CADRA® AutoGeometry
Programming Language for Customizing CADRA

Features
Benefits from Using AutoGeometry
- Assign frequently used commands to the keyboard or mouse for one-touch execution
- Automate and streamline time-consuming start-up tasks
- Add functionality to CADRA with programs invoked from the user menu
- Create libraries of programs to share with others
- Develop routines for managing drawings, creating families of parts, generating BOM’s and formatting standard copy blocks
- Write productive macro programs in a day

Programming Characteristics
- Looping and nested loops
- Programs may be written as subroutines and used in a variety of different programs
- Programs and subroutines can be called from other applications
- Two-way and three-way branching
- Function and Subroutine levels
- Structural data
- Arithmetical, logical and relational expressions
- Integer and double-precision constants
- Full suite of user documentation
- Similar to FORTRAN-77

AutoGeometry Professional Services
Mentor Graphics also offers a number of industry leading services to assist you in increasing the productivity of CADRA and your engineering department. We offer the following:
- Rapid Start Program
- Education
- Consulting
- Specialized Programs

What are some users doing with AutoGeometry?
- Automate CADRA figures to show machinery paths and functionality to check out interferences and work flow
- Automatic plotting
- Automatic dimensioning
- Automatic translations collect information to draw a washer, then draw it
- Drawing tapped holes
- Drawing hexagons
- Add signatures, revisions & dates to the title blocks

What You Get with Autogeometry
- Menu-driven editing, translate, debug, compiling, and testing
- Program customization using built-in editor or user specified system editor
- Fully-editable sample programs for creating Bill of Material
- More than 100 built-in library functions for calculating geometry, accessing a database, and simulating input new library creations by grouping and saving source codes and executable versions of programs
- Unique “learn mode” for automatically saving procedures as editable text files allowing you to generate new programs without having to learn a new programming syntax
- The ability to search, alter, add, and delete drawing entities, which can be used as the foundation for a family of parts system or automated drawing system
- Increase design productivity and eliminate repetitive work through macros that handle the standard but time consuming tasks
- Ability to encode frequently used multiple command sequences to the keyboard location or a data tablet for one touch operation
- Easy de-bugging. An interactive debugger enables line by line execution and tracing of programs
- Has separate runtime-mode that is built into the base CADRA product, this allows all your CADRA users to run your created programs without an AutoGeometry license

https://www.mentor.com/products/mechanical/cadra
Programming in AutoGeometry is made easy with the easy menu driven edit, compile and debug functionality.

AutoGeometry has many helpful features to assist you in finding, understanding and fixing programming errors in logic, syntax and structure.

For added flexibility programs can be written strictly for use in subroutines. One subroutine can be called by many programs.

Programs can be self-contained or can be written to run interactively with pauses and prompts for user input or can be run from start to end without user input.

Setup program libraries that can be read with one command.

Create and load personalize programs and alternate keyboard layouts that load when CADRA is launched.
**CADRA at a glance...**

**3D Solid Models**  
- SolidWorks  
- SpaceClaim

**AutoGeometry**  
- MicroAutomation  
- Data Management  
- NC (2 to 5 axis)  
- Batch Plot & Print

**Raster Editing & Conversion**  
- CALS, TIFF, Image-X, AnaTech, GTX

**Translator Options**  
- CATIA  
- MicroCADAM  
- CATAM  
- PRO-CADAM (CCD)  
- CADDS  
- AutoCAD (DXF/DWG)  
- IGES  
- KES  
- Gerber

**Comfortable interface**  
- Automate functionality  
- Create customer integrations  
- Well connected to other CAD/CAM tools and filelist formats  
- Preserve Legacy drawings: Convert paper to CADRA

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**Low Cost of Ownership**  
The efficient drawing productivity brought to your desktop by CADRA, allows exploration time for iterations, innovations, and clarity, which leads to improved product quality and faster time to market. CADRA provides an overall cost effective ownership experience, with its links into other CAD tools and availability on fresh Hardware and Operating Systems.

**Improve Design & Documentation Quality**  
When Drafting with CADRA it allows you time to explore alternatives and focus on clarity and accuracy of the imported 2-1/2D models for increased drafting and documentation quality.

**Reduced Cost, Faster Time to Market**  
When using CADRA you immediately turn a cost savings and compress the release schedule. No need to redraw drawings with CADRA AutoGeometry.

**Fits Existing Infrastructure**  
CADRA runs on 64 bit versions of Windows 8.1 and 10 Professional and Enterprise. As well as Windows servers versions 2012 R2, 2016 and 2019. Microsoft Word documents, Excel spreadsheets, PowerPoint presentations and pictures can be embedded in CADRA drawings. Legacy data or data from other CAD programs can be imported as well using OLE (Object Linking and Embedding).

**Global Solution**  
CADRA is available in multiple languages including English, French, German, Italian and Japanese. Reduction in the learning curve and data migration times are obtained through training, database conversions, programming tools, viewers, and direct interfaces with other CAD tools, as well as quick links to 3D visualization.

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**Greater Productivity with CADRA**

**CADRA Raster**  
- Raster-to-vector conversion utility for converting paper drawings into CADRA files

**CADRADirect**  
- A suite of CADRA translators that allow write/read of CADRA drawings

**CADRAView/Check**  
- Share designs as view-only, markup, and red-line

**CADRA Solid Modeling Integrators:**  
The SolidWorks and SpaceClaim integrators have bidirectional data exchange that turns solid models into accurate CADRA designs and legacy CADRA files into Solid Model sketches with ease. This can be used for documentation or cost effective 2-1/2D designs and provides photo-realistic images of CADRA designs in progress for prototyping.

**CADRANC**  
- 2- through 5-axis numerical control (NC) programming with full mill turn support and control of a diverse mix of CNC machines

**CADRA Plot**  
- Batch plot management and file translation

**CADRA-BOM**  
- Automate bill of materials (BOM) creation, reuse setup and retrieve

**CADRA-EDM**  
- Data management facility

**CADRA-LIB**  
- Library of components created with CADRA productivity features in mind

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**Benefits from Using CADRA-Add-ons**

**CADRA Productivity Tools**

- QuickDim intelligent dimensioning
- QuickPick rapid selection and insertion of parts, layers, and overlays
- QuickHatch for crosshatching
- QuickTrim for trimming and cornering
- CADRADirect Data exchange modules. MICROCADAM, CADAM, PRO-CADAM, CCD, CATIA, CADDS, DWG, DXF, and IGES
- FlexDesign adds dimension-driven variation and design capabilities
- Planar, step and complex sectioning with cross-hatch control
- Preview of geometry to be created
- In-place figure editing
- In-drawing foreign language text
- Plot preview, plots PDFs
- Bi-directional HPGL format
- Microsoft Office integration (OLE)
- Integrated documentation tools

**Design Automation**

- Visual Basic Object model interface
- CADRALIB integrated Component Library
- CADRABOM bill of materials automation
- CADRAEDM data management facility
- CADRADirect read and/or write CADAM, CADDS, DWG, DXF, IGES, PDF, HPGL, MICROCADAM, CATIA, and CCD

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