



**MINISTERUL EDUCAȚIEI, CULTURII ȘI CERCETĂRII  
AL REPUBLICII MOLDOVA**

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**Facultatea Calculatoare, Informatică și Microelectronică**

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# **Report**

*Final Eman*

*of Computer Graphics*

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## 1. The condition / conditions of the problems:

Make a tree. Set the angles of the branches of the tree according to Perlin noise values. Adjust the noise values over time to animate the tree. See if you can get it to appear as if it is blowing in the wind. Can you add leaves or flowers to the end of the branches? What if the leaves can fall off the tree. And comment to the program.

## 2. The code with comments:

```
The program code, having relevant comments in it: float angle;
float time = 0;
float wind = 0.01;
int leaves = 100;
int[] leafX = new int[leaves];
int[] leafY = new int[leaves];
boolean[] leafFallen = new boolean[leaves];

void setup() {
    size(600, 600);
    strokeWeight(2);
    angle = radians(20);

    // initialize leaf positions and fallen state
    for (int i = 0; i < leaves; i++) {
        leafX[i] = int(random(width));
        leafY[i] = int(random(height));
        leafFallen[i] = false;
    }
}

void draw() {
    background(9, 204, 230);
    rect(0, height-20,width,height);
    // set the angle of the branches using Perlin noise
    float noiseVal = noise(time);
    angle = map(noiseVal, 0, 1, radians(20), radians(40));

    // animate the tree by incrementing the time variable
    time += 0.01;

    // draw the fractal tree
    translate(width/2, height);
    branch(150);

    // add leaves to the end of the branches with a random chance
    for (int i = 0; i < leaves; i++) {
        if (random(1) < 0.05 && !leafFallen[i]) {
            fill(0, 255, 0);
            ellipse(leafX[i], leafY[i], 20, 10);
            rotate(20);
        }
    }
}
```

```

}

// simulate leaves falling off the tree in the direction of the wind
for (int i = 0; i < leaves; i++) {
    if (leafFallen[i]) {
        leafY[i] += wind;
        if (leafY[i] > height) {
            leafFallen[i] = false;
            leafX[i] = int(random(width));
            leafY[i] = int(random(height));
        }
    }
}
}

void branch(float len) {
    // draw the current branch
    line(0, 0, 0, -len);
    translate(0, -len);

    // if the length of the current branch is greater than a certain value, draw its
    child branches
    if (len > 4) {
        pushMatrix();
        rotate(angle);
        branch(len * 0.67);
        popMatrix();
        pushMatrix();
        rotate(-angle);
        branch(len * 0.67);
        popMatrix();
    }
}
}

```

### 3. Screen printing of program execution;



