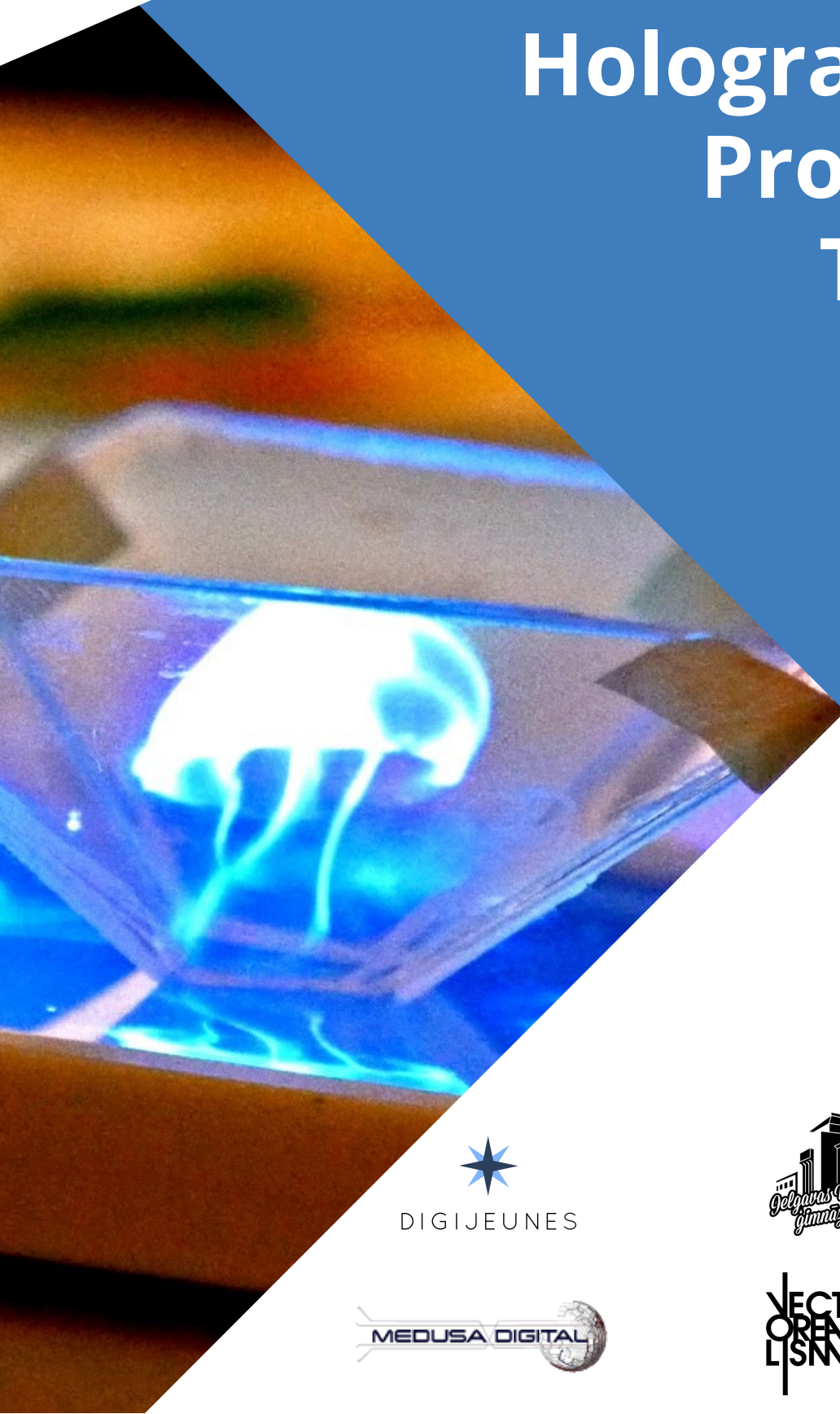


Hologram with Processing Tutorial



AM AIS

01



Photo description: Work in progress cutting the pyramid

LIST OF COMPONENTS

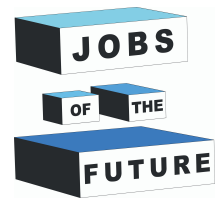
You'll need very few components for this project.

