

Chapter 3 Getting Started

3.1. Create a Program	3-1
3.2. Configuration of Screen.....	3-13
3.3. How to use a Dialog Box	3-21
3.4. Files being created in GMWIN	3-21
3.5. Open a File	3-22
3.6. Save a File.....	3-23
3.7. Close a File.....	3-24

Chapter 3. Getting Started

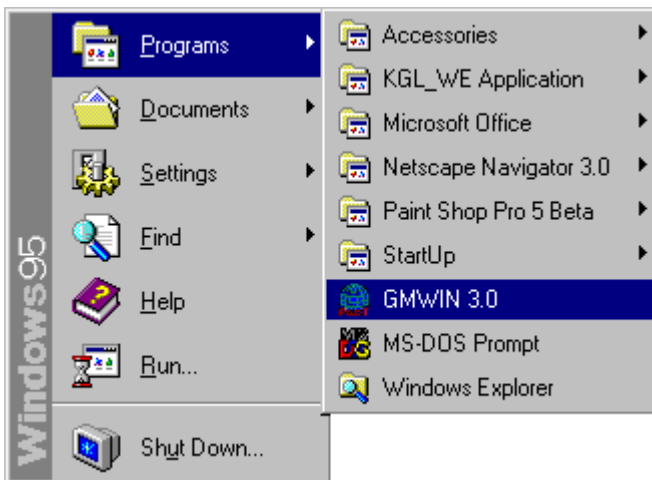
GMWIN is a programming tool that compiles a program, makes an execution file, transfers a file to the PLC, monitors and debugs the PLC program.

GMWIN uses the multiple document interface (MDI) method, so that it is possible to compile and debug several programs at the same time.

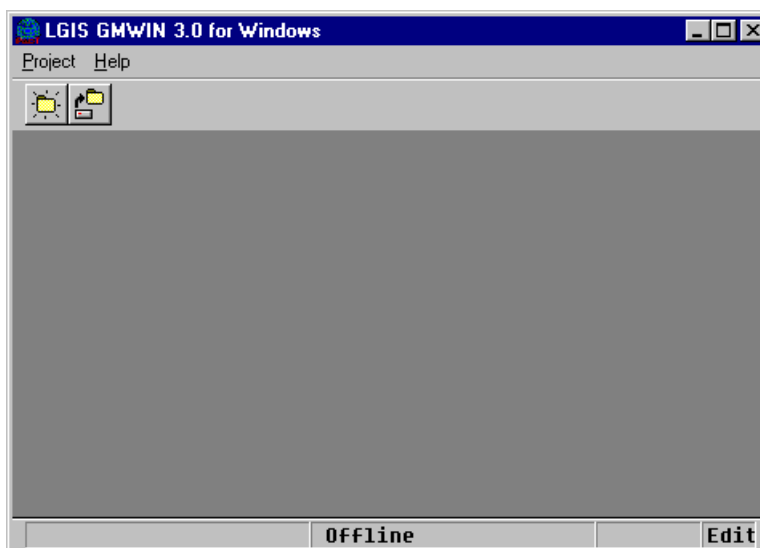
3.1. Create a Program




- Click  **Start** button.
- Click **Programs - GMWIN3.0**.

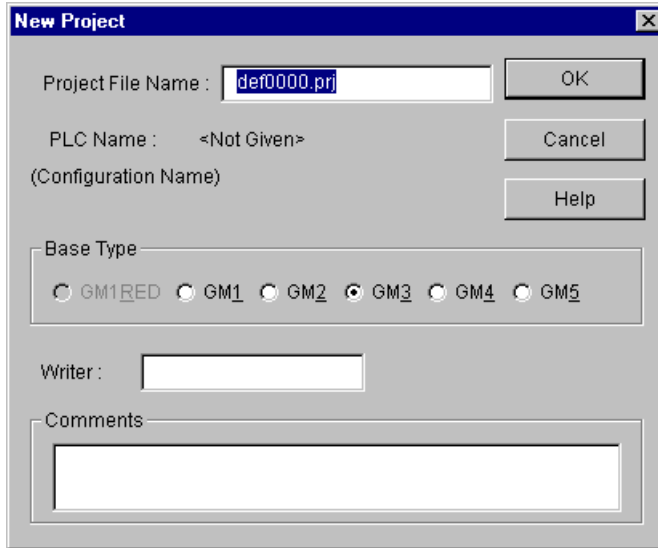


Then the initial window is shown as below.



