

Getting started



Getting started with GCOS8 Mainframe Express is a quick guide on how to install GCOS8 Mainframe Express, how it integrates with Micro Focus Mainframe Express and how to migrate from GCOS-8 COBOL Workbench.

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PREFACE

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Introduction

Welcome to GCOS8 Mainframe Express, the most productive tool for moving your BULL GCOS8 mainframe development to the PC.

GCOS8 Mainframe Express (MFE8) is an extension of Mainframe Express (MFE) from Micro Focus (formerly Merant), and together it provides all the tools you need to use your PC to develop, maintain and test applications for deployment on BULL GCOS8 and IBM MVS mainframes. This graphical, intuitive and fully integrated PC-based environment dramatically increases your productivity through leading edge tools for editing, compiling and visually debugging mainframe applications. It also provides powerful tools for moving application components from/to the mainframe environment.

Mainframe Express is designed and streamlined for an IBM mainframe environment, and for a BULL GCOS8 customer (not having IBM mainframe) some of these components have no relevance and should be ignored. Here's a list of the major parts of Mainframe Express and notes on relevance for GCOS8 applications.

Integrated Development Environment

The main window, with pulldown menus, in which you edit, compile and debug your code, and via which you access most of the Mainframe Express tools. It is often referred to as the IDE. Toolbars, popup menus, and various subwindows all help to make the IDE very fast to use.

GCOS8 specific compiler dialect are implemented under 'Non-Mainframe' as standard Preprocessor options.

GCOS8 specific tools are implemented under GCOS8 Tools pulldown menu.

Debugging of GCOS8 applications - Batch and TP8, are done through 'None-mainframe' debugging.

Project

A file detailing all the files in your application, and how they should be compiled. A project is very easy to create, and makes compiling extremely quick and easy. You should create a project for every application, even the simplest.

GCOS8 applications cannot/does not use CLIST, JCL, Catalog and Spool.

TSO Session

An interactive environment emulating IBM TSO, enabling you to run from a TSO command prompt and to include CLIST file and REXX execs in a project.

GCOS8 applications cannot use TSO (no equivalence to TSS).

JCL

A batch environment emulating IBM JCL, enabling you to include a JCL jobstream in a project.

GCOS8 applications cannot use JCL (no equivalence to GCOS8 JCL).

Workgrouping and Workflow

A feature that enables you to organize your development versions of your source files, keeping them separate from versions already in use ("production" versions), and switching easily between using development versions and production versions in your build.

Touchpoint

TouchPoint enables you to simplify and automate the testing process by making it easy to create and run both conformance and regression tests on your COBOL code.

Mainframe Access Drag & Drop

A tool to transfer files between your PC and the mainframe.

Not available for GCOS8.

SourceConnect and DataConnect

A pair of features that enable you to refer to files on the mainframe from your PC, just as if they were on your PC or on your PC network.

Not available for GCOS8.

Data Tools

A set of tools that enable you to convert, browse, edit and create data files used by an application. You can examine data files to see how an application has updated them, or create and edit a file to provide test data for an application. Files can be in any COBOL format and you can view them at both record and field levels.

EBCDIC Character Set

Mainframe Express stores all data in EBCDIC, except for program source files, which are stored in the ANSI character set.

GCOS8 applications use ANSI character set for all files as standard.

CICS Option

Not relevant for GCOS8 applications.

IMS Option

Not relevant for GCOS8 applications.

SQL Option for DB2

Not relevant for GCOS8 application, which use IBM DB2 UDB to support Interel application.

Host Compatibility Option

Not relevant for GCOS8 applications.

Assembler Option

Not relevant for GCOS8 applications.

WinRunner 2000

Cannot be used with GCOS8 applications.

GCOS8 specific features like IDS-II, TP8 etc. are discussed in more details in following chapters.

Related Documentation

GCOS8 Mainframe Express online documentation consist of:

- Getting started (this document)
- Integrated help
- Reference guide
- Add-on guides
- Release and Update notes

Copyright Information

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1. MFE8 Installation

Before installing GCOS8 Mainframe Express you should consider whether the software is to be used in a networked environment with multiple PC workstations, or a single-user non-networked PC workstation.

The software is structured to be installed into multiple directories, some directories potentially shared by multiple users and one directory non-shared for exclusive use.

During software installation you may select three types of installation, as follows:

- Server installation
- Workstation installation
- Single-user installation

GCOS8 Mainframe Express is a 32-bit product and may be installed under Windows 95, 98, NT, 2000 or XP.

GCOS8 Mainframe Express is an extension of Micro Focus Mainframe Express, and it is recommended to install Mainframe Express first.

1.1 Installation information

The GCOS8 Mainframe Express CD use Autorun to trigger automatic installation when the CD is inserted. If automatic insert detection is disabled, you should either use 'Autorun' from popup menu or start the setup program manually from the CD.

The CD is structured as follows:

- mfe8note.txt contains Release Notes
- mfe8\disk1\setup.exe used to start installation of MFE8
- mfe8up\disk1\setup.exe used to start installation of MFE8 update

GCOS8 Mainframe Express is organized into Server and Workstation directories, and Server and Workstation installation is normally performed separately, except when MFE8 installed on a single-user (non-networked) PC.

GCOS8 Mainframe Express may be installed without having installed Mainframe Express first, however it is recommended to install Mainframe Express first, and then install MFE8 Workstation hereafter.

1.2 Server Installation

Start with 'Server' installation to prepare the Server directories to be shared between multiple PC workstations. Server installation can be performed from any PC or on the target server (Windows NT/2000/XP only).

Global Directory

The global directory holds configuration and support files.

Database Directory

Database directory holds schema, subschema, backup-sets and other database support files.

Forms Directory

Forms directory holds all files related to Forms.

Program Directory

Program directory holds software and support files.

Optional Components

- SAMPLES Files - select to install sample programs, databases etc.
- DIMS8 Files - select to install DIMS8 Forms support
- FORMAT Files - select to install FORMAT Forms support
- TSM8 Files - select to install TSM8 Forms support
- PILSPRAAK Files - select to install ArrowTalk Forms support
- SOLD+ Debeka Files - select to install SOLD+ Forms support (specific version for Debeka, Germany)
- INTEREL Files - select to install INTEREL Database support
- TEC-DIMS8 Files - select to install DIMS8 Forms support (specific version for TEC, Denmark)
- SOLD+ Barmenia Files - select to install SOLD+ Forms support (specific version for Barmenia, Germany)
- WEB8 Files - select to install WEB8 support
- DBSP - select to install DBSP support
- RHB - select to install Rehosting support

Optional components must be selected during initial installation, they cannot be added later.

1.3 Workstation Installation

Continue with 'Workstation' installation to prepare each PC Workstation.

Registration

- Name
- Company
- Registration Number

The CD cover will indicate your license registration number.

Local Directory

Local directory holds configuration and work files, and must be a non-shared directory (local disk). May the same as 'mfeuser' directory.

Global Directory

Establish a link to the global directory holding configuration and support files.

Database Directory

Establish a link to the database directory holding schema, subschema, backup-sets and other database support files.

Forms Directory

Establish a link to the forms directory holding all files related to Forms.

Program Directory

Establish a link to the program directory holding software and support files.

Optional Components

Make the same selections as you did during 'Server' installation.

- SAMPLES Files - select to install sample programs, databases etc.
- DIMS8 Files - select to install DIMS8 Forms support
- FORMAT Files - select to install FORMAT Forms support
- TSM8 Files - select to install TSM8 Forms support
- PILSPRAAK Files - select to install ArrowTalk Forms support
- SOLD+ Debeka Files - select to install SOLD+ Forms support (specific version for Debeka, Germany)
- INTEREL Files - select to install INTEREL Database support
- TEC-DIMS8 Files - select to install DIMS8 Forms support (specific version for TEC, Denmark)
- SOLD+ Barmenia Files - select to install SOLD+ Forms support (specific version for Barmenia, Germany)
- WEB8 Files - select to install WEB8 support
- DBSP - select to install DBSP support
- RHB - select to install Rehosting support

Optional components must be selected during initial installation, they cannot be added later.

Integration

If Mainframe Express is already installed, then 'Workstation' installation will finish with an option to launch the integration process automatically. You may also do this later, see 1.5 Integration with Mainframe Express.

If Mainframe Express is not installed, then 'Workstation' installation will not offer you to launch the integration process automatically. You need to do this after installing Mainframe Express, see 1.5 Integration with Mainframe Express.

1.4 Single-User Installation

The 'Single-User' installation may be used to install both 'Server' and 'Workstation' at the same time. It may be used to install GCOS8 Mainframe Express on a single-user non-networked PC, where directories are not shared with other PC workstations.

Single-User Directory

Single-user directory holds everything, however software components are subdivided into G, P, F, D and L subdirectories.

This technique does allow you to change to a multi-user environment at a later stage.

1.5 Integration with Mainframe Express

Once 'Workstation' installation has been completed, you are ready to integrate GCOS8 Mainframe Express with Mainframe Express. Besides installing files, the installation has setup information in the Windows Registry and create new shortcuts in your startup menu.

Registry

Registry information, which serve as the basis for integration with Mainframe Express, is setup under HKEY_LOCAL_MACHINE\SOFTWARE\B & C Solution\GCOS8 Mainframe Express\2.5\Install.

These settings should not be manually edited, however if you choose to move directories after installation, ex. going from Single-User to Server-Workstation, you can change these directory settings accordingly. Alternatively you can re-install Workstation install and thus change directory settings accordingly.

In either case, you need to re-run the GCOS8 Integrate Process, to reflect the changed configuration within Mainframe Express.

Startup Menu

A sub-menu 'GCOS8 Mainframe Express' is created under 'Micro Focus Mainframe Express 2.5' with the following content:

- Online Books - a shortcut to open Online Books folder
- Notes - multiple shortcuts to various text documents
- Help - multiple shortcuts to various online help files and a shortcut to launch the integration process

If Mainframe Express was installed before GCOS8 Mainframe Express, you may use the 'GCOS8 Integration' shortcut to launch the integration process. If Mainframe Express was not installed, then you need to manually edit this shortcut to establish a correct path for Mainframe Express, before launching the integration process.

GCOS8 Integrate process

The GCOS8 integrate process does the following:

1. Read installation information from registry
2. Customize and create commands for batch processing under Global directory
3. Customize SITE libraries under Program directory
4. Customize configuration files under Global directory
5. Customize registry settings for Mainframe Express
6. Customize Windows Help settings in registry (register GCOS8 help files)
7. Customize SQL Option for DB2 for INTEREL

The integrate process will check current settings and optional components selected, and only perform activities as required. No harm is done if the integrate process is run multiple times.

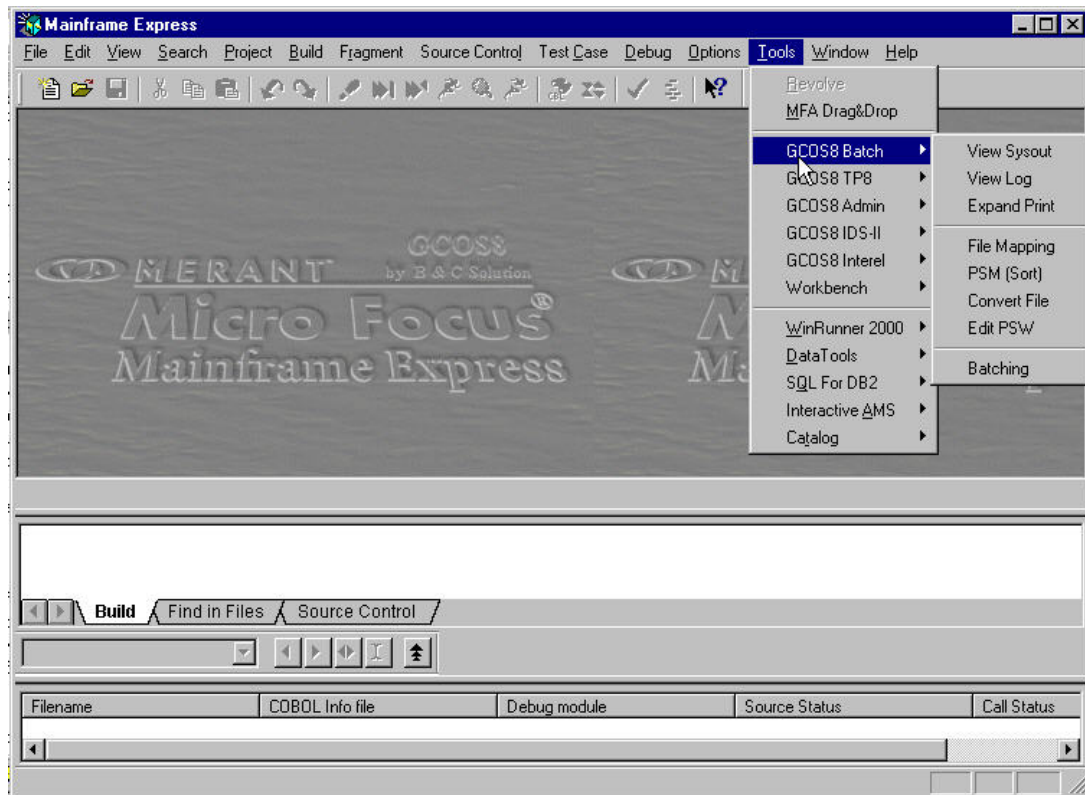
2. MFE8 Integration

GCOS8 Mainframe Express functions are completely integrated into the Integrated Development Environment (IDE) of Mainframe Express.