- Computer screen with Processing software installed
- Sheet of transparent plastic (ex. PVC)
- Transparent tape
- A drawing software (ex. paint)
- A pair of scissors

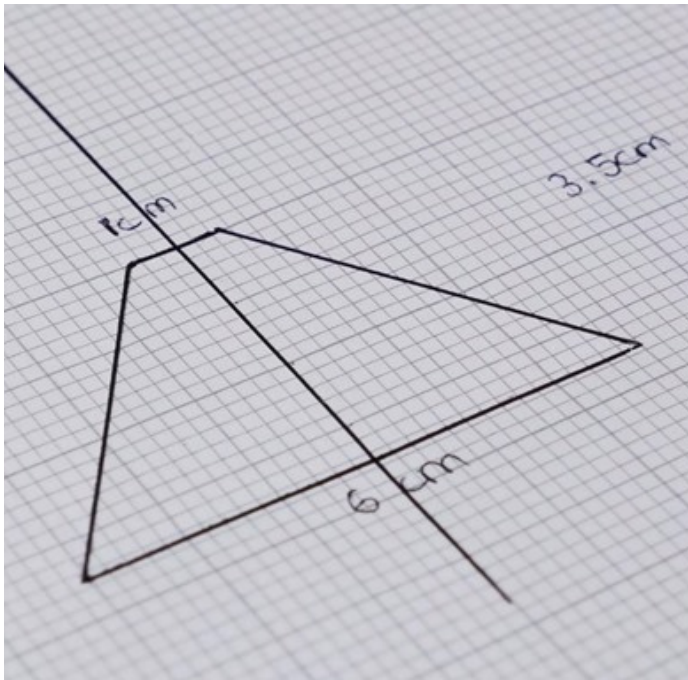
YOUR TASK

Cut and assemble the plastic to form a pyramid that will reflect light from the computer screen and display a hologram as a result.

02



DOWNLOAD THE TOOLS AND ASSEMBLE THE PYRAMID



You will need to draw the sides of your pyramid based on the size of your computer screen. To do so you can follow these steps:

- 1) Download the Processing software from the official website and install it on your computer.
- 2) Open our processing code to figure out the size of your pyramid.

Processing website :

<https://processing.org/>

Processing code for hologram :

<https://shorturl.at/gkrCD>

CALCULATE THE SIZE OF YOUR PYRAMID

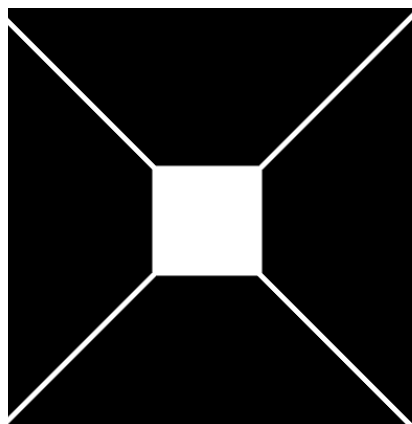
Open Processing and load our code. Run the program and you should be able to see a white square in the middle of screen. Measure one side of the square and make a cross multiplication to obtain the size of the four parts of the pyramid.

For example, if your square is 2cm large you obtain these results:

Base square : $1\text{cm} * 2\text{cm} = 2\text{cm}$

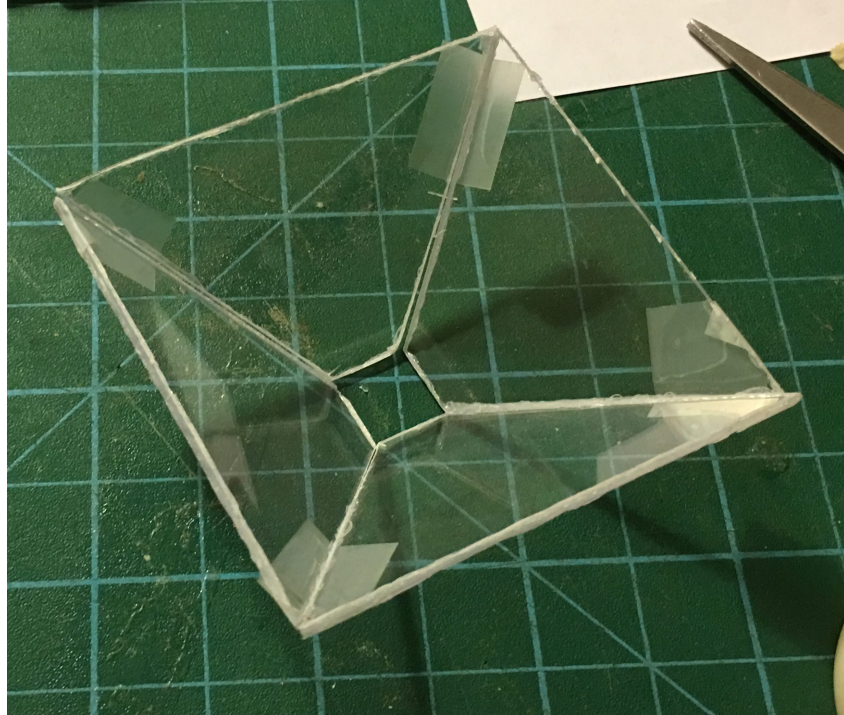
Pyramid height : $3.5\text{cm} * 2\text{cm} = 7\text{cm}$

Pyramid upper side : $6\text{cm} * 2\text{cm} = 12\text{cm}$



Cut four sides of your pyramid out of your paper sheet and fix them together with a transparent tape for a better result.

03



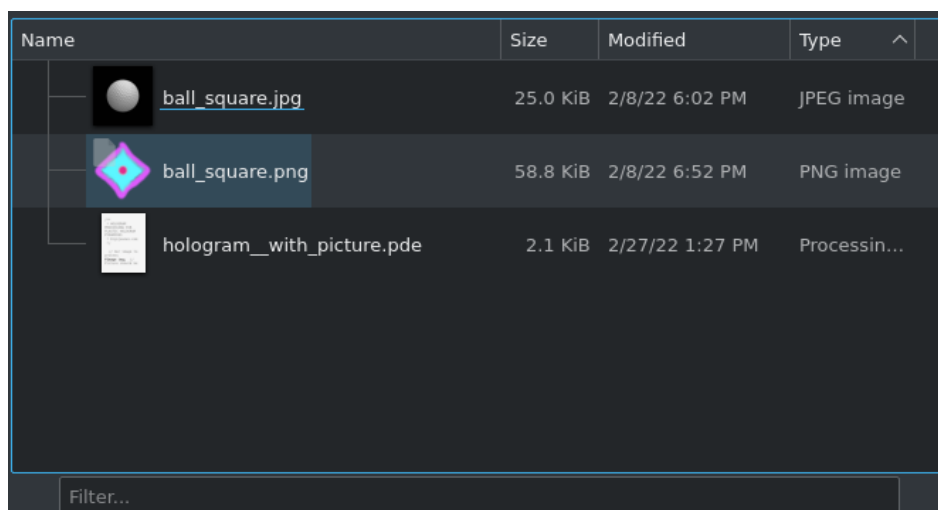
Your pyramid is now ready to display the hologram.

The next step is to make a drawing. Open your favorite drawing software and draw whatever you want in a squared canvas with no background (400*400px).

Save your image in the processing sketch folder that you downloaded before.

Now run the file `hologram_with_picture.pde`

Processing software should launch. A full code should be visible.