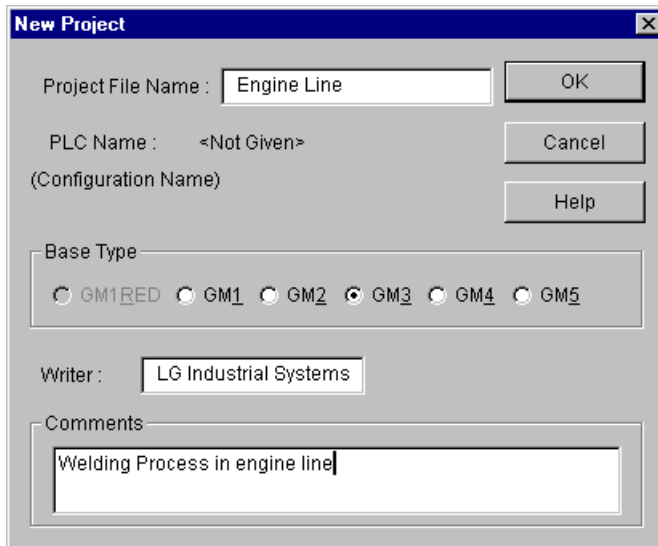
Step 1 : Create a Project

- Click **New Project** () icon or select the dialog box by clicking **Project - New...**



- Enter the information to the text boxes on **New Project** dialog box.

Project File Name	Engine Line
Base Type	GM3
Writer	LG Industrial Systems
Comments	Welding Process in engine line



- Click **OK** button.

Step 2 : Define a Program

- Enter the information on the **Define Program** dialog box.

The 'Define Program' dialog box is shown with the following details:

- Title Bar:** Define Program
- Instance(Program) Name:** WELDING
- Execution Control:**
 - Single
 - Task
- Program File Name:** c:\gmwin30\source\robot.src
- Buttons:** OK, Cancel, Help

- Enter an instance(program) name in **Instance Name** text box.
- Enter 'robot.src' for Program File Name and click **OK** button.
- Open **New Program** dialog box.




The 'New Program' dialog box is shown with the following details:

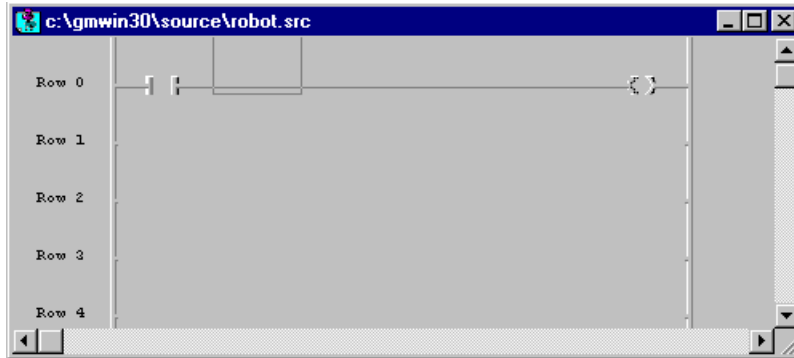
- Title Bar:** New Program
- Program File Name:** robot.src
- Language:**
 - SFC
 - LD
 - IL
 - FBD
 - ST
- Program Kind:**
 - Program Block
 - Function Block
 - Function
- Function/Function Block Name:** (empty text box)
- Return Data Type:** BOOL
- Comments:** Welding robot control
- Buttons:** OK, Cancel, Help


- Select kind of language to use for the new program.
- Type Comments for the description of the program in **Comments** box.
- Press **Enter** or **OK** button.

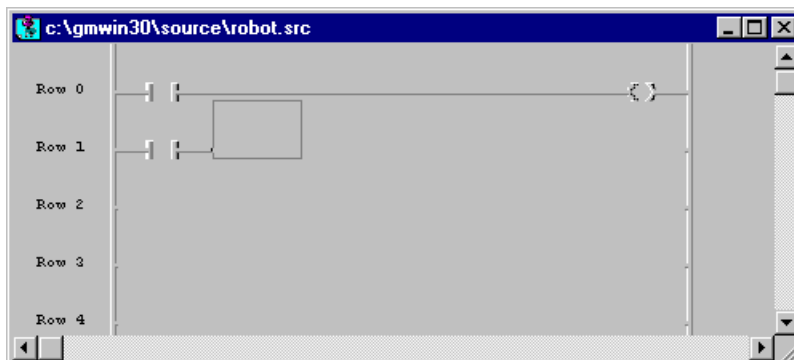
Step 3 : Editing a Program

1) Input a contact and output coil


- Click the left button of the mouse on the position of Row '0' and Column '1' in the LD window after selecting() icon in the toolbox.
- Click the mouse on the right side of contact of  after selecting  in the toolbox as below.

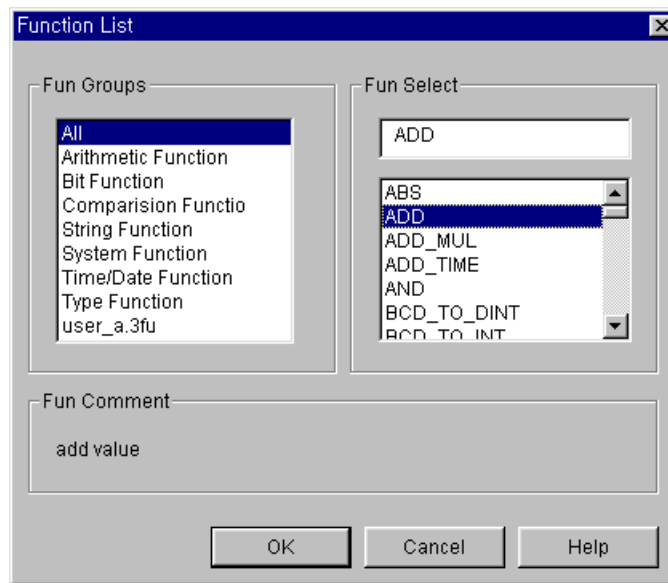


- Select  in the toolbox and click the left button on the location of Row '1' and Column '1'.