- GCOS8 specific tools can be accessed from the Tools menu.
- GCOS8 specific help can be accessed from the Help menu.
- GCOS8 specific compiler dialects can be accessed within Project and Build settings and will trigger GCOS8 compatible compilation
- GCOS8 Batch and TP applications can be debugged within a Project

2.1 Tools Integration

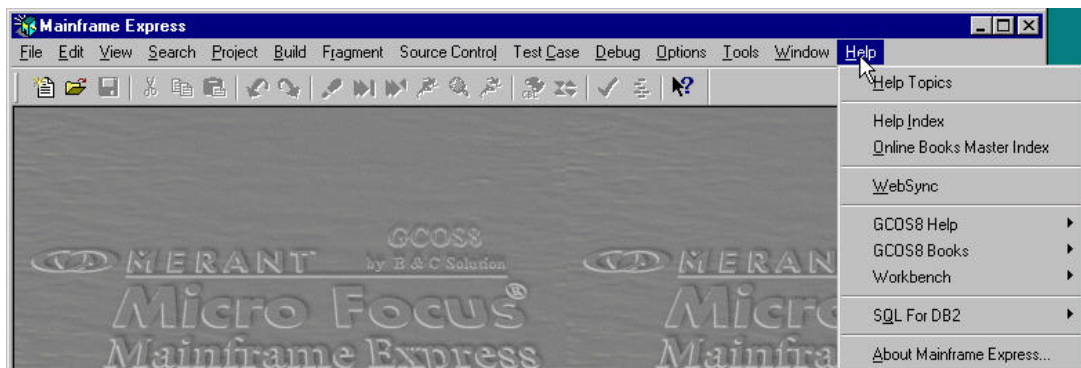
When you start Mainframe Express, GCOS8 specific tools can be accessed from the Tools menu as follows:



GCOS8 Tools holds additional functions, which are grouped into logical units of work. Most functions can be launched directly from the menu, others can be launched through a pop-up menu window. When a Project is open, the tools will act with the current project as the basis. The GCOS8 tools are grouped as follows:

- GCOS8 Batch Support - additional functions to support batch application testing
- GCOS8 TP Support - additional functions to support TP8 application testing
- GCOS8 Administration - additional functions to support administration of application components and the GCOS8 environment
- GCOS8 IDS-II Database - additional functions to support IDS-II database
- GCOS8 Interel Database - additional functions to support INTEREL database

GCOS8 specific help can be accessed from the Help menu as follows:



2.2 Project Integration

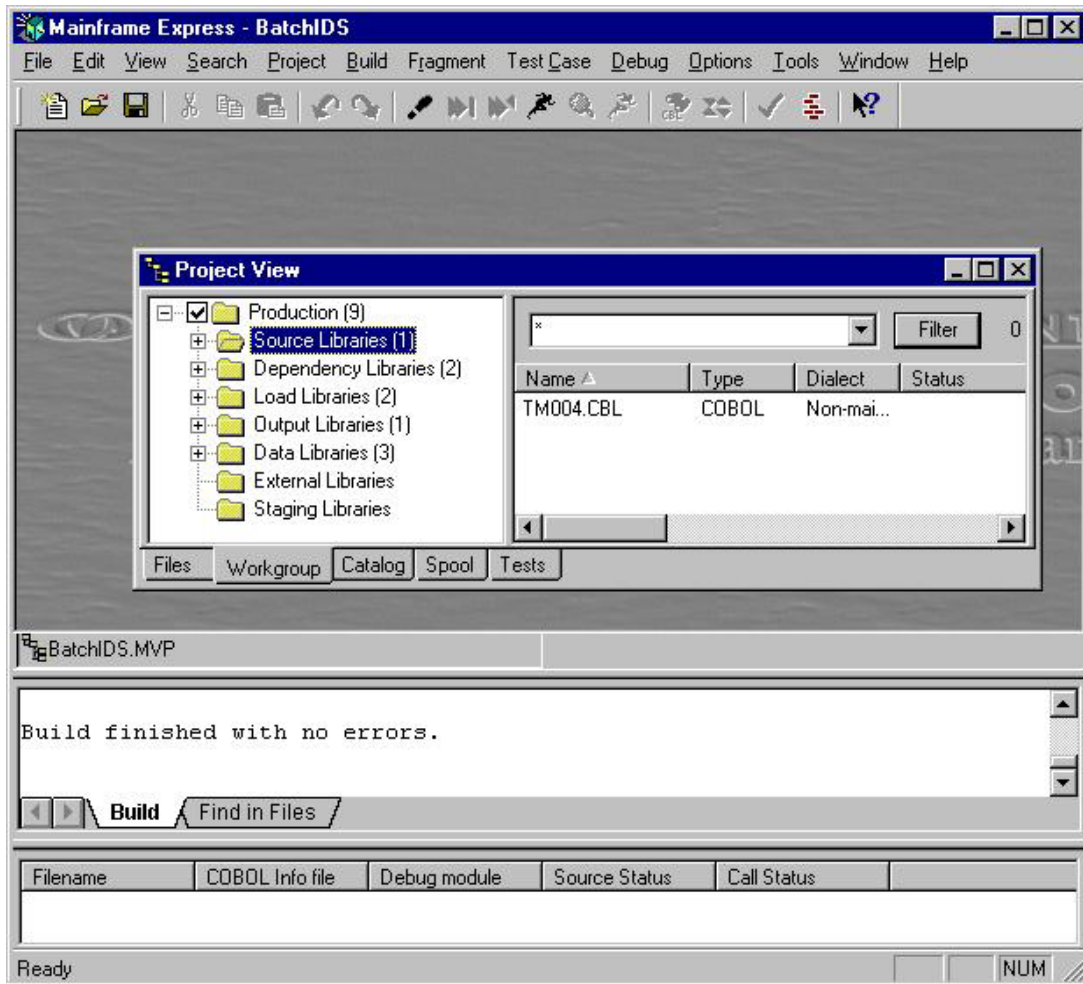
To illustrate project integration, we are using the BatchIDS project, which you will have installed if you selected SAMPLES under Optional Components during installation.

Project View

The Project View has multiple tabs as follows:

- Files - this is a simplified view where your source, copy and data files can be accessed
- Workgroup - this is a more complete view where all application components, including executables, can be accessed, and it also structures the application components into multiple levels
- Catalog - this tab is NOT USED for GCOS8 applications
- Spool - this tab is NOT USED for GCOS8 applications
- Tests - this view relate to Touchpoint (fragment testing)

Following example illustrates the Workgroup view with Source Libraries view activated.

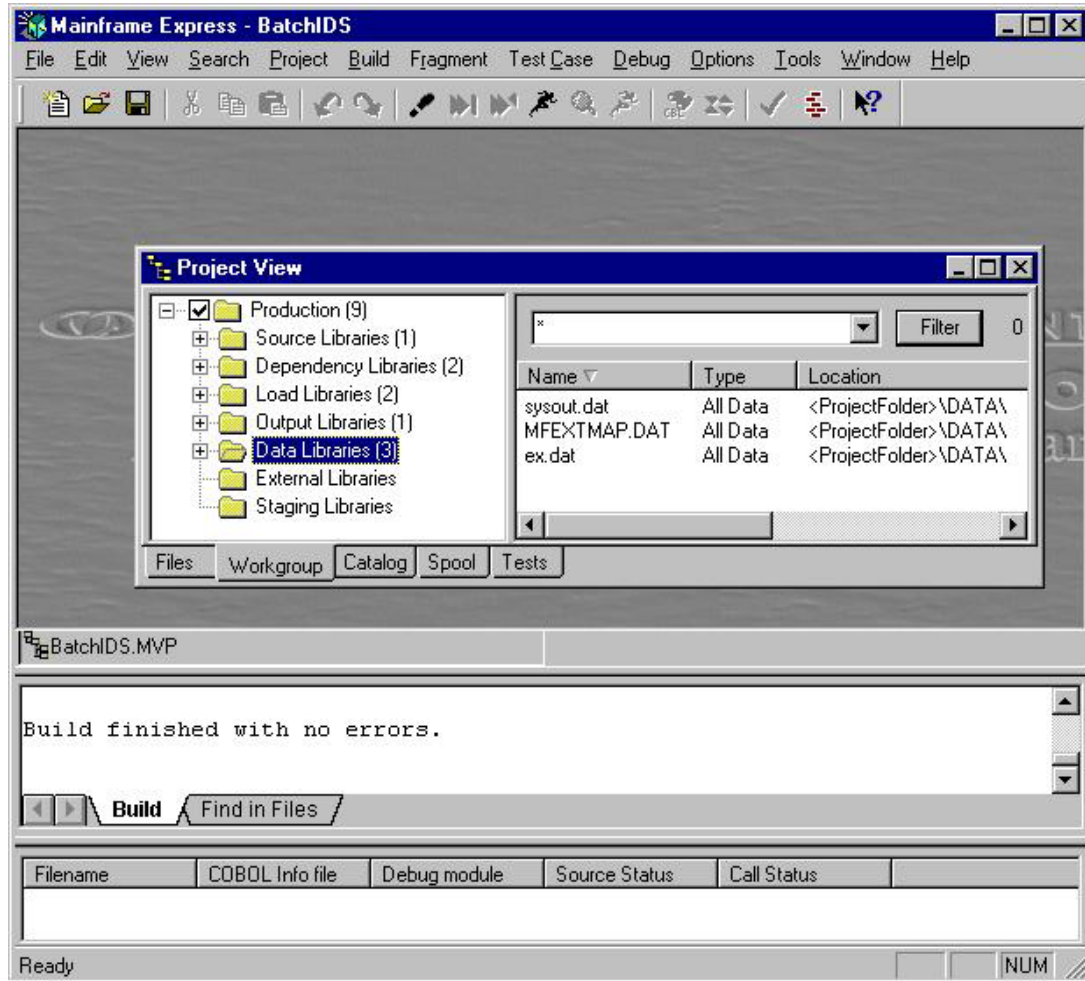


You are able to activate the various views to verify or gain access to your application components. Following briefly describes these views.

- Source Files - contains all the program sources of your project, in this case TM001.CBL, which is the source for our test program.
- Dependency Libraries - contains all the copy members of your project, separated into different libraries. Content is automatically updated with copy members as you compile source programs. All relevant copy members can thus be easily accessed.
- Load Libraries - contains all executables of your programs. You can add additional libraries to point to general libraries (directories) where 'ready' executables can be found, ex. all subroutines which are not part of the project, but used during execution.
- Output Libraries - contains listings from compiled programs.
- Data Libraries - contains all application data files with known extensions, ex. DAT
- External Libraries - contains other application source/data files with unknown extensions, ex. SD

- Staging Libraries - contains information on staging libraries (if multiple levels are configured for project)

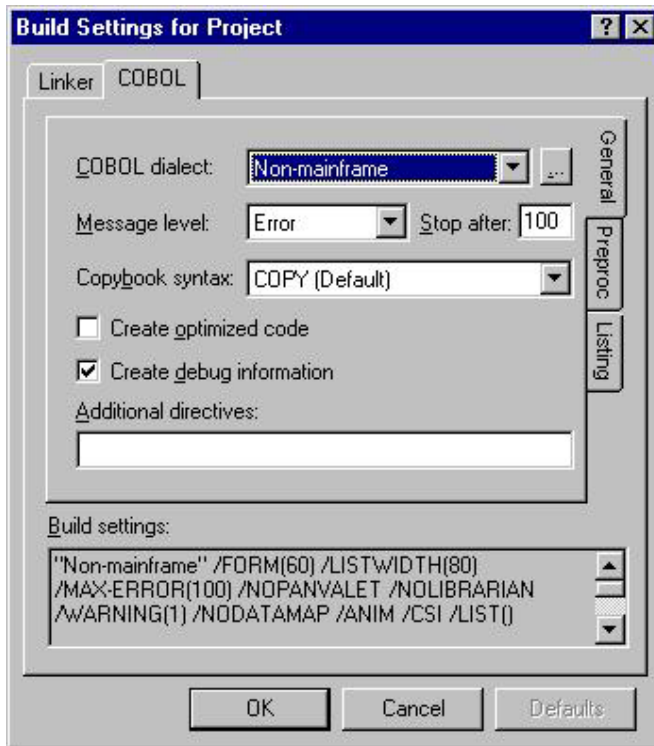
Following illustrate Data Libraries view with three test files.



Build Settings

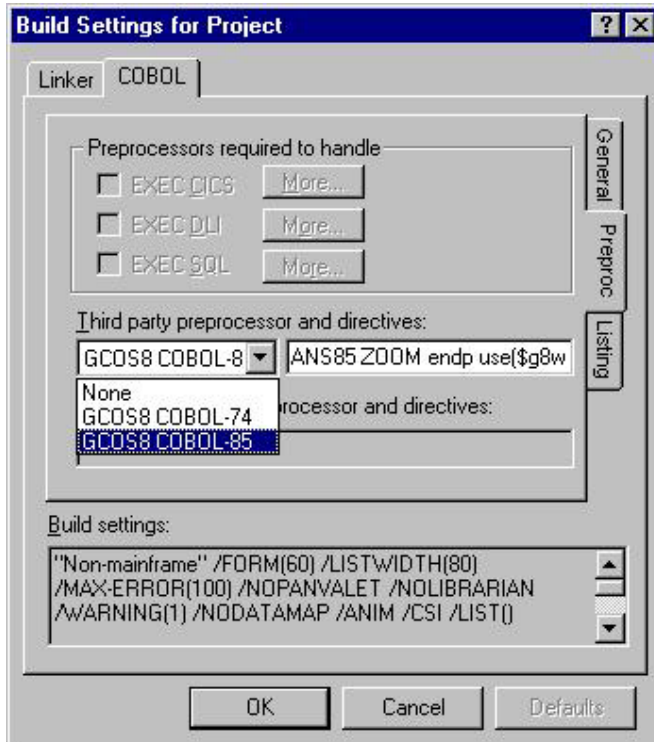
For GCOS8 applications you must change the default COBOL dialect setting within Build Settings. Either for the entire project or for each individual program source.

All GCOS8 application use 'Non-mainframe' in COBOL dialect.



In addition, one of the standard Preprocessor settings must be selected from the 'Preproc' tab, as illustrated below.

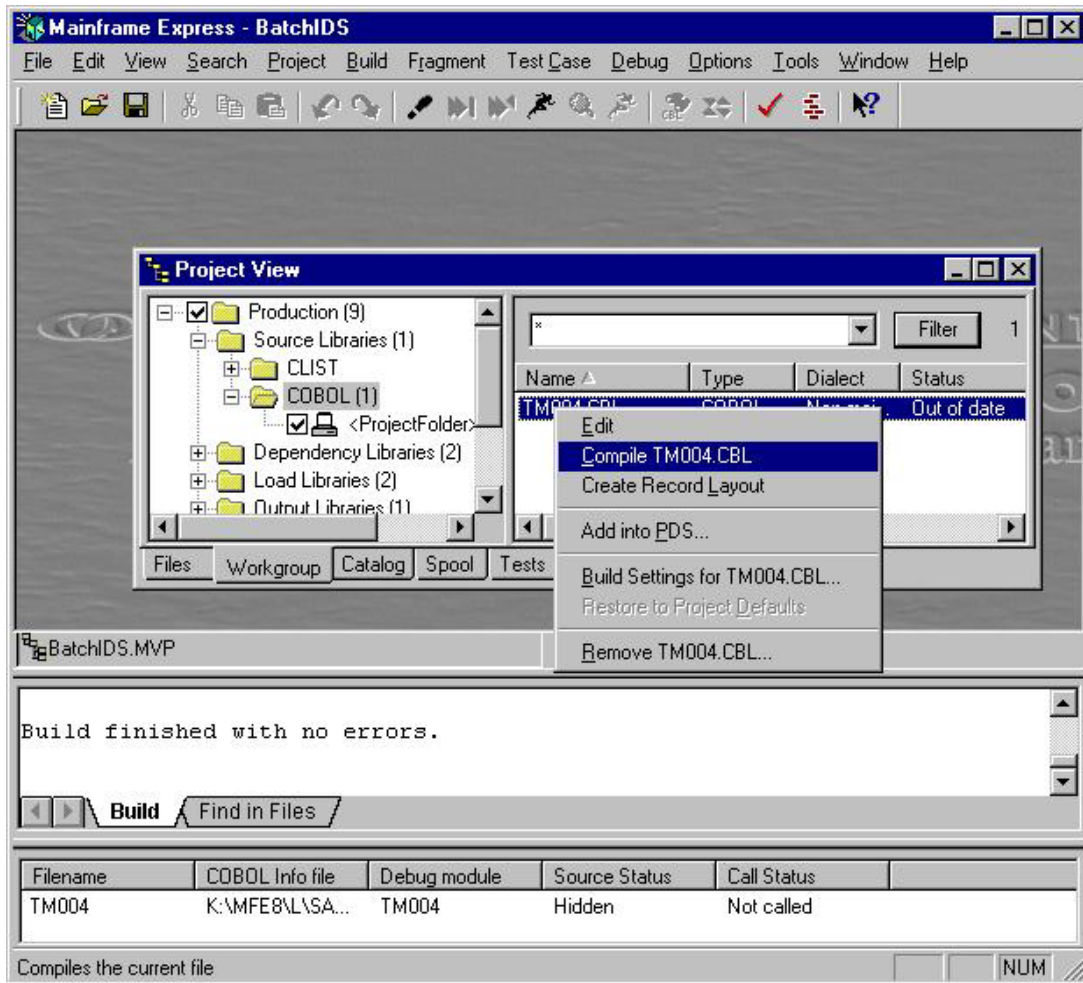
- GCOS8 COBOL-74 - use for COBOL-74 compatible programs
- GCOS8 COBOL-85 - use for COBOL-85 compatible programs
- GCOS8 COBOL-SQL - use for COBOL-85 programs with embedded SQL (Interel)
- GCOS8 DBSP COBOL-85 - use for COBOL-85 programs with DBSP SQL (Oracle)