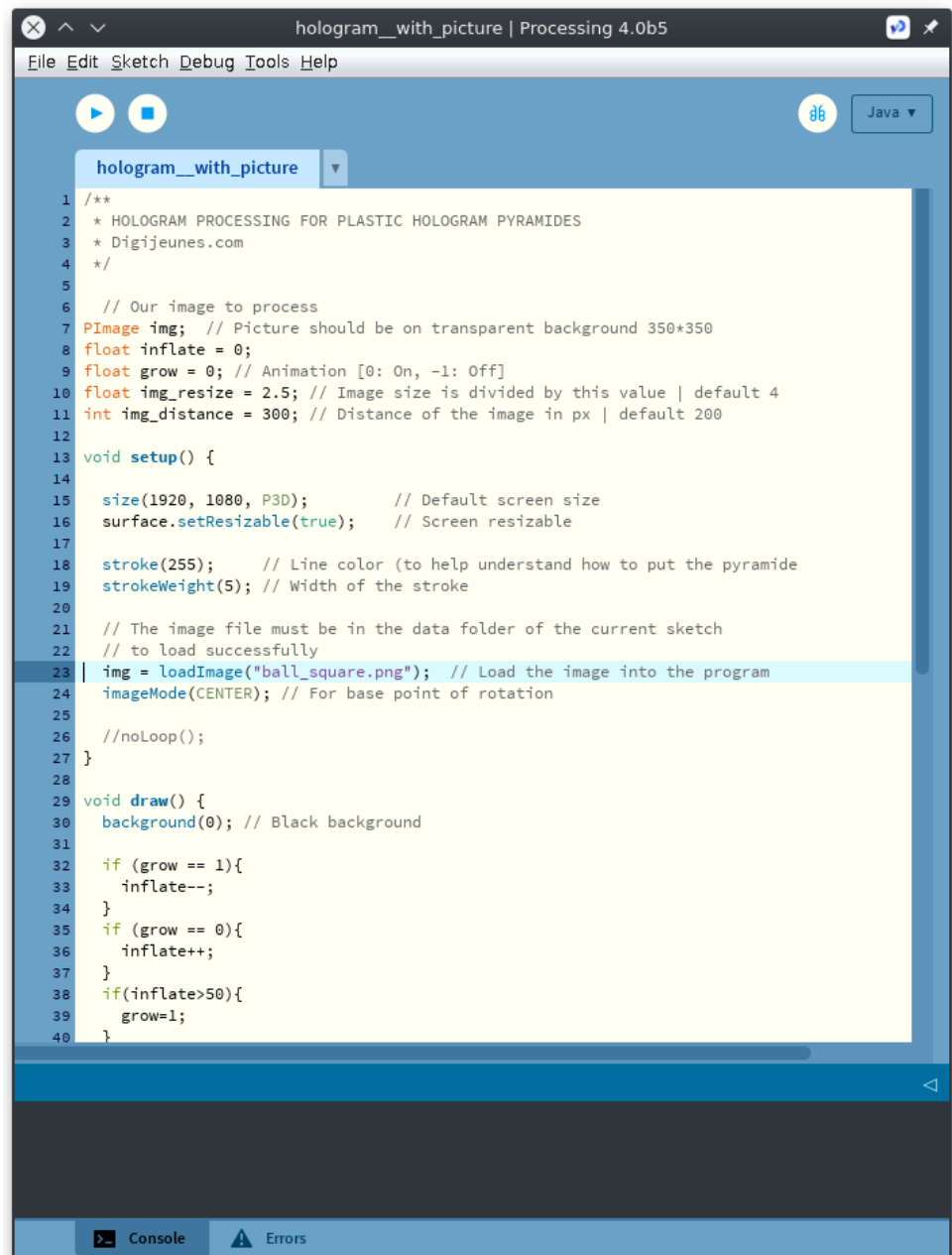
04

PLAY WITH THE CODE

Identify line 23 of the code. You should replace "ball_square.png" with the name and extension of your file.

By clicking the play icon your image should now be displayed four times on the screen. Turn off the lights and place your pyramid on the screen to view the hologram.