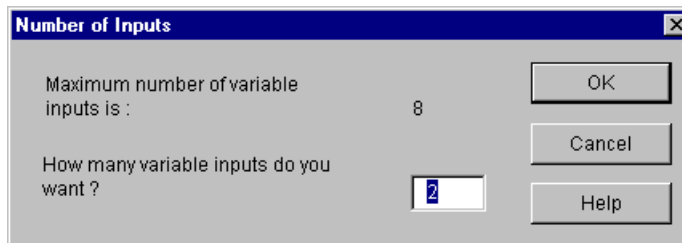


2) Insert a Function

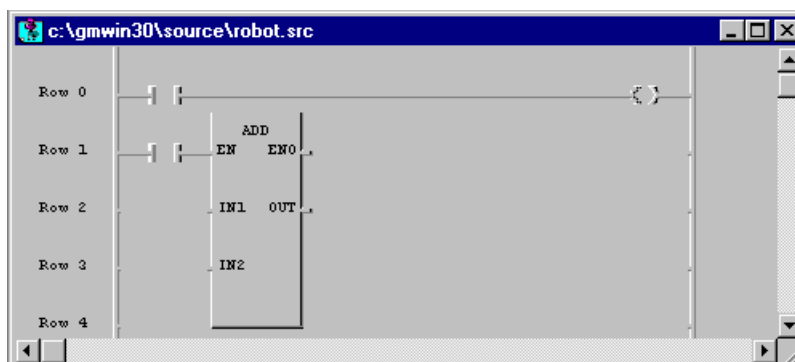
- Select  in the toolbox using a mouse.
- Click the left button of mouse on the position of Row '1' and Column '2'.





- Select Arithmetic Function 'ADD' in **Fun Select** box and click **OK** button.

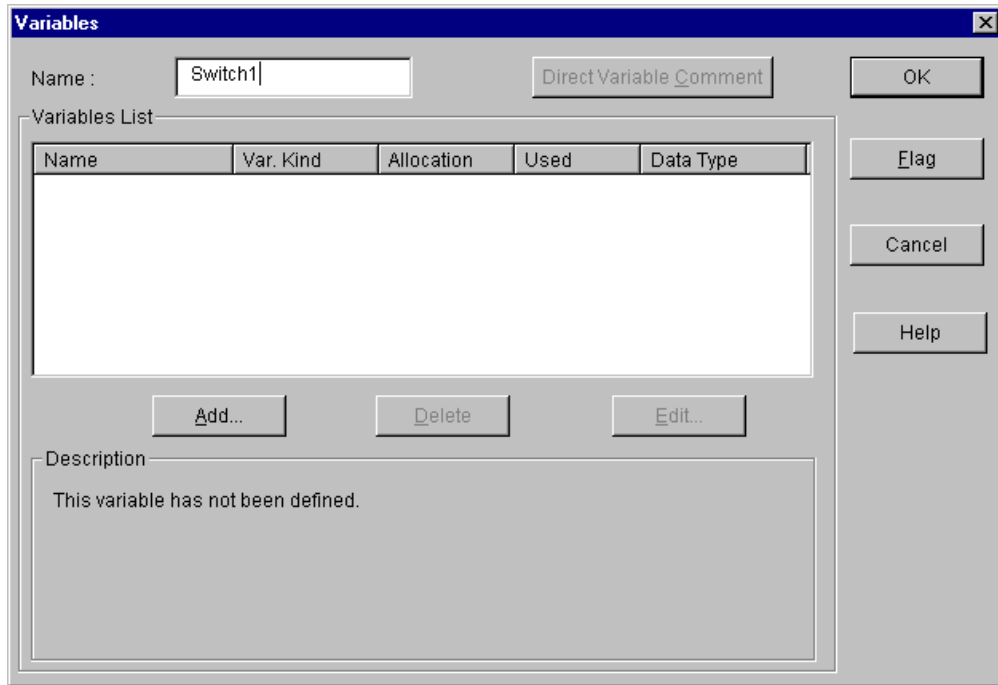


- Enter '2' for the number of inputs.
- Click **OK** button.