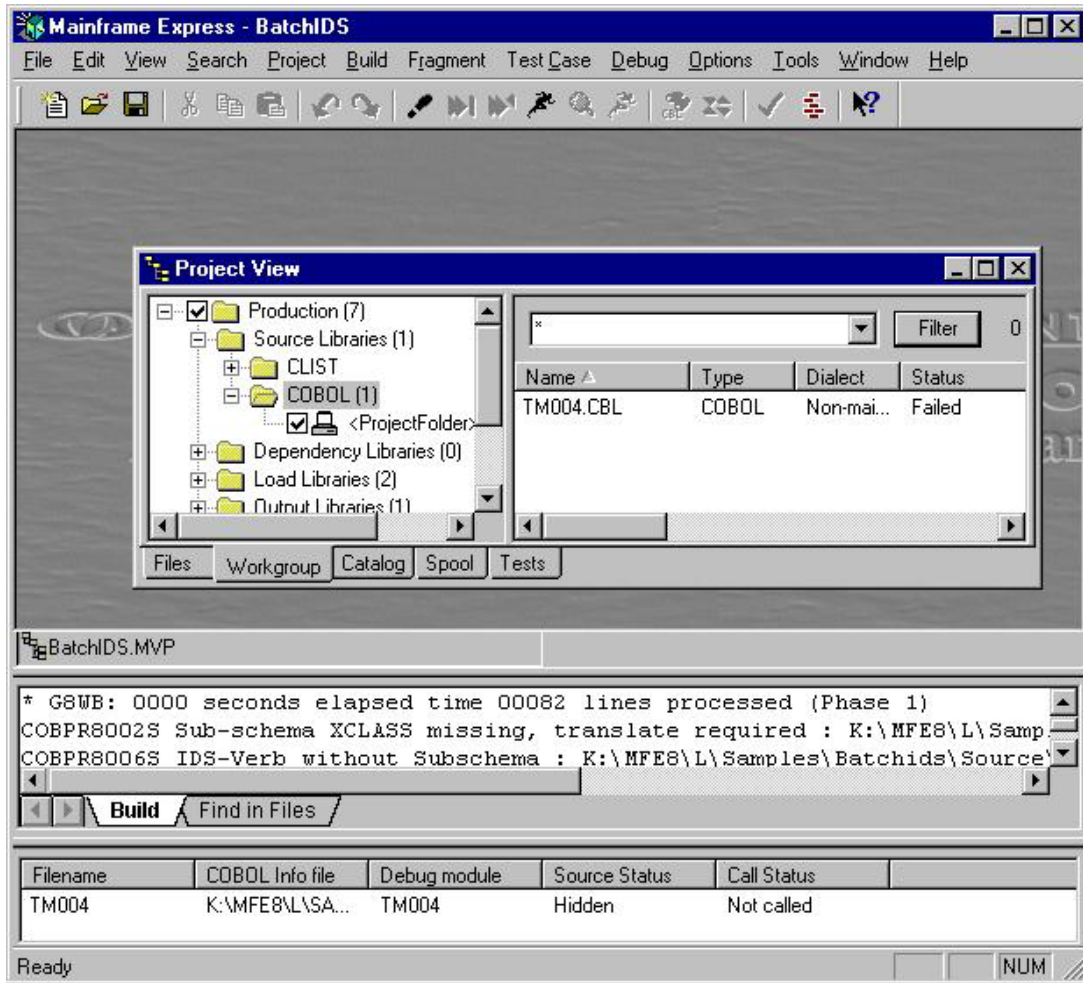
Build settings will be remembered and need only be specified once for project or individual members (programs).

Compilation

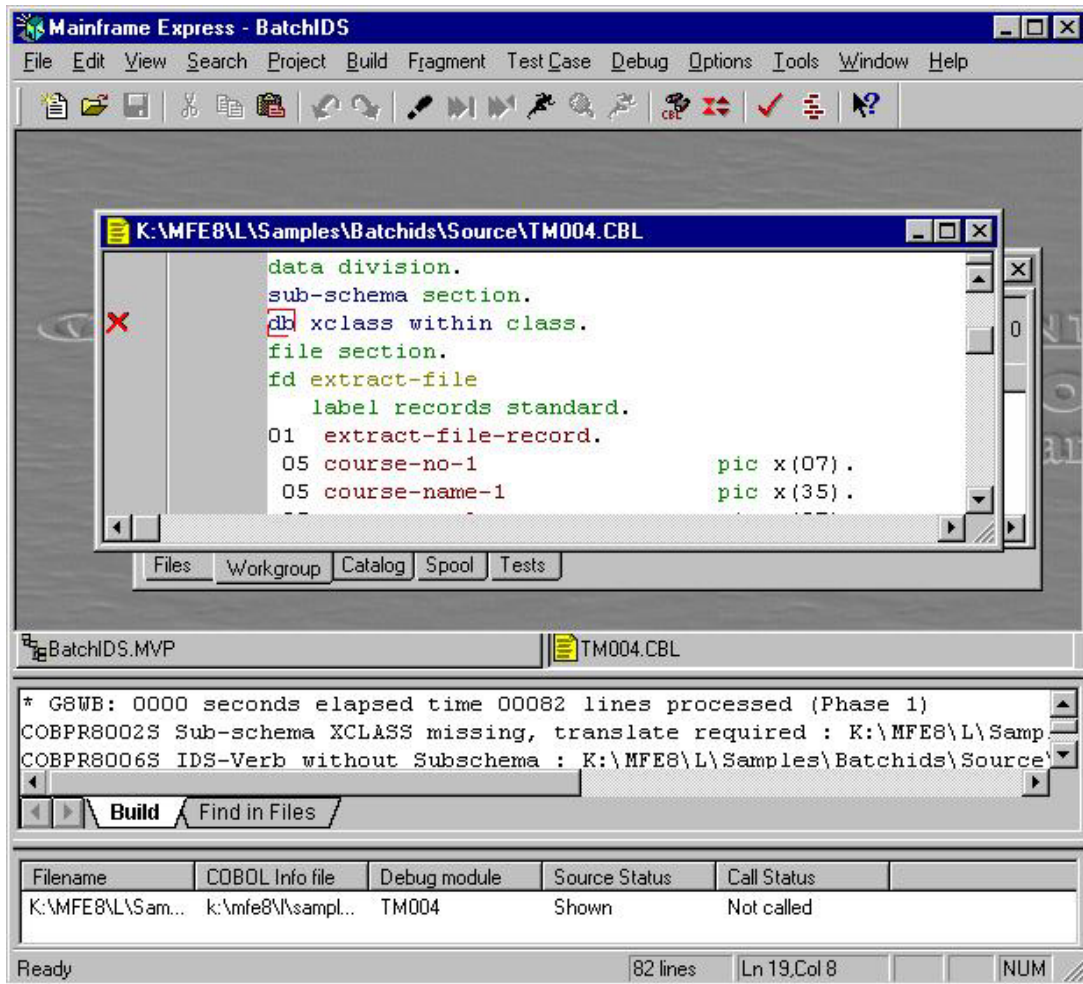
You compile program source by select one or more member from Source Libraries view, and select Compile from right-click action menu.



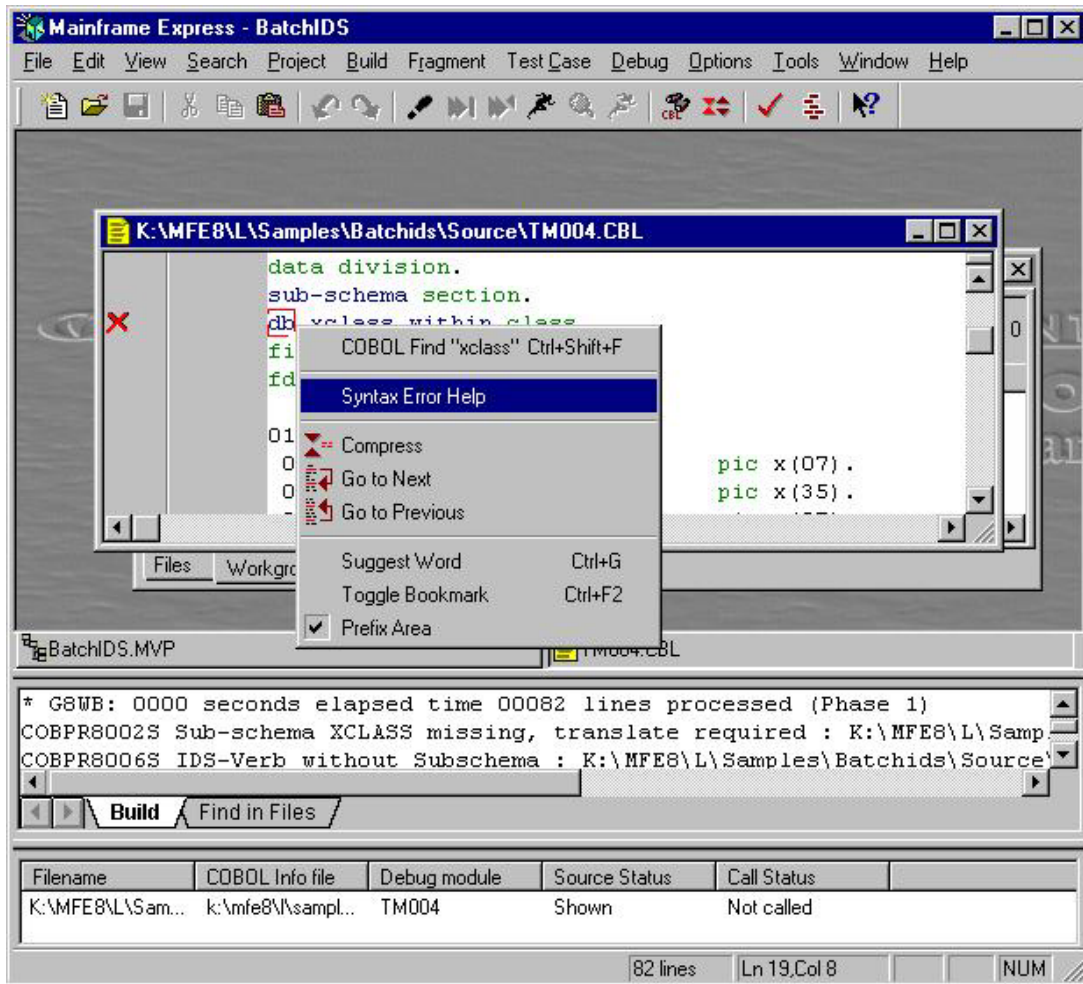
The compilation process and error reporting may be monitored in the 'Build' window of the IDE. Following example illustrate compilation with a couple of fatal errors.



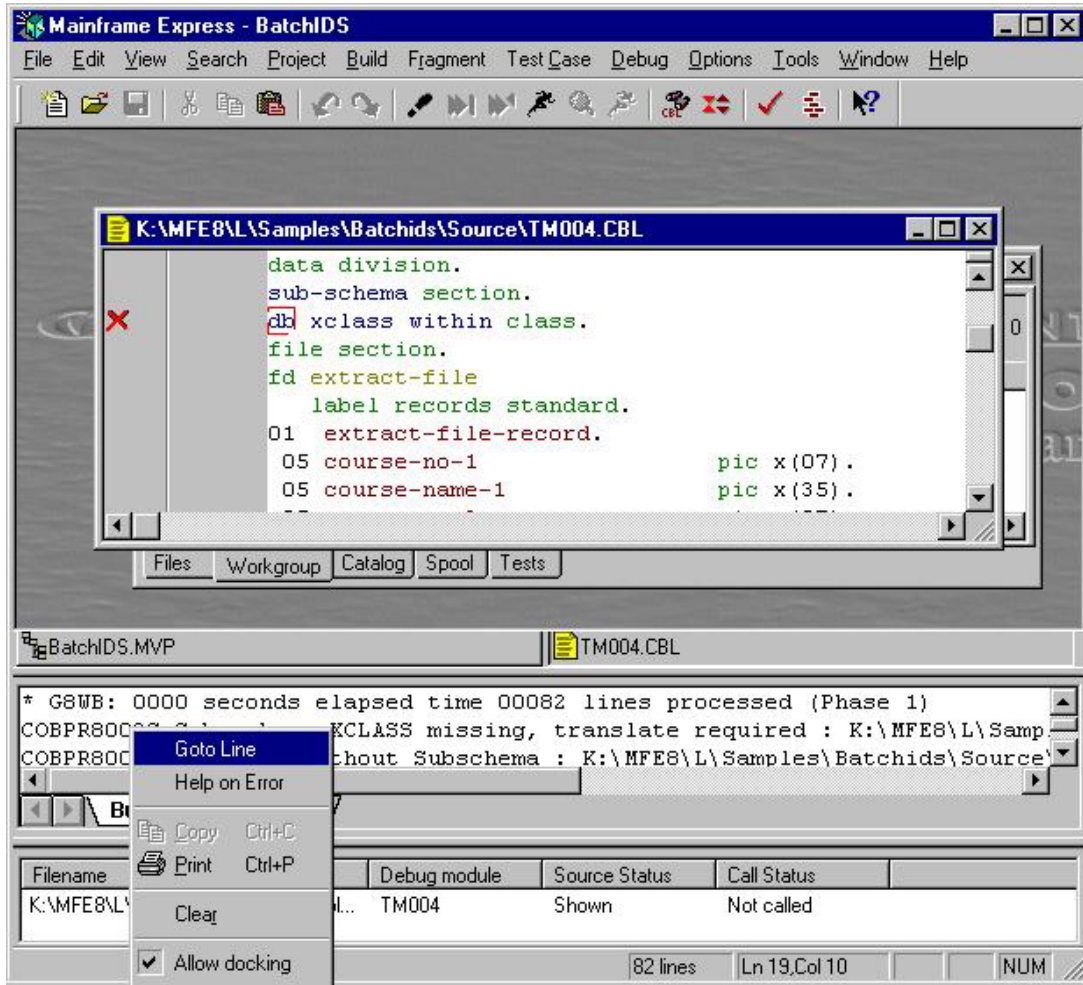
By double-clicking on one of the errors messages in the 'Build' window, the program source will be opened and positioned on the appropriate source line.



By right-clicking on the source line, you can obtain further help information (either COBOL or GCOS8 specific) and navigate through multiple errors.



By right-clicking on an error message in the 'Build' window, you can easily locate the appropriate source line.

