IS F311
Computer Graphics
BITS Pilani, Hyderabad Campus
Assignment -3
Due Date : 30th November 2023 (by Midnight IST)
Total Marks: 5 (weightage : 5%)

Problem: We would like to make an editable Bezier curve and using that Bezier curve, we would like to create a surface of revolution. Here is the list of tasks.

Task 1: Implement the de Castlejau algorithm for evaluating the entire 2D Bezier curve of degree n. This program should be named as **bezier1.xxx (your choice of extension)** **[1]**

Task 2: Make your curve editable in the following sense: **[2]**

- **Addition of control Point:** Every time we click on the canvas, a new point will be created and a new Bezier curve of appropriate degree (based on the number of points) will be redrawn.
- **Deletion of control point:** We can delete an already existing control point and redraw the new Bezier curve of appropriate degree.
- **Control Point Movement:** An user can drag any control point of the curve and correspondingly the curve should get update automatically

Task 3: Sample the curve, made in task 1, at uniform interval of size 0.1. Make a surface of revolution using these sampled points on the curve. Note that the surface of revolution will be a polygonal mesh. Store this polygonal mesh using mesh data structure. **[1]**

Task 4: Once you have created the surface of revolution, write the mesh in a file as OFF/Obj/PLY format. Use a viewer such as Geomview/ Meshview/Paraview to visualize your mesh. You can read the details of OFF format from the following website: http://people.sc.fsu.edu/~jburkardt/data/off/off.html **[1]**

General Instructions:

1. The same group of students as for first assignment should work together for this assignment also.
2. The code should be well indented, well commented and easily readable. Points will be deducted for an unorganized and uncommented code.
3. You need to submit your working code in zip file to me by the deadline. **No extension of deadline.**
4. The name of the file should be **id1_CG_A3.zip**.
5. The zip file should be loaded on CMS or mailed to rayt@hyderabad.bits-pilani.ac.in by deadline.
6. **You can discuss with your friends but refrain from copying the code and submitting. Also please do not use code downloaded from internet or taken from some other source.**

7. You have to demo the code to the instructor on a scheduled date and timing after submission. **It is important to attend the demo, as absence from demo will amount to no credit for the assignment.**