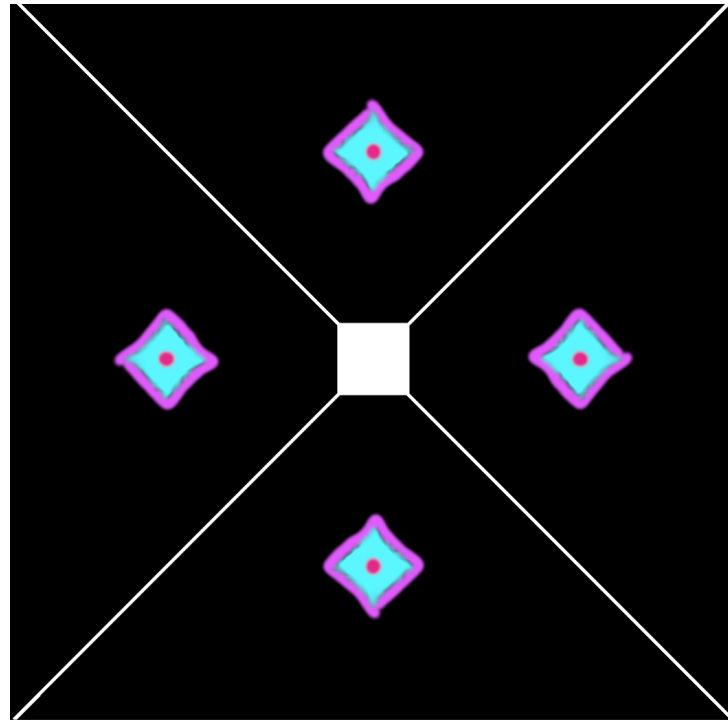
You can also play with the values on line 10 and 11 to change the size of your image as well as their distance from the centre of the screen.



```
1 /**
2  * HOLOGRAM PROCESSING FOR PLASTIC HOLOGRAM PYRAMIDES
3  * Digijeunes.com
4  */
5
6  // Our image to process
7  PImage img; // Picture should be on transparent background 350*350
8  float inflate = 0;
9  float grow = 0; // Animation [0: On, -1: Off]
10 float img_resize = 2.5; // Image size is divided by this value | default 4
11 int img_distance = 300; // Distance of the image in px | default 200
12
13 void setup() {
14
15     size(1920, 1080, P3D); // Default screen size
16     surface.setResizable(true); // Screen resizable
17
18     stroke(255); // Line color (to help understand how to put the pyramide
19     strokeWeight(5); // Width of the stroke
20
21     // The image file must be in the data folder of the current sketch
22     // to load successfully
23     img = loadImage("ball_square.png"); // Load the image into the program
24     imageMode(CENTER); // For base point of rotation
25
26     //noLoop();
27 }
28
29 void draw() {
30     background(0); // Black background
31
32     if (grow == 1){
33         inflate--;
34     }
35     if (grow == 0){
36         inflate++;
37     }
38     if (inflate > 50){
39         grow = 1;
40     }
```

05

This is what your computer screen should look like once you hit the play button on Processing.



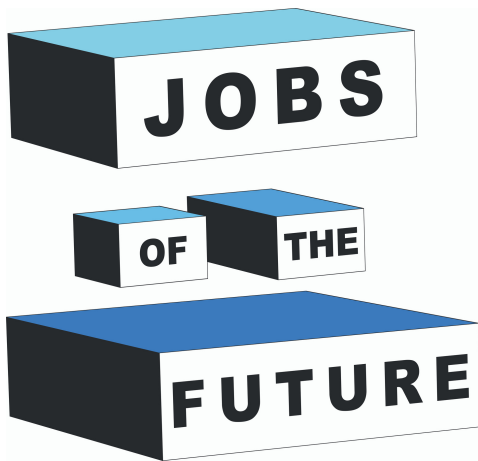
REAL LIFE APPLICATIONS

The hologram technology has been around for many decades and different ways of displaying holograms exist. Real life applications of the hologram technology include applications in the field of arts.

Artists such as Hatsune Miku or Michael Jackson, or even the French politician Jean-Luc Melanchon used it to stream their own persona in different locations as if they were actually present in different places at once.

Some hologram techniques use a combination of rotating fans and LEDs to display the virtual object. Others include physical plasma that actually has a matter-like consistency.

Although applications of holograms are currently limited, in the future we expect them to boost especially in the advertising industry.



Jobs of the Future is an international cooperation co-financed by the Erasmus + programme of the European Union. It aims to create synergies between enterprises active in the tech sector, youth organizations and educational institutions. The objective is to empower young people to pursue their own professional and educational goals in the tech field.

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