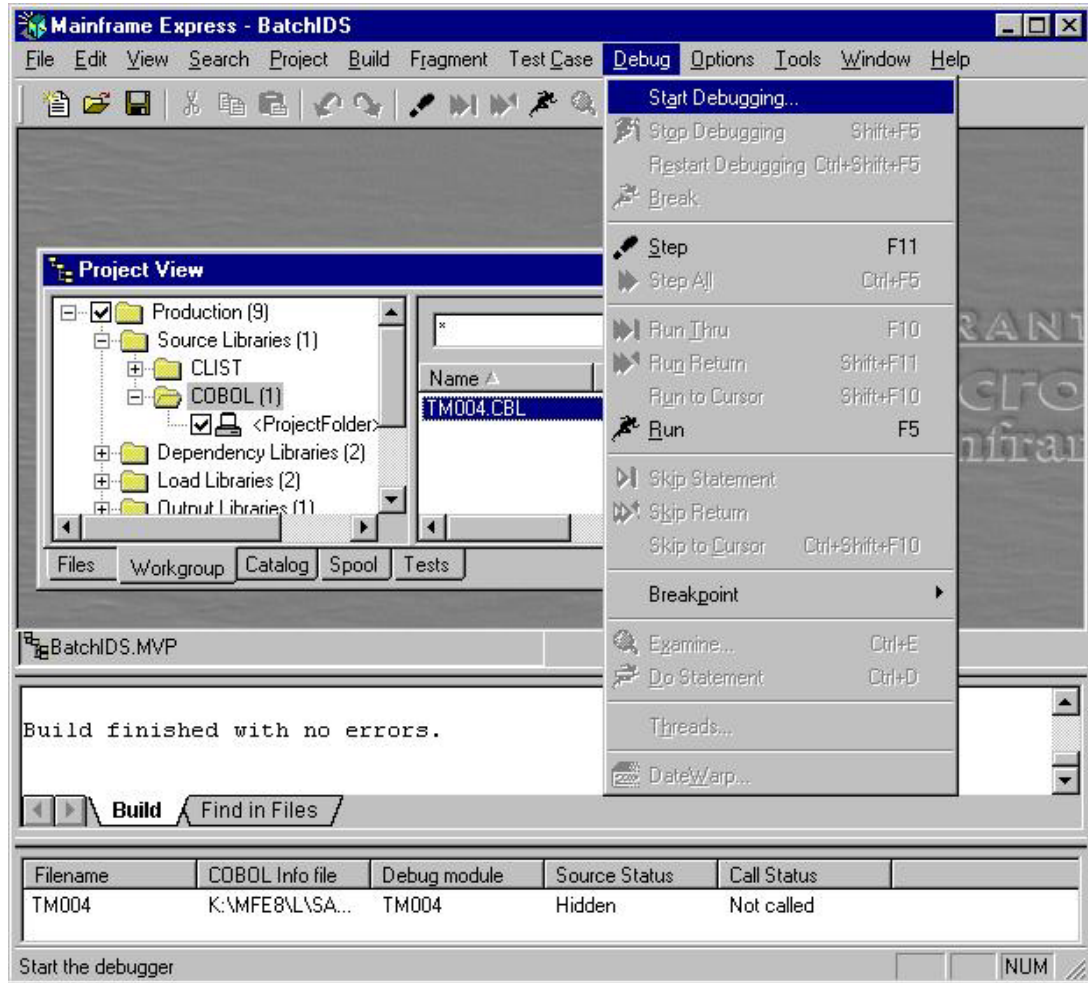


Correct the errors and re-compile as required. The Source Libraries view will show the status (Failed or OK) for each program source.

2.3 Batch Example

To illustrate debugging of a GCOS8 batch application, we continue to use the BatchIDS project, where we have the program TM004 clean compiled.

Debugging (Animation) is started from the Debug menu as follows:

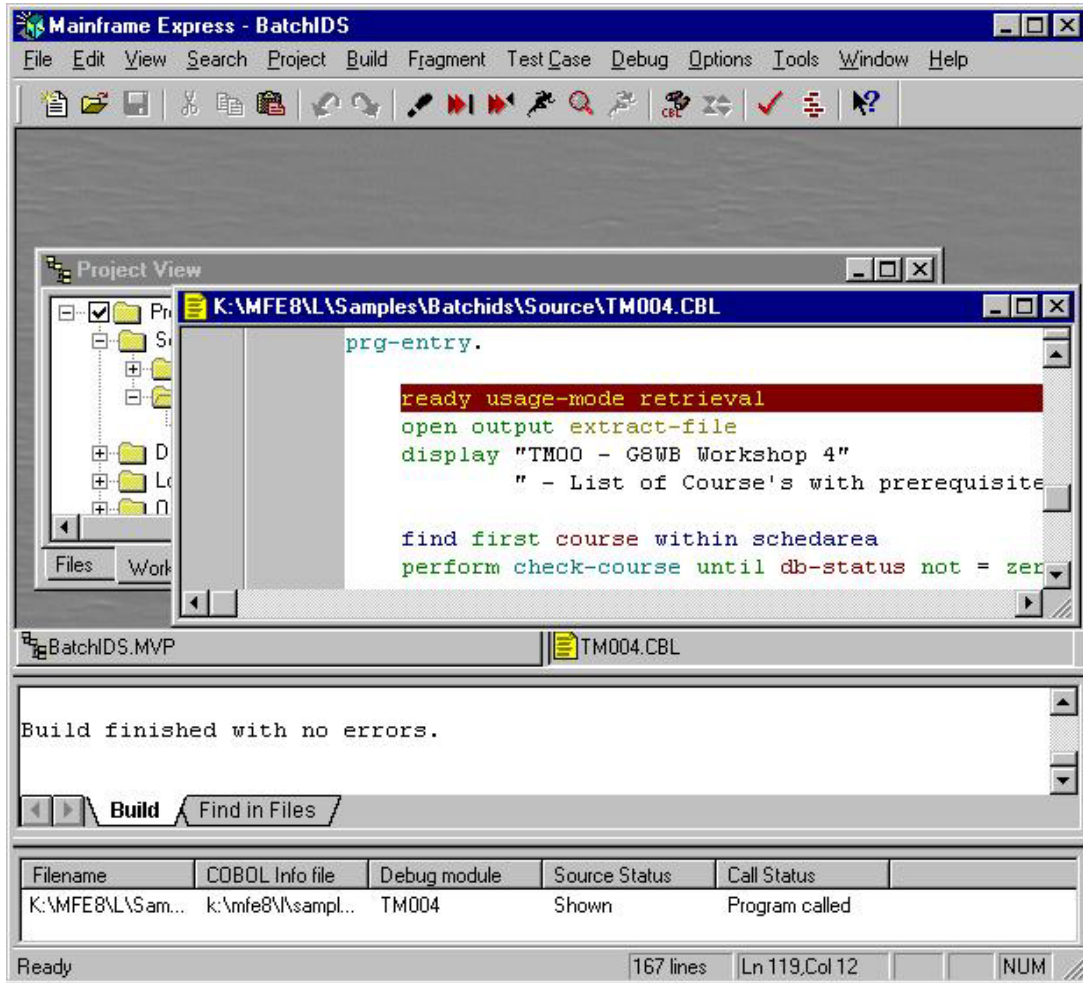


If a program source was selected, the program name is presented as default in the 'Start Debugging' window. Otherwise the program name may be entered manually.

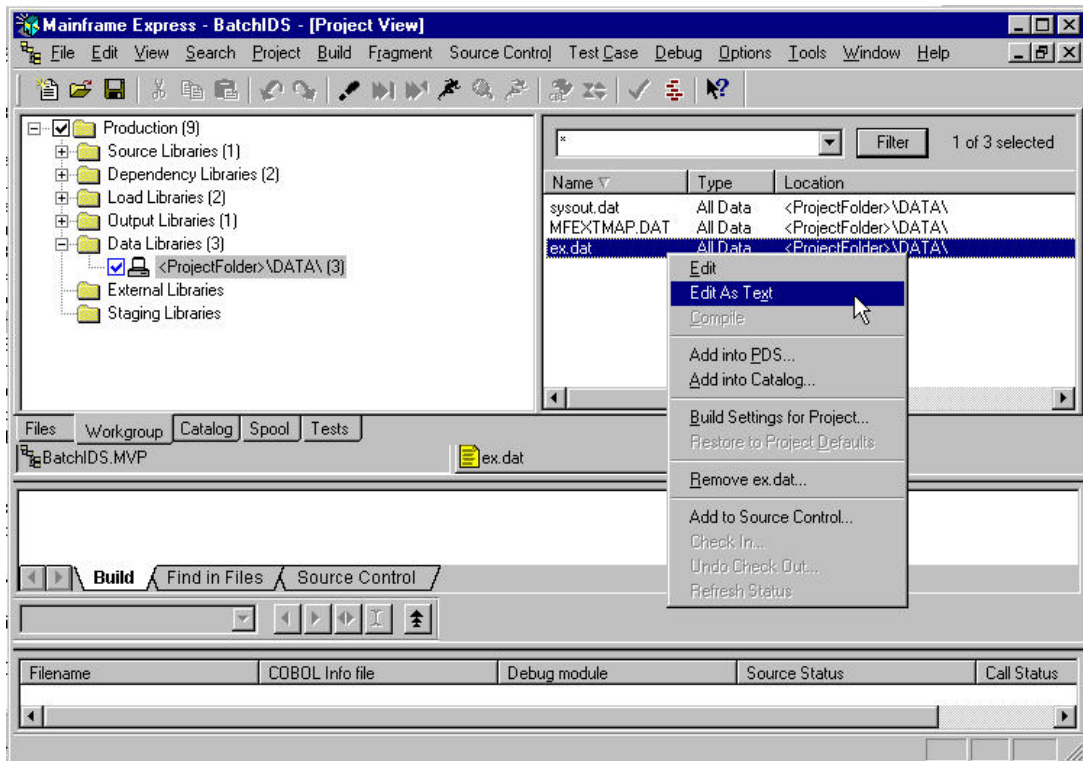
The TSO and JCL tabs, as well as 'Enable Assembler debugging', are not relevant for GCOS8 applications.



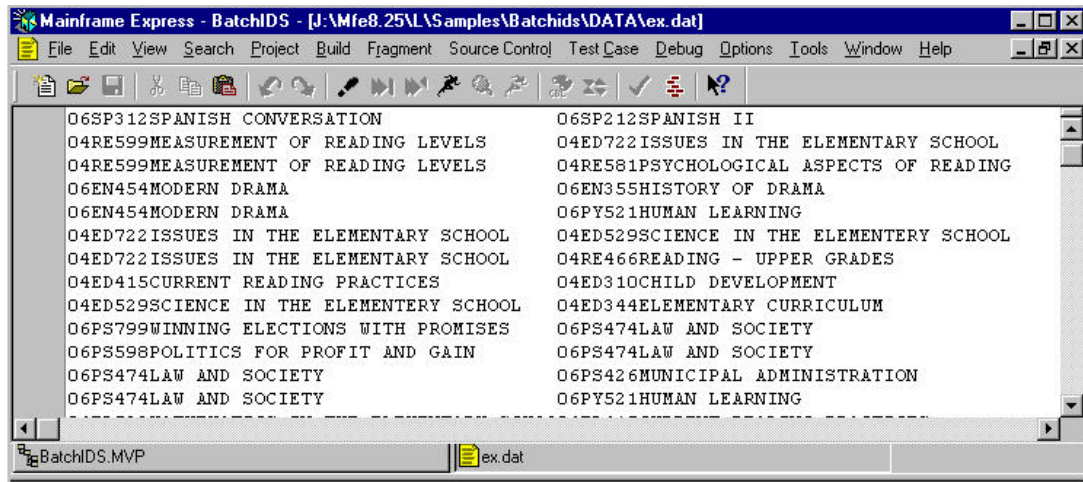
The TM004 program now starts and source code is animated. You may now use the various debug functions (push buttons, debug menu) to control execution of the program.



The Data Libraries view, which is manually populated, contains a list of data files relevant for the program TM004.



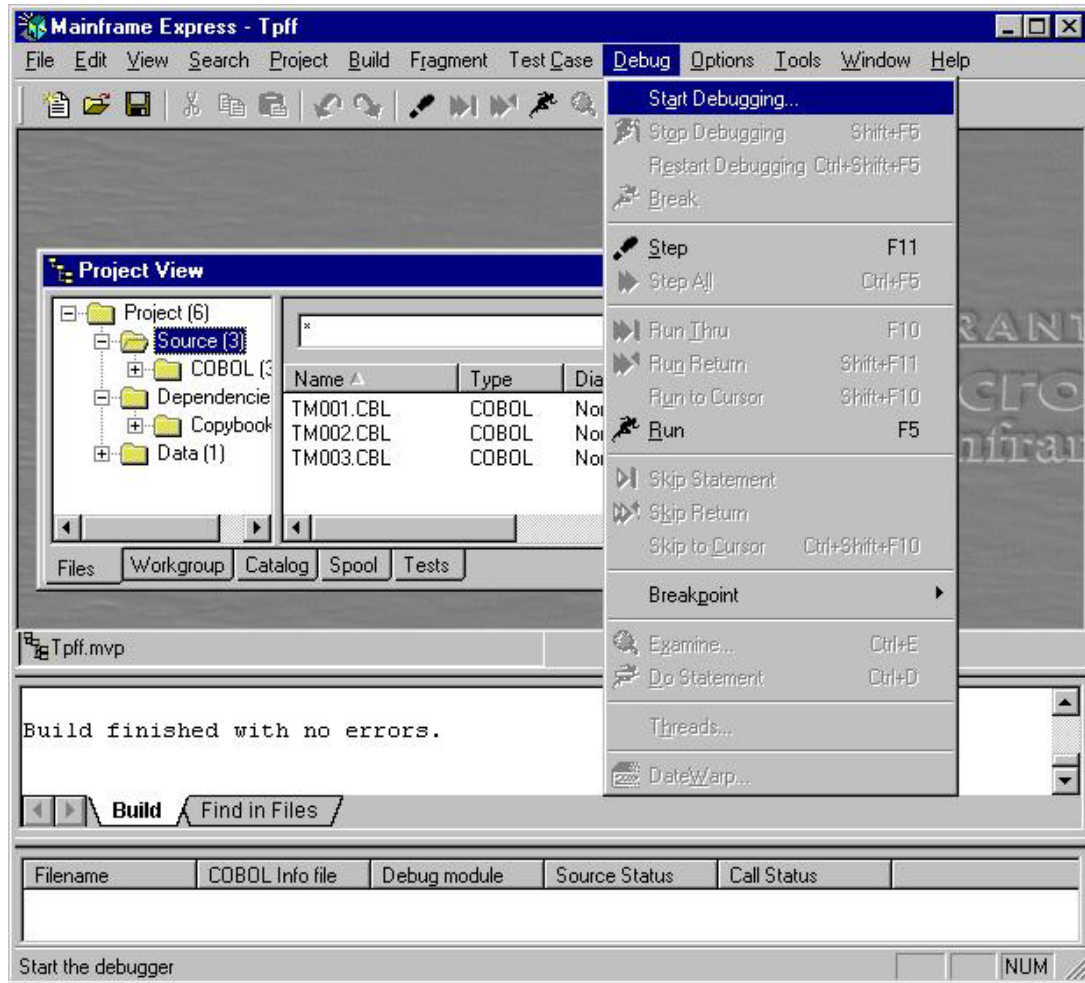
Following illustrate how the EX.DAT file, which is an ASCII text file written by TM004, can be viewed/edited from the data file view.



