Problem 3: Shape Interpolation

The lecture web-page provides two-dimensional control polygons for three key frames \( \{ t_0 = 0, t_1 = 0.5, t_2 = 1 \} \). Modify your program from exercise sheet 1 to implement quadratic polynomial interpolation between these time steps. Interpolated shapes should be approximated with cubic B-Splines. Display the resulting shapes:

(a) Use quadratic interpolation to obtain control points for interpolated shapes at times \( t \in [t_0, t_2] \).

(b) Approximate the interpolated control polygons with cubic B-Splines (see exercise sheet 1).

(c) Display an animation of the resulting shapes at different times \( t \in [t_0, t_2] \).

Problem 4: Animated Bézier Surface

Design a time-varying Bézier surface based on three key frames and quadratic interpolation of control points. You may use the data provided on the web-page as a first key frame.