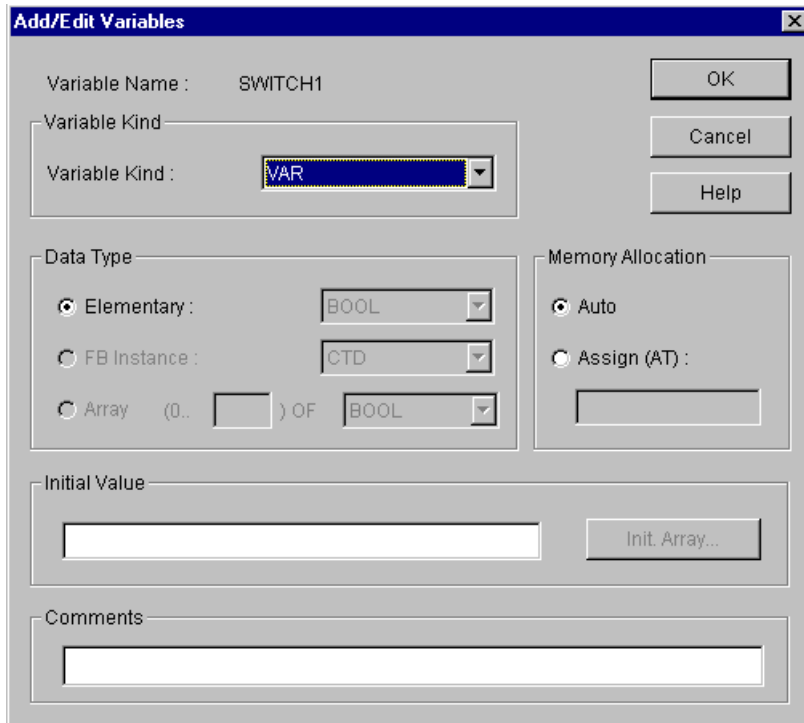


3) Variable Input

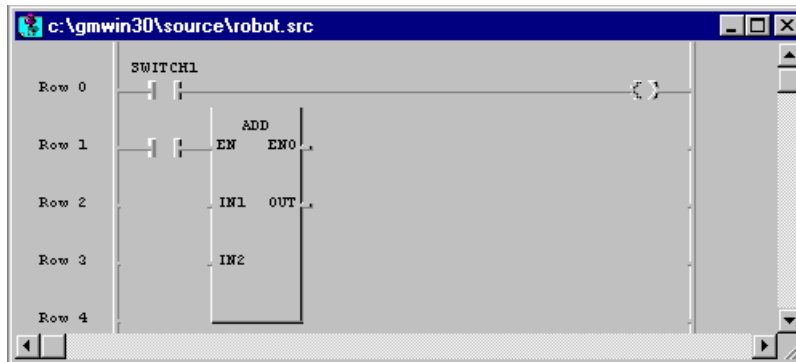
- Select  in the toolbox and double-click the left button of mouse on the location  of Row '0' and Column '1'.



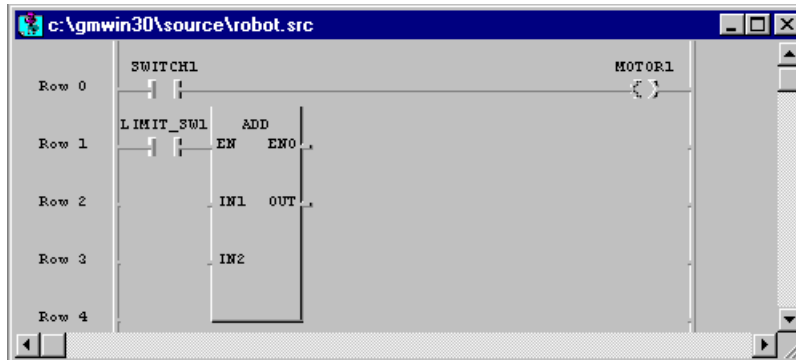
- Enter 'SWITCH 1' in the **Name** edit control.
- Click **OK** button.



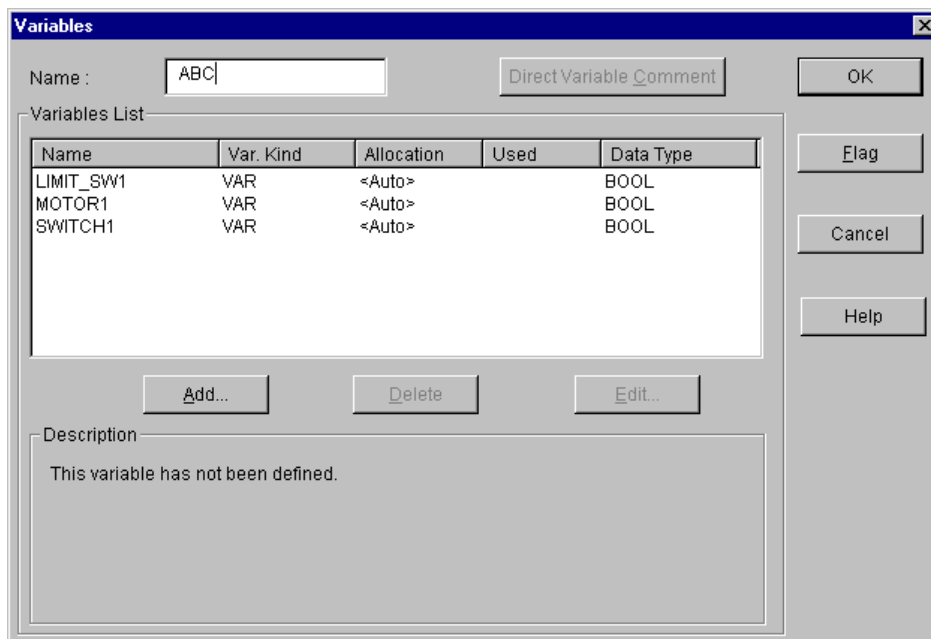
- Click **OK** button.



