Experiment no:- 09

Aim:- WAP to implement a beizer curve in cc

Resource Required:- Turbo c, Notepad, wordpad, paint

Theory :-

Bezier curves are a fundamental tool in computer graphics, used to model smooth curves that can be scaled ~~id~~ indefinetly without losing detail. Developed by pierre Bezier for Automotic design They are widely used in various graphic Application such as CAD ~~system~~, vector graphic desig Animation, and font creation

Key concepts of Bezier

① control points:-

Beizer curves is defined by set of control point The no. of control point determine degree of curves

Linear Bezier curve:- Defined by two control point, creating a straight line

Quadratic Bezier curve:-

Defining by three control points, resulting in parabolic curve

cubic Bezier curve:-

Defined by 4 control point This is most common form use in computer graphics

2. Parametric eqn :-
Bezier curve defined using parametric eqn where parameter ranges from 0 to 1
The curve computed as weighted sum of control point with weight depending on value of

Linear bezier curve :-
For two control points and curve is simply
$B(t) = (1-t)P_0 + tP_1$
$B(t) = (1-t)^2 P_0 + 2(1-t)tP_1 + t^2 P_2$
$B(t) = (1-t)^3 P_0 + 3(1-t)^2 tP_1 + 3(1-t)t^2 P_2 + t^3 P_3$
The parameter move from 0 to 1,
And curve is drawn by calculating intermediate point based on control points

3] Properties of Bezier curve :-
Affine invariance, convex Hull, Endpoint Interpolation, continuity

Application in computer graphic
(1) Vector graphic
(2) Animation
(3) font design
(4) computer Aided design (CAD)

conclusion :- Bezier curve, are vital in computer graphic for modeling smooth and scalable curve using few control points. By providing precise control over shape while ensuring smooth transition, Bezier curve play a crucial role in graphic design And CAD system