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Assignment 6

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**Assignment Objective:** To create a program that the user can manipulate control points, creating a 3d Bezier curve.

**How achieved:** First, I duplicated 16-Stub-BezierCurve.cpp and renamed it BezierCurve3D.cpp. I then implemented class Bezier methods DrawControlMesh():

void DrawControlMesh(vec3 pointColor, vec3 meshColor, float opacity, float width) {

// draw the four control points

Disk(p1, 2.0, pointColor, opacity);

Disk(p2, 2.0, pointColor, opacity);

Disk(p3, 2.0, pointColor, opacity);

Disk(p4, 2.0, pointColor, opacity);

Line(p1, p2, width, opacity);

Line(p2, p3, width, opacity);

Line(p3, p4, width, opacity);

}

**Then I implemented Point():**

vec3 Point(float t) {

// return a point on the Bezier curve given parameter t, in (0,1)

return (0 - pow(t, 3) + 3 \* pow(t, 2) - 3 \* t + 1) \* p1 + (3 \* pow(t, 3) - 6 \* pow(t, 2) + 3 \* t) \* p2 +

(-3 \* pow(t, 3) + 3 \* pow(t, 2)) \* p3 + pow(t, 3) \* p4;

}

**Then I implemented Draw():**

void Draw(vec3 color, float width) {

float tIncVal = 1.0f / res; // value to increment t by in the loop

for (float t = 0; t < 1; t += tIncVal) {

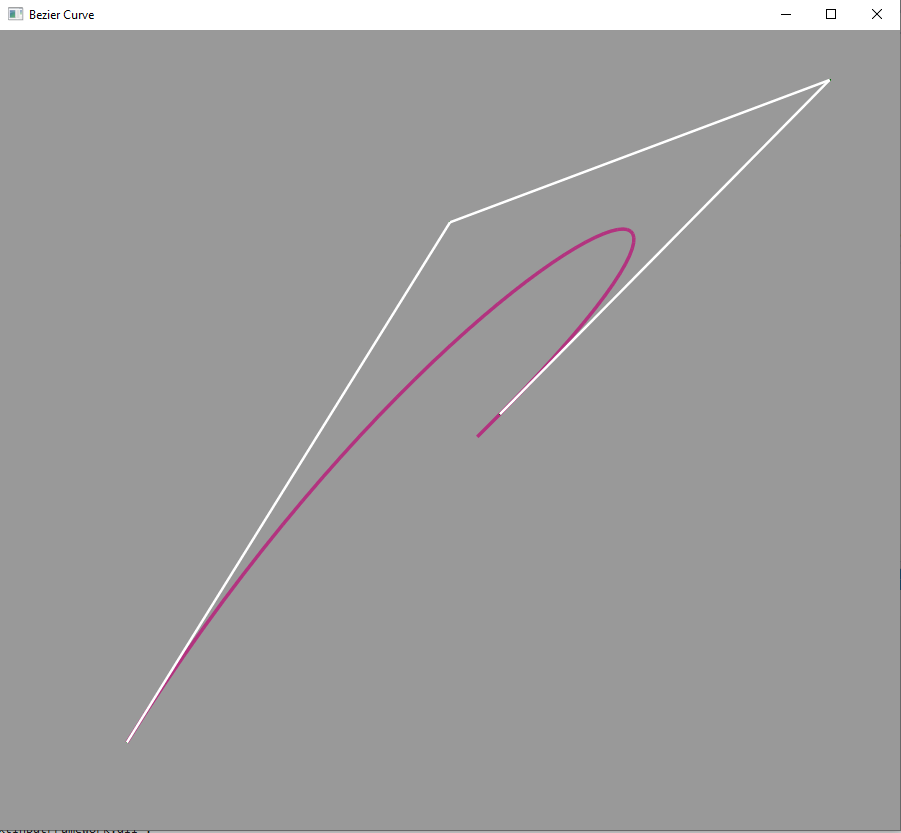
Line(Point(t), Point(t + tIncVal), width, color);

}

}

However, I was unable to get PickPoint() working. I would refactor and my and debug my approach to achieve this.

**Results:**

 A close up of a logo

Description automatically generated