1. **BEZIER**

```
#include<iostream.h>
#include<conio.h>
#include<graphics.h>
#include<math.h>
#include<process.h>

void bezier (int xarr[4], int yarr[4]) {
   int x, y;
   for (float t = 0.0; t < 1.0; t += 0.001) {
      x = xarr[0] * pow((1-t), 3) + xarr[1] * 3 * pow((1-t), 2) * t + xarr[2] * 3 * (1-t) * pow(t, 2)
+ xarr[3] * pow(t, 3);
      y = yarr[0] * pow((1-t), 3) + yarr[1] * 3 * pow((1-t), 2) * t + yarr[2] * 3 * (1-t) * pow(t, 2)
+ yarr[3] * pow(t, 3);

      putpixel(x, y, 10);
   }
}

void hermite (int xarr[4], int yarr[4]) {
   int x, y;
   for (float t = 0.0; t < 1.0; t += 0.001) {

      x = xarr[0] * ((2 * pow(t, 3)) - (3 * pow(t, 2)) + 1) + xarr[1] * ((3 * pow(t, 2)) - (2 *
pow(t, 3))) + xarr[2] * (pow(t, 3) - (2 * pow(t, 2)) + t) + xarr[3] * (pow(t, 3) - pow(t, 2));
      y = yarr[0] * ((2 * pow(t, 3)) - (3 * pow(t, 2)) + 1) + yarr[1] * ((3 * pow(t, 2)) - (2 *
pow(t, 3))) + yarr[2] * (pow(t, 3) - (2 * pow(t, 2)) + t) + yarr[3] * (pow(t, 3) - pow(t, 2));

      putpixel(x, y, 10);
   }
}

void main() {
   int gd = DETECT, gm, x[4], y[4], x1, x2, x3, x4, y1, y2, y3, y4, choice;
   initgraph(&gd, &gm, "C:\\TURBOC3\\BGI");

   while(1) {
      clrscr();
      cout<<"***** MENU *****";
      cout<<"\n1.Bezier";
      cout<<"\n2.Hermite";
      cout<<"\n3.Exit";
      cout<<"\nEnter your choice... ";
      cin>>choice;
```

```
switch(choice) {
    case 1:
    cout<<"Enter tha value of x1 & y1: ";
    cin>>x1>>y1;
    x[0] = x1;
    y[0] = y1;

    cout<<"Enter tha value of x2 & y2: ";
    cin>>x2>>y2;
    x[3] = x2;
    y[3] = y2;

    cout<<"Enter tha value of x3 & y3: ";
    cin>>x3>>y3;
    x[1] = x3;
    y[1] = y3;

    cout<<"Enter tha value of x4 & y4: ";
    cin>>x4>>y4;
    x[2] = x4;
    y[2] = y4;

    bezier(x, y);

    break;

    case 2:
    cout<<"Enter tha value of x1 & y1: ";
    cin>>x1>>y1;
    x[0] = x1;
    y[0] = y1;

    cout<<"Enter tha value of x2 & y2: ";
    cin>>x2>>y2;
    x[1] = x2;
    y[1] = y2;

    cout<<"Enter tha value of x3 & y3: ";
    cin>>x3>>y3;
    x[2] = x3;
    y[2] = y3;

    cout<<"Enter tha value of x4 & y4: ";
```

```
            cin>>x4>>y4;
            x[3] = x4;
            y[3] = y4;

            hermite(x, y);

            break;

            case 3: exit(1);

            default: cout<<"Invalid choice";

        }
        getch();
    }
    getch();
    closegraph();
}
```