2.4 TP8 Example

To illustrate debugging of a GCOS8 TP8 application, we use the TPF project, which consist of three TPRs - TM001, TM002 and TM003.

Debugging (Animation) is started from the Debug menu as follows:

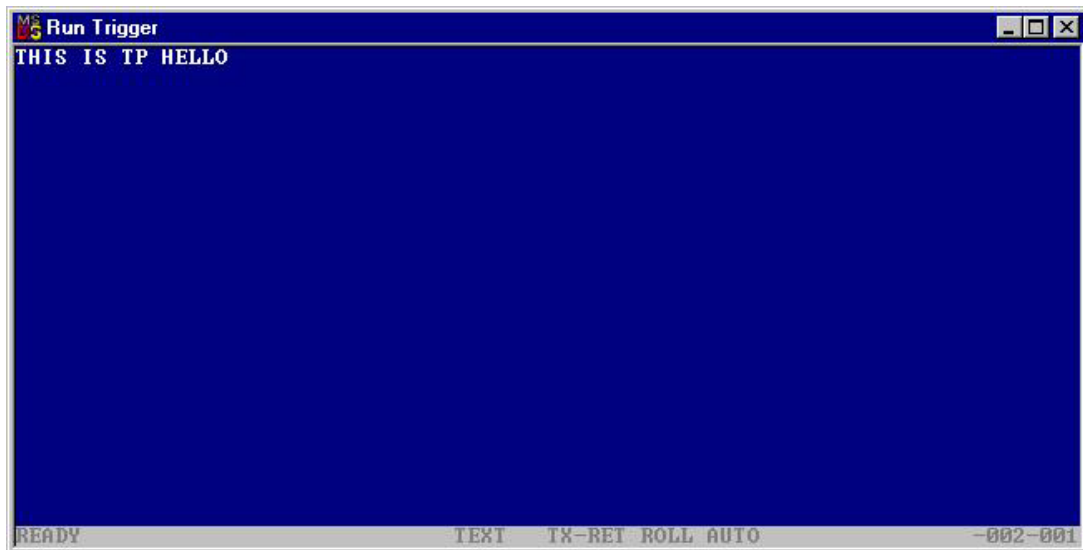


Unlike batch, where you specify the initial program to execute, TP8 debugging is started with 'Run TP8'. A history is kept, so for subsequent debugging you can just pick the command from a list.

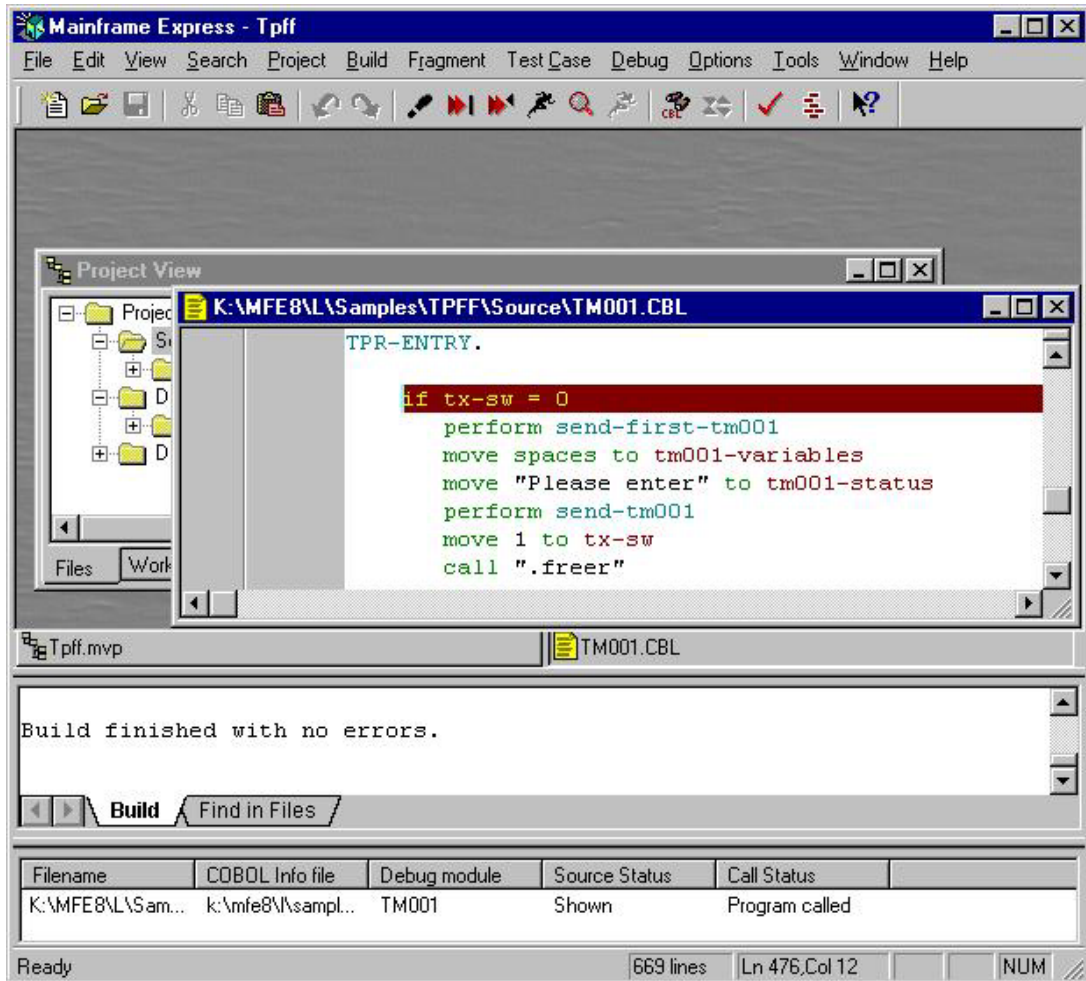


TP8 emulation is now started and the logon screen is presented. The screen interface depends on what terminal-type you have configured, whether you are configured use of external terminal emulator, ex. Glink, WEB8 or the default built-in emulators. A logon screen could also be presented.

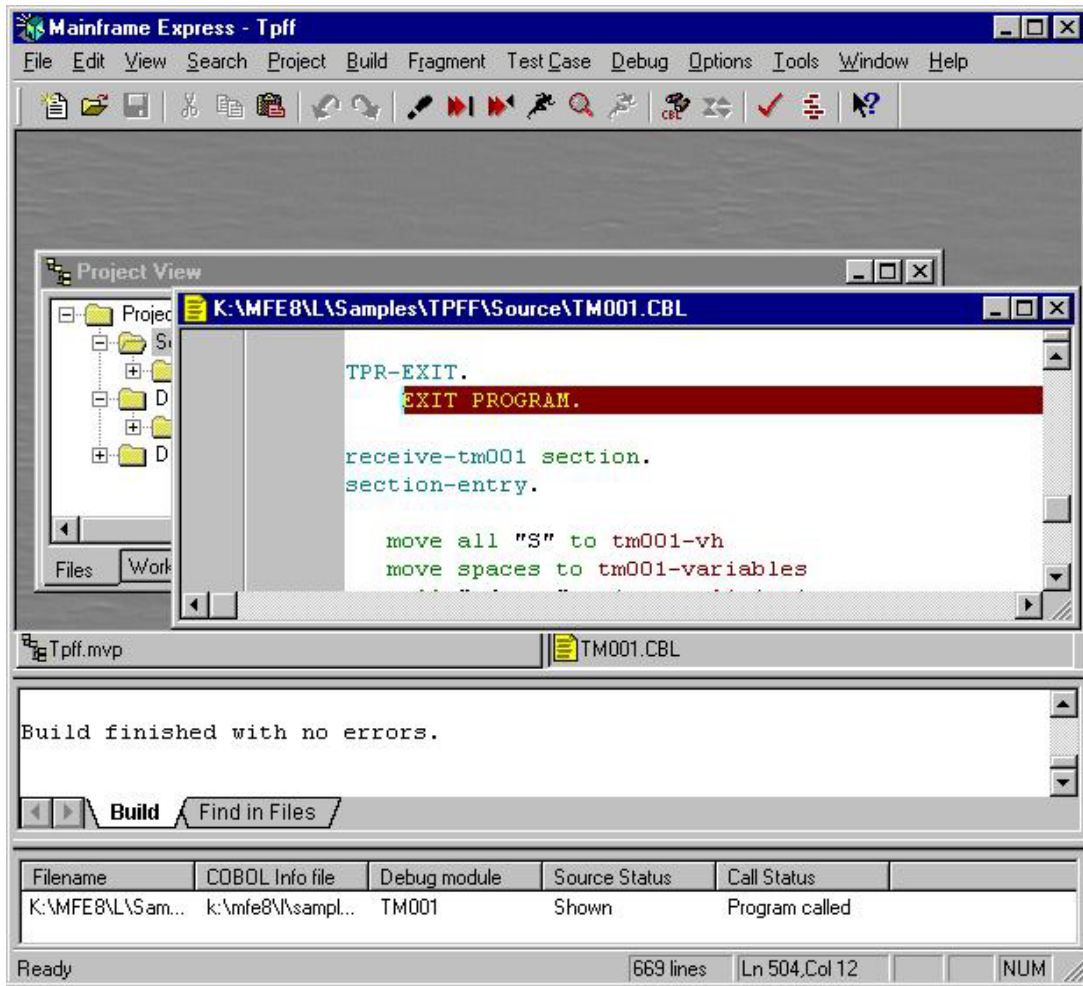
We now enter the command 'TM001' to start execution of a transaction, where first TPR is TM001.



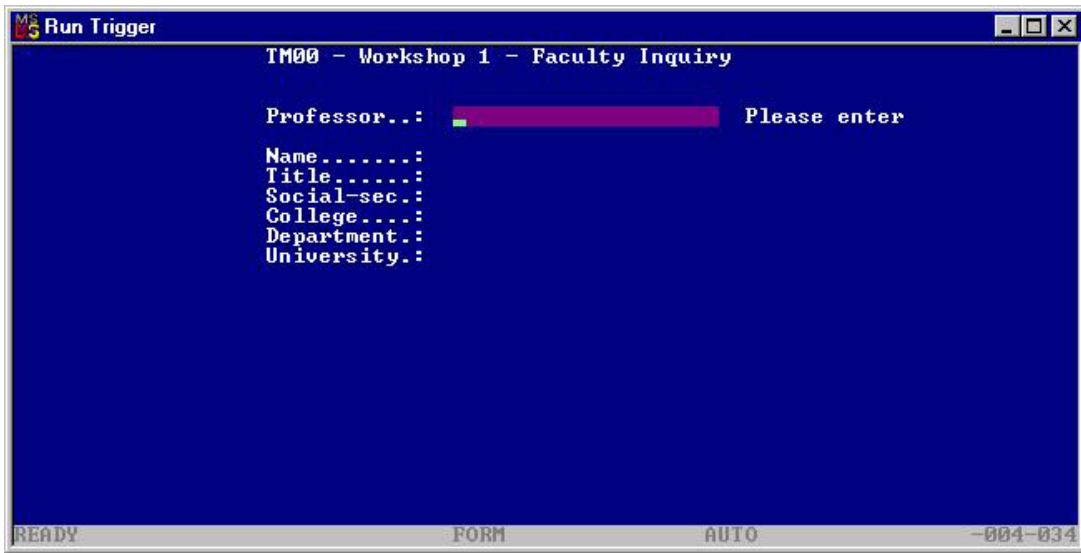
The TM001 TPR now starts and source code is animated. You may now use the various debug functions (push buttons, debug menu) to control execution of the TPR.



Execution under TP8 continues until EXIT PROGRAM. Hereafter control return to the TP8 emulation screen.



The TM001 TPR presents a form and goes into a conversation. You now enter input and 'transmit' to continue execution.



```
Run Trigger
TM00 - Workshop 1 - Faculty Inquiry

Professor...: ██████████ Please enter
Name.....:
Title.....:
Social-sec.:
College....:
Department.:
University.:

READY          FORM          AUTO          -004-034
```

We have typed the name 'Rice Warren' and continued execution. TM001 retrieves information on the professor from the CLASS database, and continues until name is left blank.



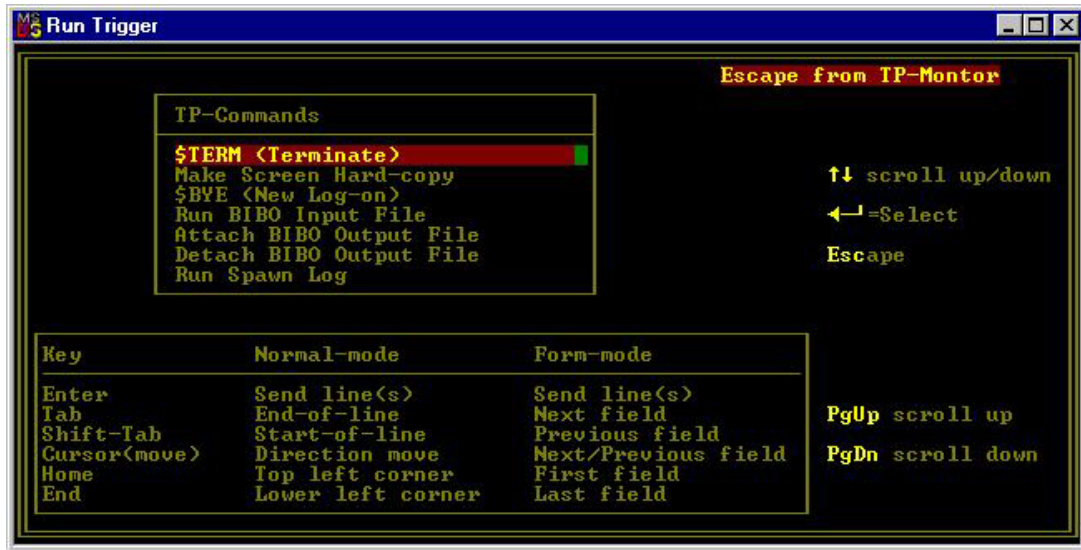
```
Run Trigger
TM00 - Workshop 1 - Faculty Inquiry

Professor...: ██████████ OK, try another
Name.....: RICE WARREN
Title.....: PH.D. TEXAS A & M U.
Social-sec.: 0999846512
College....: ENGINEERING
Department.: CIVIL ENGINEER
University.: HONEYWELL UNIVERSITY

READY          FORM          AUTO          -004-034
```

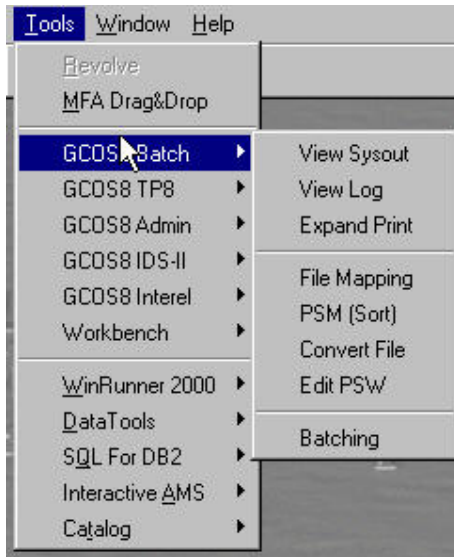
Whenever screen input is accepted - command or conversational, you can use the ESCAPE key to trigger the TP8 services menu, and select to perform an action.