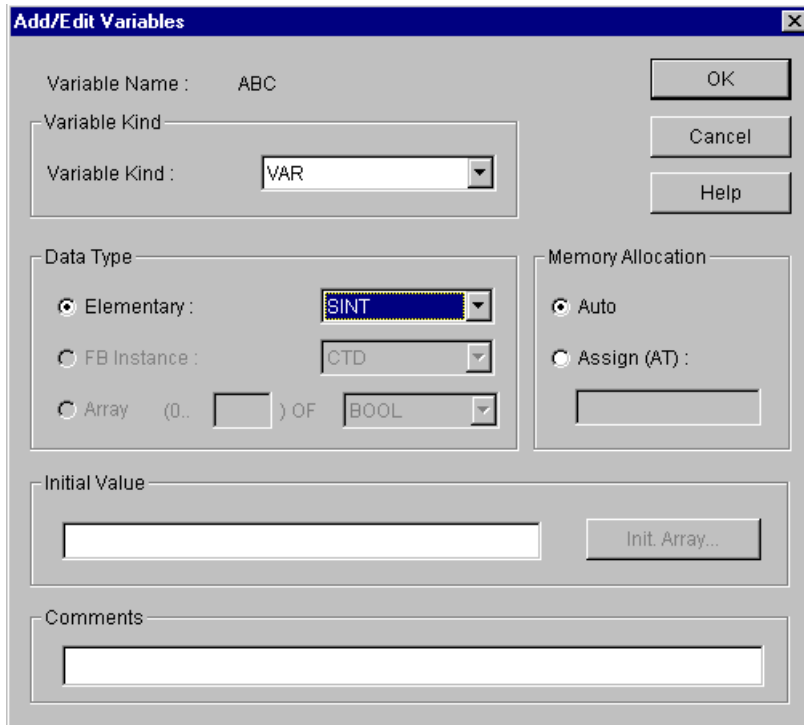
- How to assign a variable to output coil and the input contact for ADD Function are same as the above one.



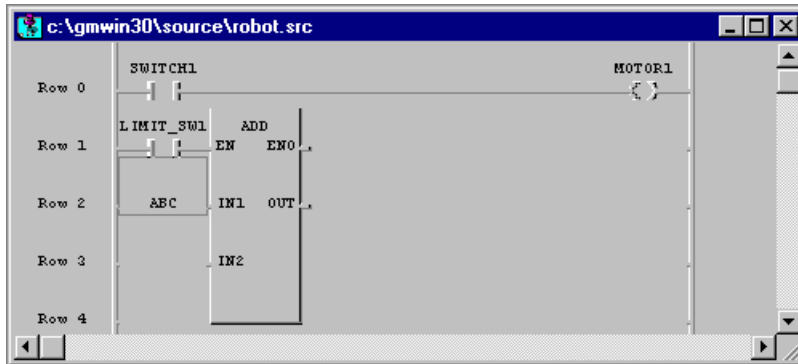
- Double-click the left button of mouse on the left of 'IN1' position (row '2', column '1') in the function 'ADD'.
- Enter the variable name 'ABC' on the **Name** edit control in **Variables** dialog box.



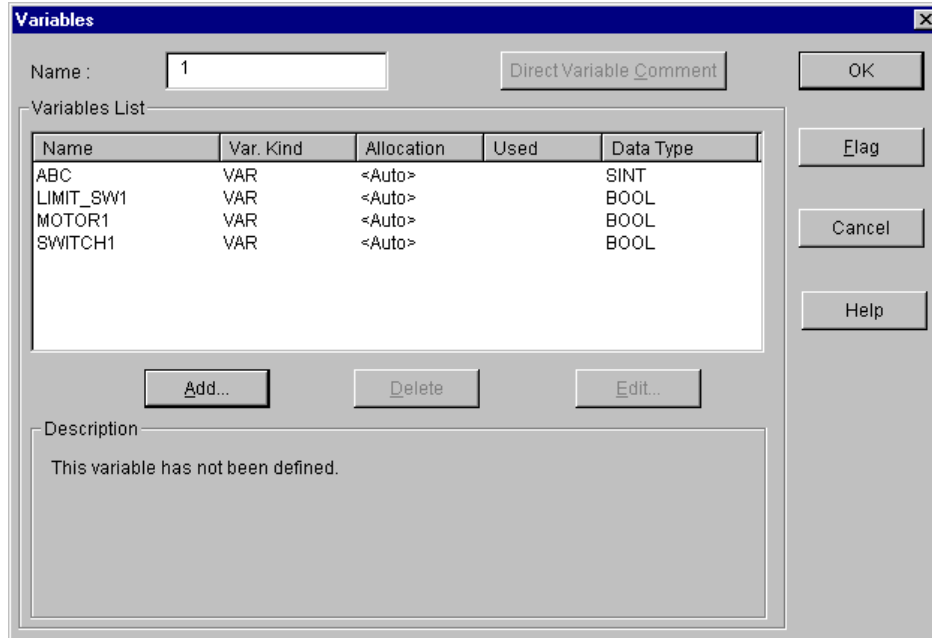
- Click **OK** button. Then **Add/Edit Variables** dialog box appears.



