50-b/4);
        ofDrawLine(390-c*a*cos(theta), 800-i, 410-c*a*cos(theta), 800-i);
        ofDrawLine(190-c*a*sin(theta), 800-i, 210-c*a*sin(theta), 800-i);
        ofDrawLine(590-c*a*sin(theta), 800-i, 610-c*a*sin(theta), 800-i);
    }
}

```

Picture 7:Screenshot of the code for simulating the swing of flowers

For the third part, the variables are used to add interaction between program and audience.

The picture 7 is my rough idea about the interaction that audience drag the mouse and flower will track the moving trace of mouse to grow flowers. The black circle represents mouse here. However, I want to make the interaction to be rich and easy to achieve at the same time because if I use too many mouse functions, the audience may feel confused and lost when they play with this program.



Picture 7:Image about the mouse interaction with flowers