Select \$TERM from the menu or type \$TERM to stop TP8 debugging.



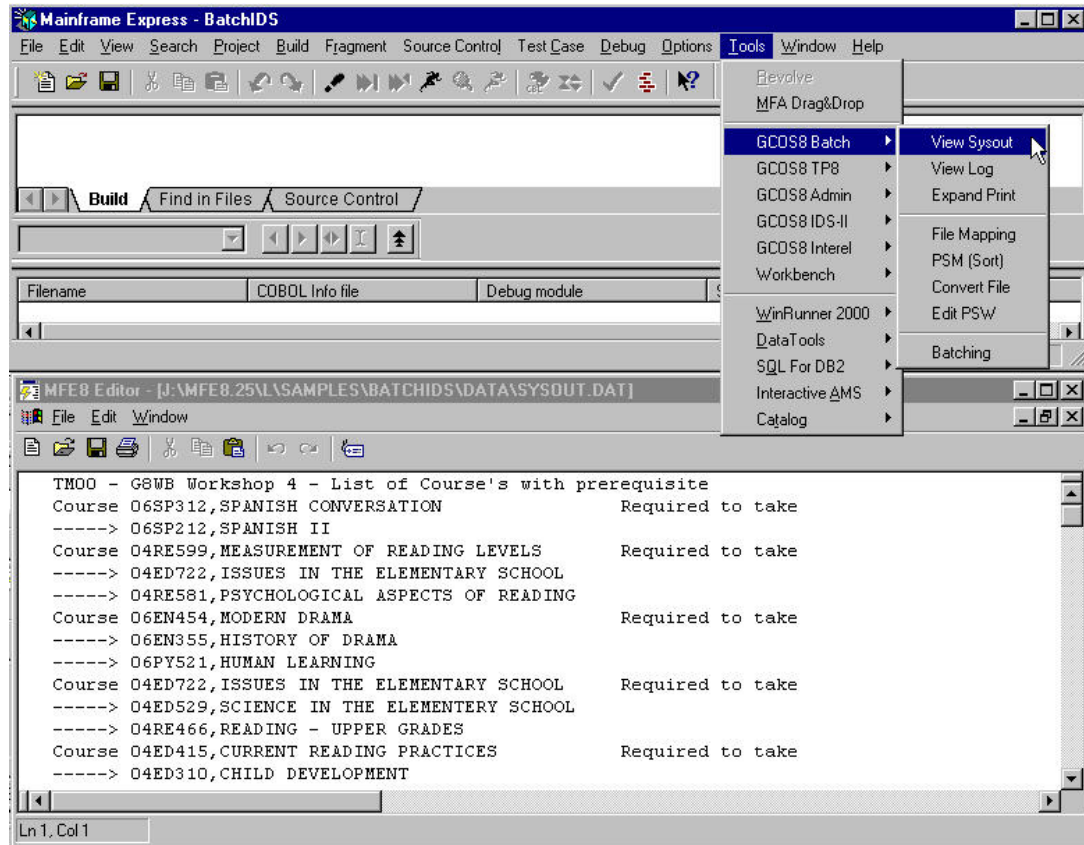
2.5 Batch Support

The GCOS8 batch support menu is a collection of functions related to GCOS8 batch application handling.



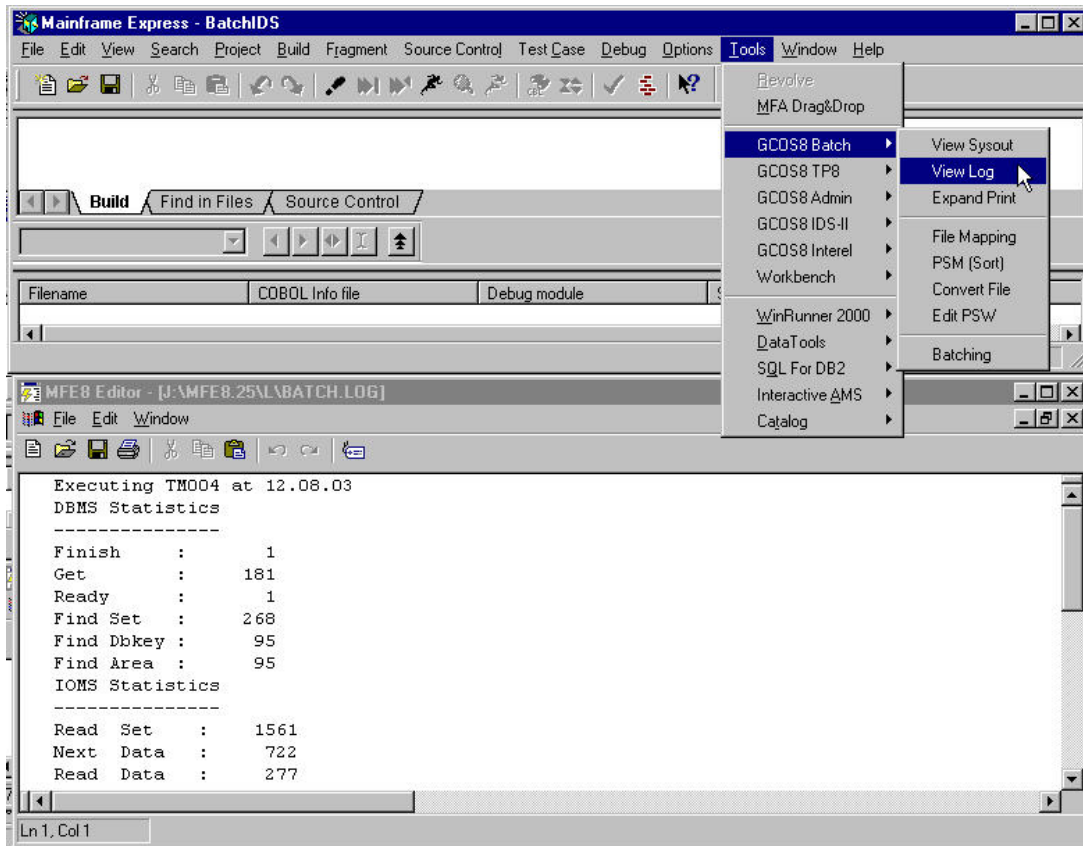
View SYSOUT

DISPLAY output from the batch application is written to SYSOUT. Following illustrate how the SYSOUT file can be viewed through GCOS8 Batch->View SYSOUT.



View Log

The Log file is the equivalent of a GCOS8 execution report. Following illustrate how the execution report can be viewed through GCOS8 Batch->View Log.



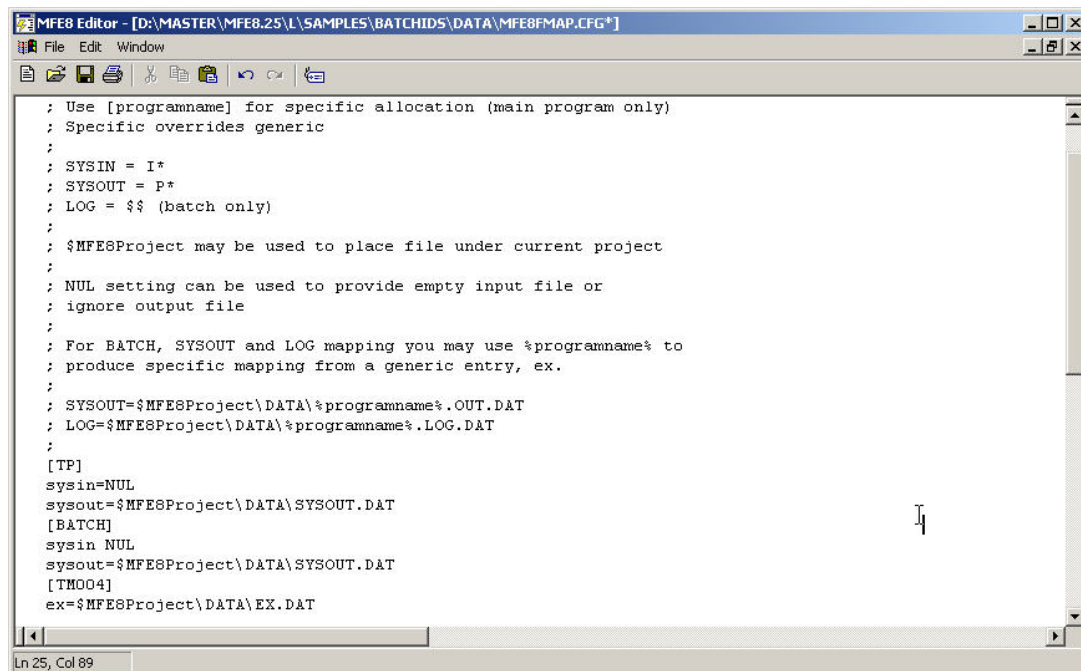
Expand Print

Simple print files from the application are automatically formatted for PC printing, and can be viewed or printed through the data file view. Complex print files, meaning print files produced with Report-code and/or Report Writer, holds additional control information and may hold multiple reports in the same file. Such files are easily expanded with Expand Print utility, like CONVER would be used on GCOS8.

File Mapping

MFE8 does not use JCL, however non-database files are like GCOS8 accessed through their file-code. By default, files are mapped (accessed) in the current directory (your project) using the file-code as name. MFE8 provides the file mapping technique for specific and more flexible mapping, through a MFE8fmap.cfg file associated with the project. The MFE8fmap.cfg file acts as a stack of \$ PRMFL/FILE, which is applied for all programs within a project.

Following illustrate how the MFE8fmap.cfg file can be viewed/edited through GCOS8 Batch->File mapping.



```
MFES Editor - [D:\MASTER\MFE8.25\L\SAMPLES\BATCHIDS\DATA\MFE8FMAP.CFG*]
File Edit Window
; Use [programname] for specific allocation (main program only)
; Specific overrides generic
;
; SYSIN = I*
; SYSOUT = P*
; LOG = $$ (batch only)
;
; $MFE8Project may be used to place file under current project
;
; NUL setting can be used to provide empty input file or
; ignore output file
;
; For BATCH, SYSOUT and LOG mapping you may use %programname% to
; produce specific mapping from a generic entry, ex.
;
; SYSOUT=$MFE8Project\DATA\%programname%.OUT.DAT
; LOG=$MFE8Project\DATA\%programname%.LOG.DAT
;
[TP]
sysin=NUL
sysout=$MFE8Project\DATA\SYSOUT.DAT
[BATCH]
sysin NUL
sysout=$MFE8Project\DATA\SYSOUT.DAT
[TM004]
ex=$MFE8Project\DATA\EX.DAT
Ln 25, Col 89
```

If the MFE8fmap.cfg file does not exist, a file is created from a template. File-code may either be mapped generic (for all programs [BATCH]) or for a specific program ([TM004]).

In above example, the file-code EX is mapped to \$MFE8Project\ex.dat, and SYSOUT is mapped to \$MFE8Project\sysout.dat. Use of \$MFE8Project is optional, ex. sysout=\data\sysout.dat would be equivalent.

The I* file-code is SYSIN and P* file-code is SYSOUT.

PSM (Sort)

PSM sort programs (macro language) may be executed with the PSM utility.

Convert file

Existing GCOS8 files (GFRC and UFAS) may be transferred to MFE8 and converted using the Convert File utility.

Edit PSW

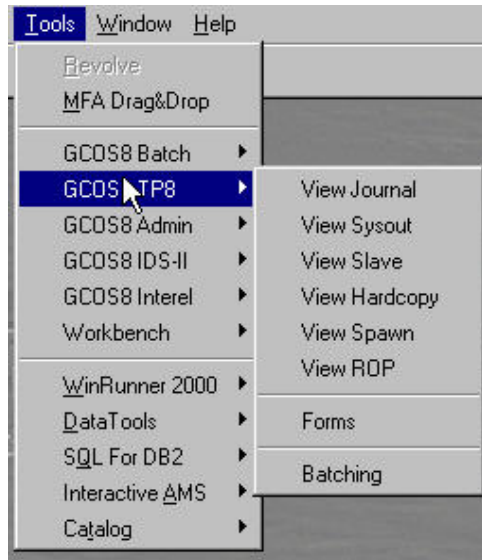
Program-Switch-Word may be viewed/edited after/before execution of an application program.

Batching

Batching allows to setup batch streams for execution of multiple programs, very much like you would build JCL job on GCOS8.

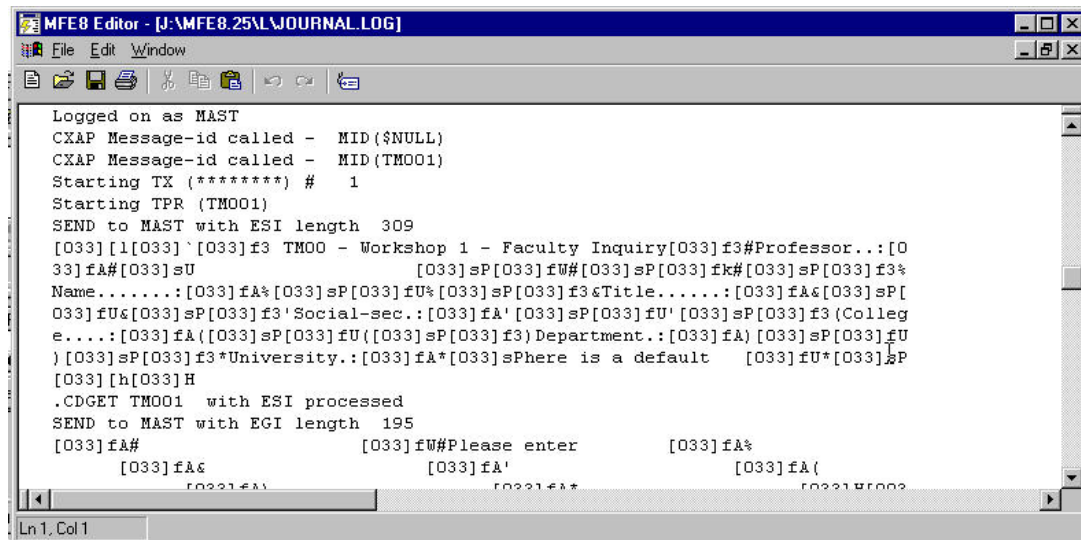
2.6 TP Support

The GCOS8 TP support menu is a collection of functions related to GCOS8 TP8 application testing.



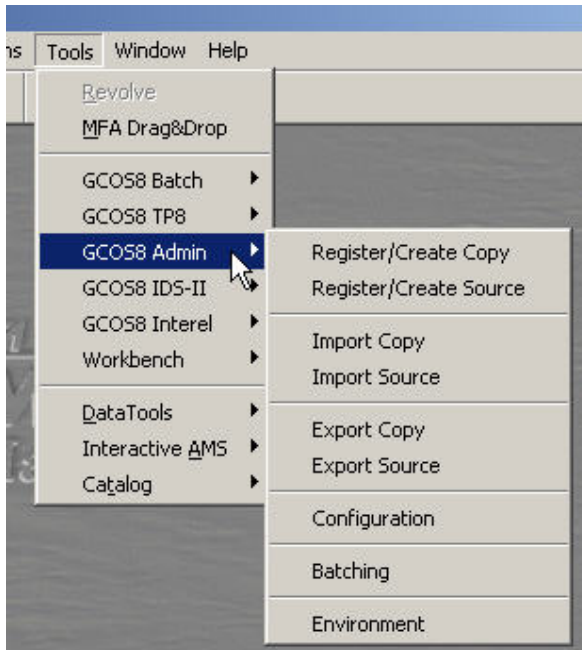
View Journal

TP8 execution will produce a readable journal, which may be used for postmortem debugging. The level of details written to the journal is configurable. Use GCOS8 TP8->View Journal to browse the journal. Following illustrate the content of the TP Journal.