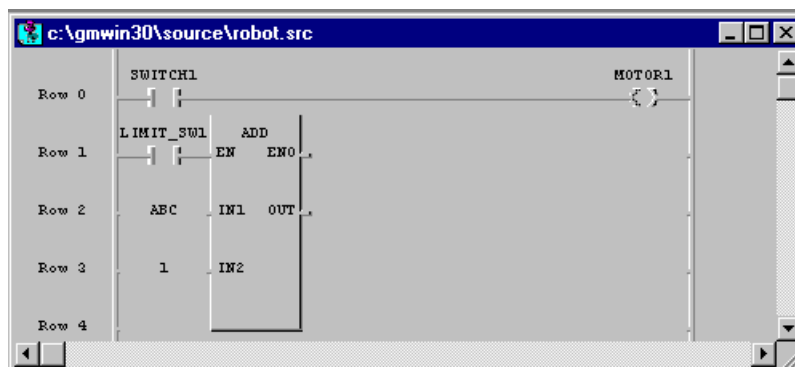
- Click **OK** button. Then variable name 'ABC' is assigned as 'IN1' of the function 'ADD'.



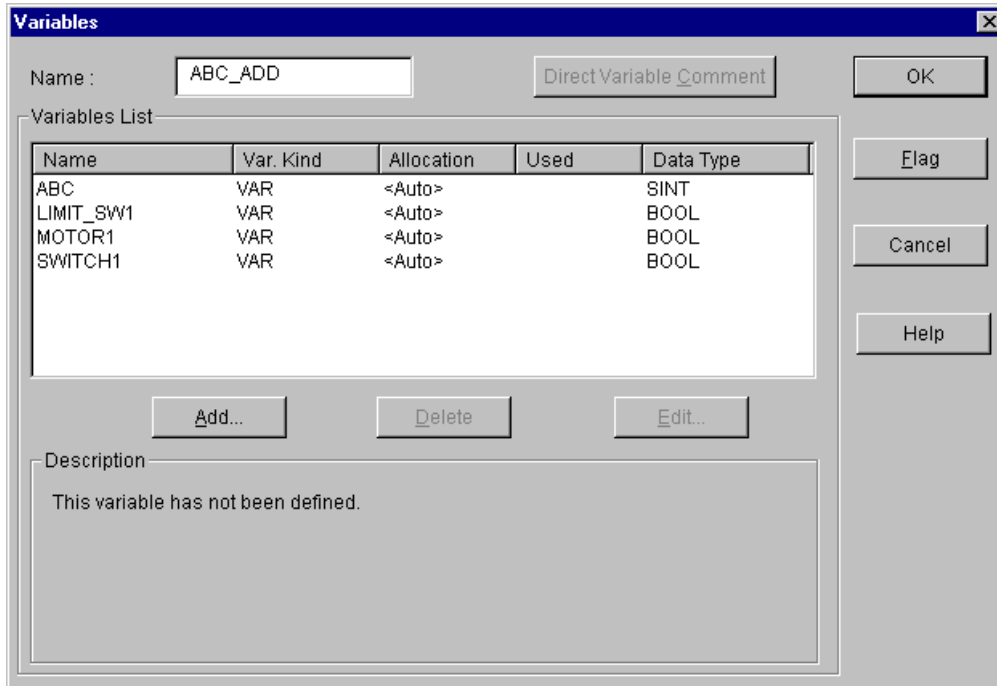
- Double-click the left button of the mouse on 'IN2' position (Row '3', Column '1').
- Then **Variables** dialog box appears.
- Enter Constant '1' in the edit control of **Name**.



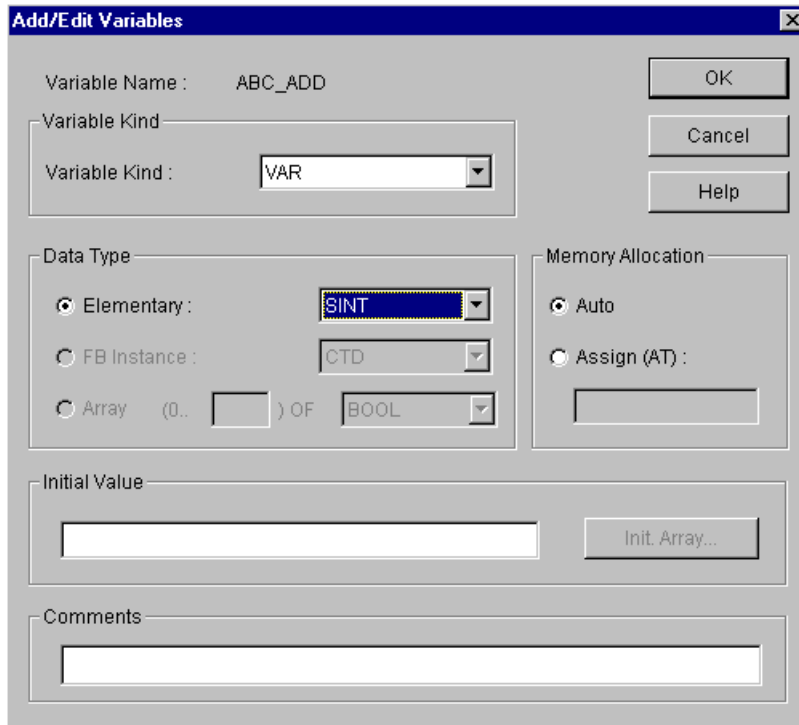
- Click **OK** button. Then Constant '1' is assigned as 'IN2' of the function 'ADD'.



