

Part 5: List of used Programs

Name of program **Function**

- JULIA.BAS** *A program that generates code representing the pixels of a Julia fractal. Input data are the maximum number of iterations, the tolerance, the fixed value of the constant, and the coordinates of the window frame.*
- MANDELBROT.BAS** *Program that generates a code for Mandelbrot fractals. The value of the constant is a value associated to the elements of the frame (the pixel values). A fixed seed value is chosen.*
- ROOTREAL.BAS** *Calculates the roots of a polynomial equation with the Newton-Raphson method. All roots have real values. Input data are the maximum and minimum values of the seed value of the X-coordinate, the degree of the equation and its coefficients, The roots are placed in an array with a symbolic address.*
- ROOTNR.BAS** *Calculates the complex roots of a (complex) polynomial equation with the Newton-Raphson method. Input data are the coordinates of the frame (rectangle) that are associated with the pixels of the display screen, the required accuracy of the roots, the maximum allowable iterations, and the symbolic address of the file in which the roots are to be stored.*
- ROOTRF.BAS** *The same as above utilizing the regula-Falsi method.*
- ROOTXX.BAS** *Same as ROOTNR.BAS but employing the extended Newton-Raphson method.*
- ROOTWV.BAS** *Determines (a) root(s) with the modified Wegstein method.*
- ROOTMU.BAS** *Determines the roots of a polynomial with complex coefficients with Muller's method.*
- GRAFREAL.BAS** *The results of this program are the roots calculated with ROOTREAL.BAS. It is a plot of the function, and a colour scheme that indicates what root Newton-Raphson will calculate given a series of seed values.*
- GRAPHNR.BAS** *Generates a NR-mosaic (either polynomial graph or fractal) that will be stored in a defined file. Input data are the file that contains the coding scheme of the pixels, the degree of the equation the tolerance, the maximum allowable iteration steps, and the coordinates of the frame of the mosaic.*
- GRAPHRF.BAS** *Same as GRAPHNR.BAS for a RF-mosaic.*
- GRAPHXX.BAS** *Same for the XX-mosaic.*
- GRAPHMU.BAS** *Same for MU-mosaic.*
- REBUILD.BAS** *Builds a mosaic, using the stored coding scheme of fractals and polynomials. Input data are the question whether or not the location of the roots must be displayed (this needs the file containing the roots as input), the file that contains the coding scheme, a question whether or not a 10x10 grid should be displayed, an area from that grid should be identified (if so the coordinates of that area are displayed), whether or not a MBP-file should be generated, and whether or not a rectangle, identifying an area of the mosaic (for this the coordinates of the rectangle must be specified) must be shown on the mosaic.*
- SHOWROOT.BAS** *Shows the roots of an identified equation, its degree, and its coefficients.*
- BMP.BAS** *Generates a fractal or polynomiograph, using the file in which the coding scheme is stored.*
- CHGCOL.BAS** *Changes the colours of certain parts of the mosaic (fractal or polynomiograph).*

Some other utility programs are also used, mostly to show or print certain (intermediate) results of the various calculations.