2.7 Application Administration

The GCOS8 Application administration menu is a collection of functions related to GCOS8 application handling.



Register/Create Copy

Create Copy may be used to create and/or register a new copy in a GCOS8 application copy library. Once registered, the copy will be included in the next Export Copy operation.

Register/Create Source

Create Source may be used to create and/or register a new program in a GCOS8 application. Once registered, the program will be included in the next Export Source operation.

Import Copy

Import Copy may be used to import one or more copy members from a GCOS8 application copy library. During import copy members are adapted for MFE8 use and registered, and a subsequent Export Copy operation will automatically detect which copy members have been changed and thus subject for export to GCOS8.

Import Source

Import Source may be used to import one or more source programs from a GCOS8 application. During import programs are adapted for MFE8 use and registered, and a subsequent Export Source operation will automatically detect which programs have been changed and thus subject for export to GCOS8.

Import operations will never override a copy or program, which has been changed in the MFE8 environment.

Export Copy

Export Copy may be used to collect all changed copy members and provide a single file to be used for update of a GCOS8 application copy library.

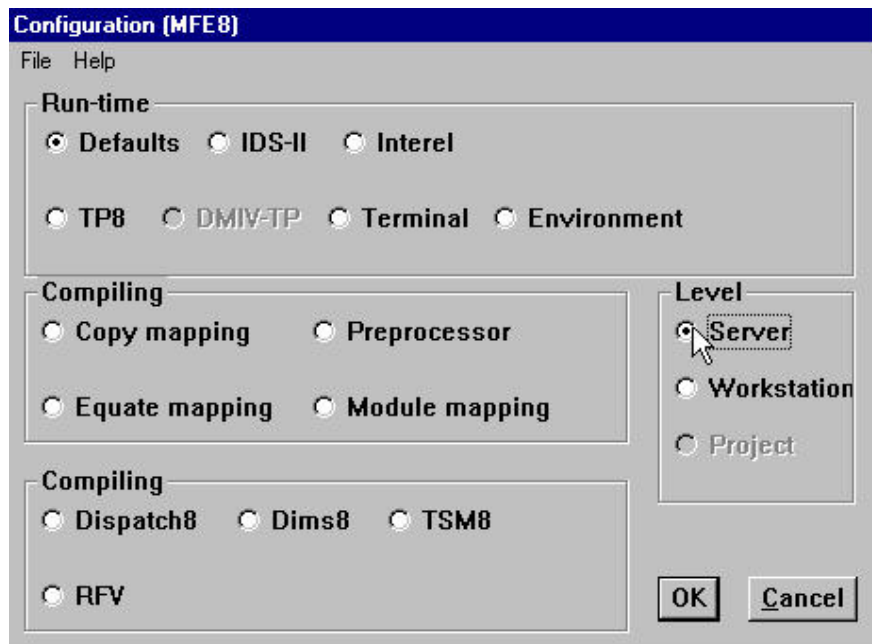
Export Source

Export Source may be used to collect all changed programs and provide a single file to be used for update of a GCOS8 application.

Configuration

The MFE8 environment may be configured in a number of areas, if required for your GCOS8 applications. Some of these configuration areas are automatically updated, others require much less configuration than is required on GCOS8.

MFE8 operates with a Server (shared by all developers) and a Workstation (non-shared unique for developer) configuration. Workstation configuration entries override or amends the Server configuration.



- Defaults - configuration of common MFE8 features and behavior.
- IDS-II - configuration of schema, subschema, database and backups (updated automatically).
- Interel - configuration of Database models etc. (optional).
- TP8 - configuration of TP8 features and attributes (simplified TP8 workstation configuration).
- Terminal - configuration of built-in terminal emulators.
- Environment - configuration of run-time environment.
- Copy mapping - configuration of application copy libraries (updated automatically).

- Equate mapping - configuration of equates (if used by application).
- Module mapping - configuration of pre-loads (if required by application).
- Preprocessor - configuration of preprocessor behavior.
- Dispatch8 - configuration of Dispatch8 product (optional Print software).
- DIMS8 - configuration of DIMS8 product (optional Forms software).
- TSM8 - configuration of TSM8 product (optional Forms software).
- RFV - configuration specific to customer (optional).

Environment

Environment may be used define/change environment settings for the MFE8 environment. It relates to a Project and is especially useful when execution GCOS8 application and function outside the IDE (from MFE Command Prompt). It may also be used to support multiple database environments.

2.8 IDS-II Database

The GCOS8 IDS-II database menu is a collection of functions related to GCOS8 IDS-II database handling. MFE8 by default work with local IDS-II databases, meaning each developer has their own non-shared database, which is protected with Abort Rollback.



Backup

Backup may be used to backup a local IDS-II database to a predefined location (Backup-set). A database is identified by its Schema name. The use of predefined backup-sets names makes it easy for the developer to choose a location for the backup.

Backup-set may either be shared (placed on Server for general use) or non-shared (placed locally).

Restore

Restore may be used to restore the local IDS-II database to a known state. By using meaningful backup-set names, the developer can easily determine where to restore the database from.

Interactive

Interactive IDS-II may be used to browse and edit an IDS-II database. Database navigation is performed via DML, like the similar GCOS8 tool, however, MFE8 also provides assistance for writing DML and presentation of record information in formatted panels. Database exception codes are also explained, to ease use. Powerful script facilities allows you to record, edit and playback scripts of DML.

Interactive IDS-II may also be triggered during execution of Batch and TP8 application, and thus act as a debugger for DML verb.

Q2UT

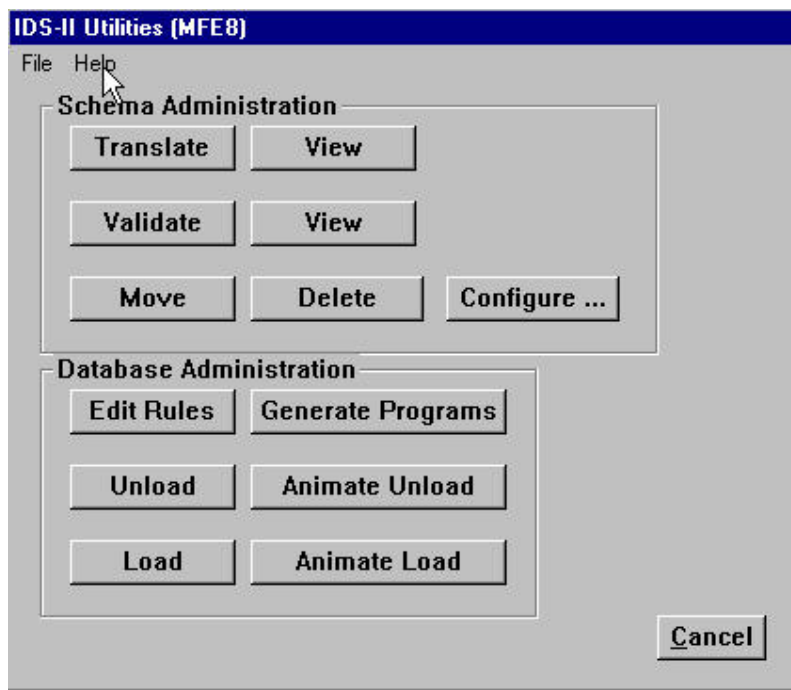
Q2UT (Database Utility) may be used to initialize an IDS-II database, display/dump information, get statistics and verify the consistency of an IDS-II database.

Init \$\$Local

IDS-II databases are by default running with Abort Rollback protection, meaning updates are not committed permanently until a checkpoint or a program/transaction is successfully completed. The Init \$\$local function may be used to reset protection after a disaster (PC hang-up, crash of MFE8). This function is automatically performed after a database restore operation.

Schema Utilities

Functions related to Schema administration are accessible through Schema Utilities menu.



Translate

May be used to translate schema DDL and DMCL from GCOS8, with a full syntax validation. New schemas are automatically configured. The View function may be used to verify schema translation - listing with warning and error messages.

Validate

May be used to validate schema, once it has been translated without errors. The view function may be used to verify schema translation/validation - listing with additional information on schema attributes.

You need to use Q2UT to initialize the database hereafter.

Schema validation will automatically generate a subschema with a complete view. You may use this subschema by translation/validating the DDL from the generated file.

Move

May be used to move all files related to a schema to another MFE8 environment, ex. when having multiple versions of a schema.

Delete

May be used to delete all files related to a schema, and de-configure it.

Configure

May be used to view/edit the Server configuration for IDS-II databases.

Generate Programs

Unload/Load of GCOS8 databases is easy, since this function may be used to generate both an unload and load program. Once generated the unload program can be transferred to GCOS8, compiled and executed to produce a flat file ascii image of the database. The Load function (see below) automatically calls the generated load program, which read the flat file image and load an equivalent copy of the database in the MFE8 environment.

You must use a subschema with a complete view of the database, either the generated subschema or your own subschema, for the Generate Programs function.

Edit Rules

Edit Rules may be used to define rules for the unload/load programs generated. The types of rules may be specified.

Migration - used for processing of embedded fields, i.e. non-display fields which are hidden into a block (not visible in the subschema).

Selection - used for shrinking the database content, i.e. logically reducing the number of records in the database.

Load

Once the flat file image of the database has been transferred to MFE8 environment, you may use the load function to load the equivalent database. Unload/load may be done as full database or split into multiple unload/load steps, i.e. per area.

Unload

When schema change are made, you have the option to redo the unload/load from GCOS8 or migrate the database(s) already existing within MFE8. Use the unload function to unload the database to a flat file image, BEFORE you make your schema changes. When validating the changed schema you can request a new schema version, and once you have generated unload/load programs, the

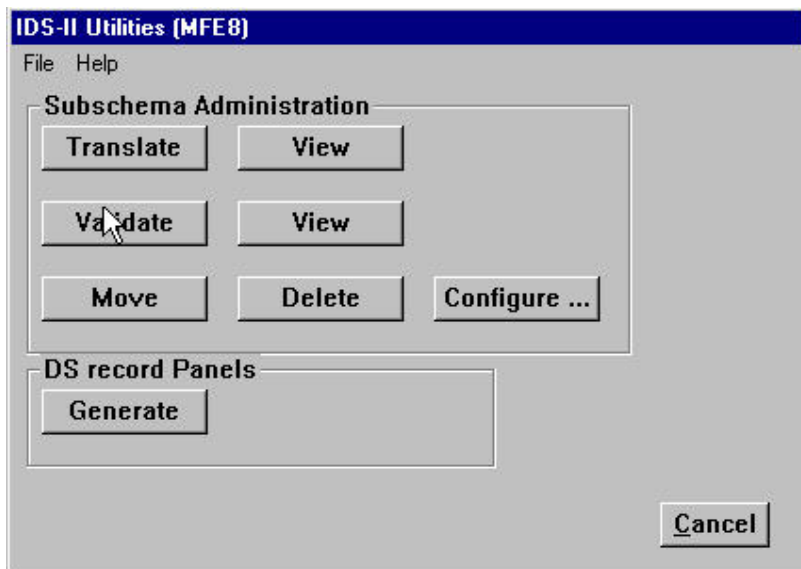
generated load will be able to read files unloaded either with previous or current version of the schema.

Animated load/unload

Field migration rules and selection rules are written in COBOL, and the animate function may be used to debug the execution of the unload/load programs (your logic).

Subschema Utilities

Functions related to Subschema administration are accessible through Subschema Utilities menu.



Translate

May be used to translate subschema DDL from GCOS8, with a full syntax validation. New subschemas are automatically configured. The View function may be used to verify subschema translation - listing with warning and error messages.

Validate

May be used to validate subschema, once it has been translated without errors. The view function may be used to verify subschema translation/validation - listing with additional information on subschema attributes.

Move

May be used to move all files related to a subschema to another MFE8 environment, ex. when having multiple versions of a subschema.

Delete

May be used to delete all files related to a subschema, and de-configure it.

Configure

May be used to view/edit the Server configuration for IDS-II databases.

Generate

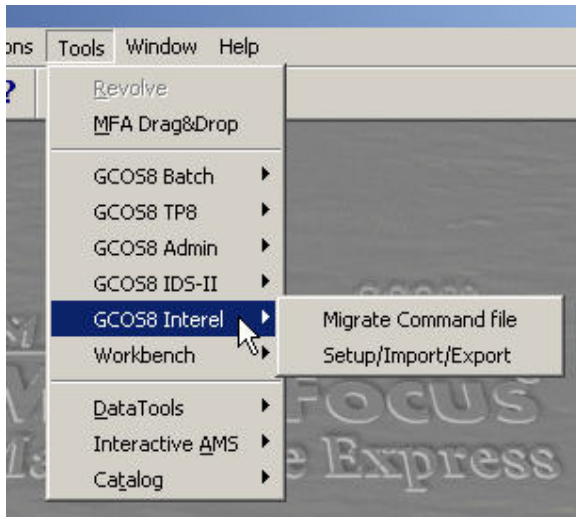
May be used to generate formatted Record Panels for use within Interactive IDS-II, and thus make database browsing and editing easier.

You need a license of NetExpress 3.1 for the generate (disabled if not present), however, this applies only to the PC Workstation where you do the generate, i.e. an administrator. Once generated, all MFE8 users can use Record Panels.

2.9 INTEREL Database

INTEREL database support is based on IBM UDB v7/8, which is installed separately from MFE/MFE8 and has its own tools for creation and manipulation of SQL databases. Before you can use an Interel database, you must create the database within DB2 UDB.

The GCOS8 Interel menu provides a few additional functions to help you setup your Interel databases.



Migrate Command file

Interel command files are not completely compatible with DB2 UDB, and you can use this function to migrate existing Interel command files for use with DB2 UDB.

Setup/Import/Export

Setup may be used to generate script(s) for unload of a GCOS8 Interel database. Transfer and execute script(s) on GCOS8 and transfer the result file(s) to NE8.

Import may be used to import the result file(s) from GCOS8.

Export may be used to export the local database, and import this on GCOS8.

Import/Export will adapt differences in formats between Interel and DB2 UDB.

2.10 project workgrouping

MFE projects are private, meaning only one developer can work with a project at any given time, and usually a developer is only working with parts of an application. To be able to test an application, execution normally rely on other application programs/modules/tprs. You should thus organize a GCOS8 application into multiple MFE projects. Here's an example of how you can organize a workgroup environment.

Developer

A project used by a single developer (private). The project contains only source/copy/data files, which are being modified/used exclusively by the developer. Usually objects are INT with full animation.

Project

A project used by a team of developers (shared). The project contains only source/copy/data files, which are being modified/used exclusively by the developer team. Usually objects are GNT without (or with) animation.