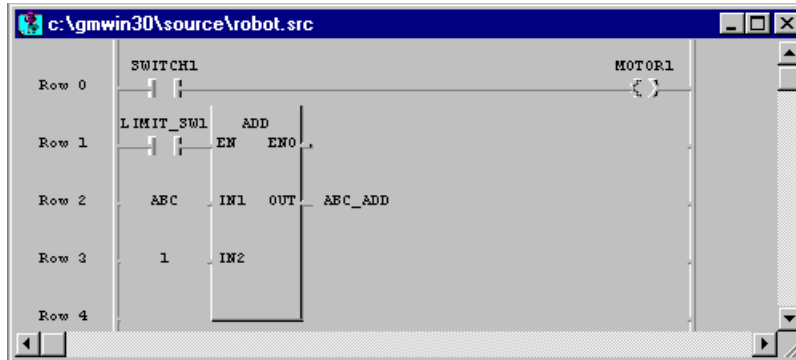
- Double-click the left button of the mouse on 'OUT' position (Row '2', Column '3') in the function 'ADD'.
- Enter the variable name 'ABC_ADD' in the edit control of **Name** in the Variables dialog box.



Click **OK** button.

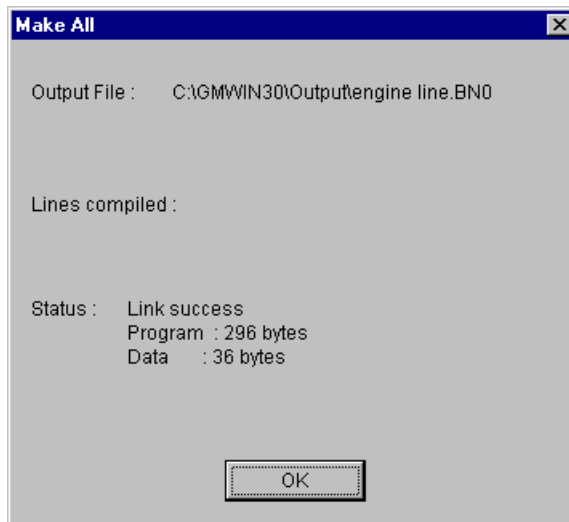


Click **OK** button. Then the variable name 'ABC_ADD' is assigned as 'OUT' in the function 'ADD'.



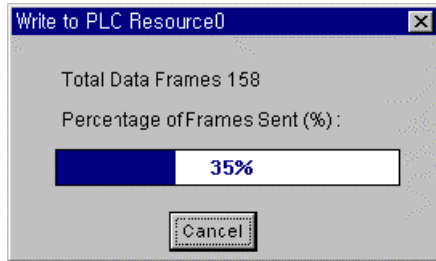
Step 4 : Compile a Program

- Select **Compile - Make** in the pull-down menu.
- Build the project file for the execution by running compiler.

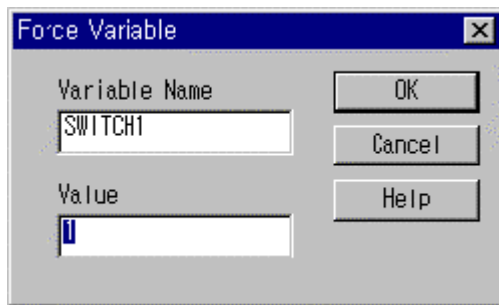


Step 5 : Download a Program

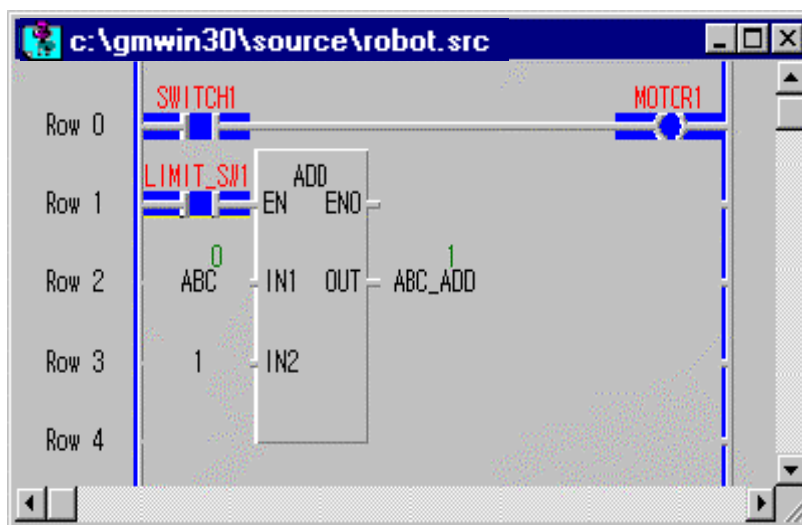
- Be sure to connect the cable between PC and PLC before downloading the program.
- Select **Online - Connect + Write + Run + Monitor On**.