System test

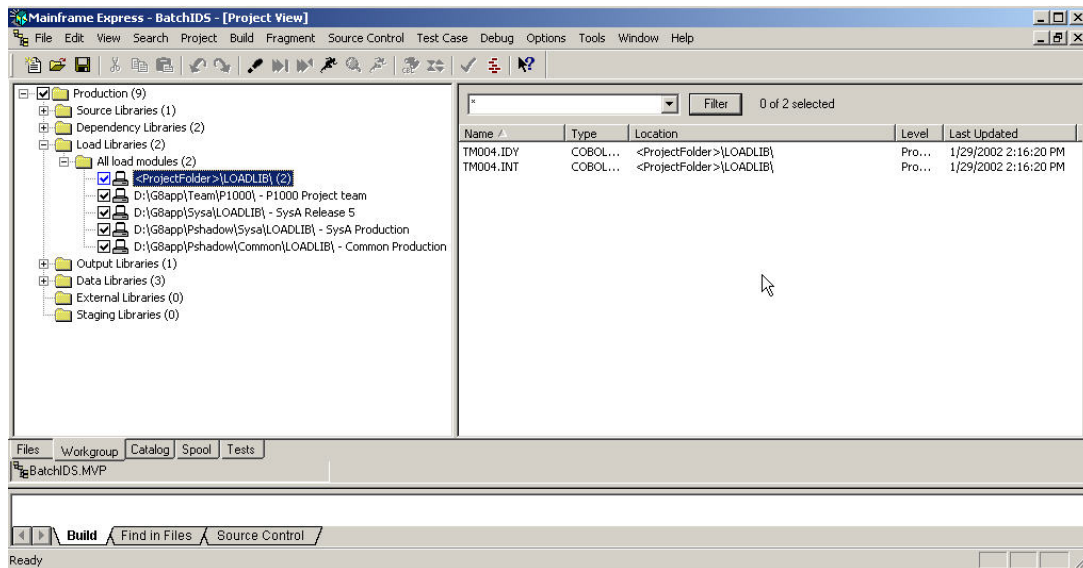
A project or multiple projects (divided into applications) used for system test by developers and/or end-users (shared). The project contains only source/copy/data files, which are being modified/used exclusively in preparation for a system test. Normally objects are GNT without animation.

Production shadow

A project or multiple projects (divided into applications) used to enable test of any application (shared). The project contains a complete shadow of the GCOS8 application environment (source, copies etc.). Usually program and copy sources are kept in separate directories. Normally objects are GNT without animation.

Workgroup

Initially all GCOS8 application components are imported into the Production shadow project or projects, and compiled to provide run-time support for testing. When setting up Developer, Team and System test projects, you need to enable search of dynamic search/load of application programs. This is done by amending the Load Libraries definition within the Workgroup view. By default the <ProjectFolder>\LOADLIB is included, however you can use right-click to add more load libraries. Following example illustrate multiple load libraries, which are searched top-down, whenever an application programs is loaded.



Environment

If you need to execute GCOS8 applications outside the IDE, the project settings are not active. You can use the MFE8 environment configuration to enable dynamic search for programs within the workgroup structure, ex.

```
; MFE8 Environment settings  
; Use COBDIR to include other application directories in search  
; (the default project inclusion is for Command prompt execution  
outside project)  
COBDIR=.;%MFE8Project%\LOADLIB  
; Define application project  
TEAMPRO=d:\g8app\team\p1000  
SYSPRO=d:\g8app\sysa  
REFPRO=d:\g8app\pshadow\sysa  
REFCOM=d:\g8app\pshadow\common  
; Include for dynamic linking  
COBDIR=%COBDIR%;%TEAMPRO%\LOADLIB  
COBDIR=%COBDIR%;%SYSPRO%\LOADLIB  
COBDIR=%COBDIR%;%REFPRO%\LOADLIB  
COBDIR=%COBDIR%;%REFCOM%\LOADLIB
```

When adding program or copy sources to a project, you retrieve the appropriate version within the workgroup structure, and request MFE to copy the files into your project.

When the current development stage is completed, ex. Private to Team, you can use Register Source or Copy to move the source (incl. compile for program sources).

The use of Version Control (embedded PVCS or other) can be appended as required in the workgroup structure.

3. Migration from Workbench

MFE is structured very different from MFWB and it is a completely new installation (nothing can be migrated/reused from MFWB).

MFE8 is structured similar to G8WB, however, the MFE/MFE8 environment is not compatible with G8WB/MFWB. Application components must be rechecked, recompiled, retranslated etc., however no changes are required in the application components.

Since G8WB/MFWB and MFE8/MFE environments are not compatible, it is recommended that you copy your existing application directories to a new set of MFE8 application directories. Following summarizes the migration activities required.

- Database support file structure and format has not changed, however all Schema's and Subschema's must be re-validated to generate a run-time environment compatible with MFE.
- MFE8 configuration files are quite similar to G8WB configuration files, however, it is recommended that you use the default configuration files and amend these 'manually' from your G8WB environment.
- Changes to SITE components must be ported from your G8WB environment.
- Command files must be adapted.
- Run-time version of application programs have changed, thus all programs, modules and TPR's must be rechecked/compiled.
- Project's must be rebuild.

3.1 Configuration migration

MFE8 configuration files are quite similar to G8WB configuration files, however, it is recommended that you use the default configuration files and amend these 'manually' from your G8WB environment.

- \$G8WBDDIR\DBMS.CFG: Merge and change schema, subschema, backup-set and defaults from existing configuration files.
- \$G8WBDDIR\INTEREL.CFG: Merge and change Location and backup-sets from existing configuration files.
- Other Server CFG's: Merge and change defaults from existing configuration files into \$G8WBGDIR*.CFG's.
- Workstation CFG's: Merge and change defaults from existing configuration files into \$G8WBLDIR*.CFG's..

3.2 Database migration

IDS-II Database

Database support file structure and format has not changed, however all Schema's and Subschema's must be re-validated to generate a run-time environment compatible with MFE.

1. Migrate your database configuration file (DBMS.CFG).
2. Next copy your schemas and subschemas to the MFE8 environment, either using 'Move' function within G8WB, or copying all files as follows:

```
COPY $oldDDIR\schema\*.* $newDDIR\schema
COPY $oldDDIR\sschema\*.* $newDDIR\sschema
```

3. Next re-validate all schemas.
4. Next re-validate all subschemas.
5. Next generate DS Record Panels, if you have a Net Express license.
6. Next generate unload/load programs.

Note: Although you can also translate/validate schemas and subschemas, care must be taken if you have produced multiple versions of a schema, i.e. removed/added entities within the schema, because this could lead to differences in entity numbering and problems with existing database files.

The format of the IDS-II database files have not changed, and as such, there is no requirement to perform unload and load of database files. Instead you may, as required, copy database files and backup-sets from your existing G8WB environment. Keep in mind, that the you keep the same schema number, when migration database configuration files.

Use COPY to copy existing database files and backup-sets as follows:

```
COPY $oldLDIR\DBMS\nn*.* $newLDIR\DBMS
```

```
COPY $oldDDIR\DBMS\nn*.* $newDDIR\DBMS
```

where nn = schema number (ref. DBMS.CFG)

INTEREL Database

Current Database Models and Tables must be unloaded under the existing G8WB environment, and the imported under the new MFE8 environment. For each Database the following sequence must be performed:

1. Unload all tables from existing G8WB environment
2. Create Location (Model) under new MFE8 environment
3. Create Tables, Indexes etc. for Database
4. Import database content from unload files
5. Backup database.

3.3 SITE migration

Changes to SITE components must be ported from your G8WB environment.

- Use MFE DIFF utility to compare existing (changed) and new SITE programs.
- Merge your specific changes or move any new programs you have made into \$G8WBGDIR\SITE for this version.
- Compile all changes/new programs.

- Re-build run-time libraries with \$G8WBDIR\LBR\GENSITE.

3.4 Forms migration

The Forms directory has not changed for MFE8, and you can simply copy the whole FMS directory from G8WB as follows:

```
XCOPY $oldFDIR\FMS\*. * $newFDIR\FMS /S
```

3.5 Command migration

The launch command(s) for MFE8 have changed and existing OS command files must be adapted as follows:

G8WB launch command: WB W8 command argument(s)

MFE8 launch command: RUN WB command argument(s)

If you were not running G8WB from a 'Micro Focus Command Prompt', you could use the MFENV command to setup environment, ex.

```
MFENV 32 WB W8 command argument(s)
```

A similar command for MFE8, i.e. not running from a 'Mainframe Express Command Prompt', would be

```
c:\mfe25\mfide\bin\mfeenv RUN WB command arguments(s)
```

Note: For G8WB you could use the MFENV xx to load different environments, however this is NOT possible for MFE8. Instead use the MFE8ENV.CFG feature of MFE8 to work with different environments.

A few differences exists for the G8WB/MFE8 commands.

G8WB Command	MFE8 Command	Remarks
CHKCBL74	INTCBL74	
CHKCBL85	INTCBL85	
CHKCBL85SQ	INTCBL85SQ	
CHKCDBSP	INTDBSP	
COMPILE	GNTCBL74	Either INT or GNT (single compile)
	GNTCBL85	
	GNTCBL85SQ	
	GNTDBSP	
GENERATE	n/a	
ANIMTP	n/a	Debugging only through IDE
ZOOMTP	n/a	
RUNTP	TP8	
ANIMPRG	n/a	Debugging only through IDE
ZOOMPRG	n/a	
RUNPRG	PRG	
EDIT	n/a	
WFL	n/a	Only through IDE
DFED	n/a	
HEXEDIT	n/a	
FINDER	n/a	

3.6 Application migration

The MFE8 run-time environment is not compatible with G8WB and you need to recheck/recompile all application modules, program, TPR's and database procedures, after you have installed MFE8.

If you have existing command file, adapt the commands (see above) and recompile. Alternatively create a reference project, add all your source files, apply Project and/or Build settings and recompile.

Projects from 'Advanced Workbench' cannot be migrated, instead you need to create similar projects under Mainframe Express.

4. Samples

Whether you are new to Mainframe Express or migrating from COBOL Workbench, it is recommended to install SAMPLES, and use the various demo programs to get familiar with the basics of the IDE and the way GCOS8 applications are handled.

SAMPLES are installed under Local Directory and consists of a number of ready-to-use projects.

4.1 Batch samples

Use MFE to open the existing project under `$g8wbldir\samples\batch\batch.mvp` or `$g8wbldir\samples\batchids\batchids.mvp`.

Batch.mvp consists of a number of programs and files, which you can use get familiarized with MFE8 and how GCOS8 batch applications are handled.

Btest1

A simple batch program, which read the TESTSCM database and produce three reports. These reports are written using Report-code and Report-writer technique, and these needs to be expanded before they are ready for print.

The TESTSCM database use both area-selection and encode/decode procedures, which are called as required during execution.

Btest4

A simple batch program, which read different types of GCOS8 files - GFRC, UFAS sequential and relative (fixed and variable length).

The GCOS8 files are supplied both in converted format (as read by Btest4) and in GCOS8 binary image (G8F). You also have profiles (G8P) and mask (G8M) files for conversion of files through the GCOS8 Convert utility.

Btest3

A simple batch program, which write different types of GCOS8 files - GFRC, UFAS sequential and relative (fixed and variable length). This program can be transferred to GCOS8, so you can try the whole exercise of converting different GCOS8 files for use within NE8.

Batchids.app consists of a single program, which you can use get familiarized with NE8 and how GCOS8 batch applications are handled.

Tm004

A simple batch program, which read the CLASS database and produce an output file.

4.2 IDS-II samples

Use MFE to open the existing project under `$g8wbldir\samples\ids\ids.mvp`.

Ids.mvp consists of a number of programs and files, which you can use get familiarized with MFE8 and how GCOS8 IDS-II is handled.

Lclass

A simple load program for the CLASS database. The CLASS database is already loaded, so to run Lclass successfully you must first initialize the database with Q2UT.

You find the load file Lclass.txt as well as schema ddl/dmcl and subschema ddl files included in the project.

Testscm

There is no load program for TESTSCM database, instead this may be loaded using the LTS.IDS file, which is a script file for Interactive IDS-II.

You also find schema ddl/dmcl and subschema ddl files included in the project.

4.2 TP8 samples

Use MFE to open the existing project under `$g8wbldir\samples\tp\tp.mvp` or `$g8wbldir\samples\tpff\tpff.mvp`.

Tp.mvp consists of a number of TPRs and modules, which you can use get familiarized with MFE8 and how GCOS8 TP8 applications are handled.

Wtest1

A simple TPR, which send a few test lines of output to originator and to the slave terminal. The TPR also demonstrate .ILINK and other TP8 service calls.

Wtest2

A simple TPR, which store a number of records in the TESTSCM database.

Wtest3

A simple TPR, which use implicit receive/send to echo a typed message. Must be started with TEST3 command, since implicit receive/send requires a pre-defined TP8 command definition.

Wrdytpr

A simple ready TPR. Ready TPR's are optional (only required to initialize Global Storage).

Tpff.mvp consists of a number of TPRs, which you can use get familiarized with MFE8 and how GCOS8 TP8/TPFF applications are handled.

Tm001

A query TPR, which may be used to query Faculty from the CLASS database.

Tm002

A update TPR, which may be used to maintain Student schedule in the CLASS database.

Tm003

A query TPR, which may be used to query a Student schedule from the CLASS database.

Class testdata

PROFESSOR

ABRAHAM WILLIARD
SLATTERY HUGH M.
BOHLMAN HERBERT
DILLOW PAUL V.
ROBBINS EARL J.
RICE WARREN
DAVIS KEITH
STAFF
DECKER JOHN P.
FARRIS MARTIN T.
ELLEIS JOHN C.
HOYT CHARLES D. JR.

SOCIAL-SEC/STUDENT-NAME

0527544478 - DANIELSON JAMES R.
0381694477 - NELSON LEROY
0105056001 - MOORE LEONARD C.
0572001213 - MATHEWS C. W.
0572149266 - OLSON ALICE V.
0988765678 - MITCHELL ROBERT
0741100085 - SMITH DANIEL B.
0381994873 - ADAMS EVERT G.
0220985462 - AUSTIN NEIL J.
0798676543 - LINDELL HARRY
0765456739 - COX HERBERT

0129883765 - YEE RUDY
0100098789 - WOLF ROBERT

COURSE-NO/COL-NAME/DEPART-NAME

06SP312 - LIBERAL ARTS - FOREIGN LANGUAGES
04RE433 - EDUCATION - READING EDUCATION
04RE599 - EDUCATION - READING EDUCATION
06EN210 - LIBERAL ARTS - ENGLISH
06PS799 - LIBERAL ARTS - POLITICAL SCIENCE
03AC210 - BUSINESS - ACCOUNTING
03FI300 - BUSINESS - FINANCE
05EE428 - ENGINEERING - ELECTRICAL ENGINEER
04AE511 - EDUCATION - ADULT EDUCATION
06CN413 - LIBERAL ARTS - FOREIGN LANGUAGES
06JN202 - LIBERAL ARTS - FOREIGN LANGUAGES
05KE411 - ENGINEERING - CHEMICAL ENGINEERING
05KE543 - ENGINEERING - CHEMICAL ENGINEERING
03EC301 - BUSINESS - ECONOMICS

4.4 Interel samples

Under construction ...

4.3 Web8 samples

Under construction ...

4.4 DBSP samples

Under construction ...

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