- Then the execution file is downloaded to PLC.
- After downloading the program, PLC must be 'Run' mode to enable monitoring.
- In order to turn 'SWITCH1' On forcibly, double-click the left button of the mouse on the position of the contact. Then **Force Variable** dialog box appears.

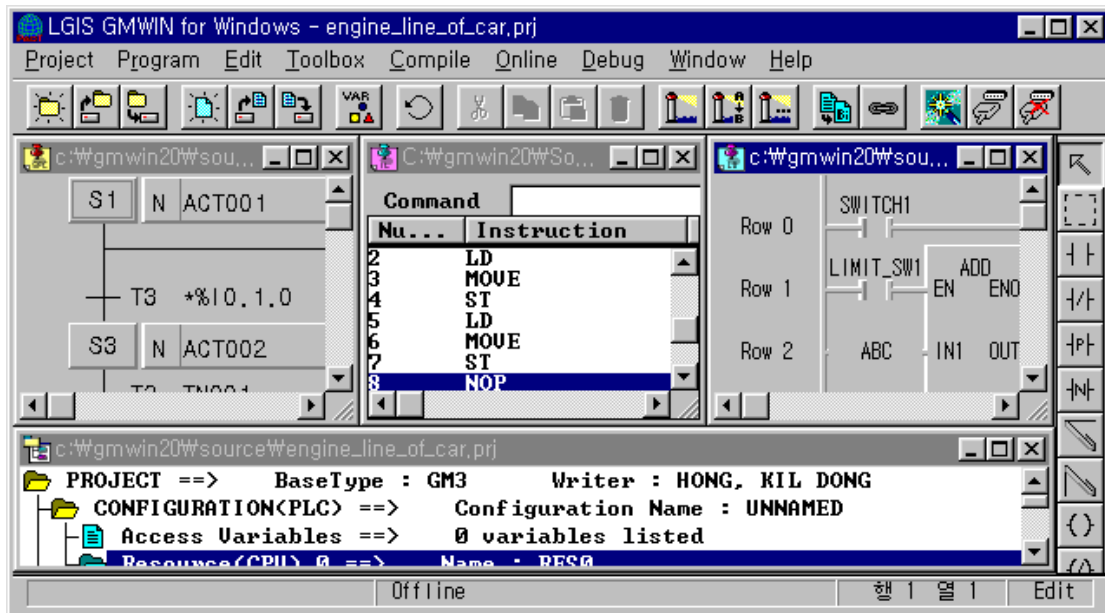


- Enter the value of the contact as '1' in the edit control of **Value** and click **OK** button.
- To turn 'LIMIT_SW1' On forcibly, execute the same order as the above.

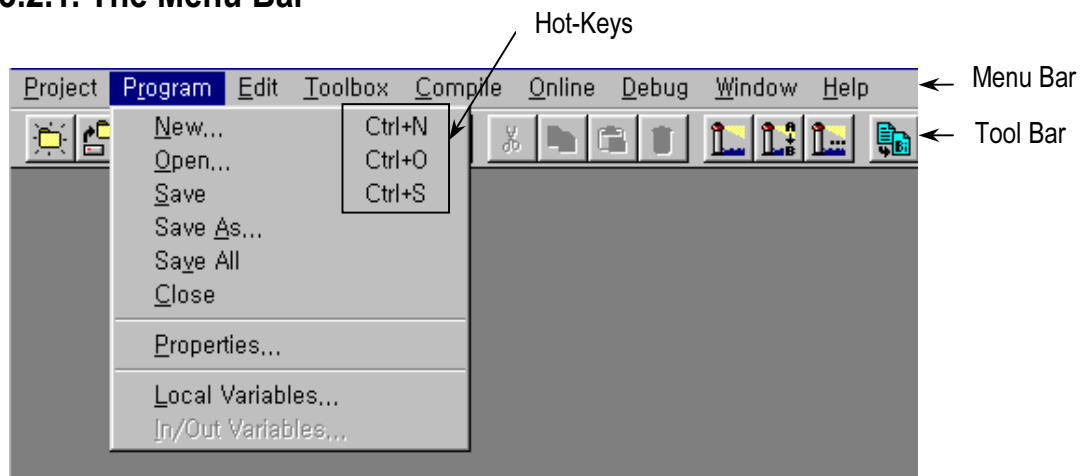


- The output coil 'MOTOR1' gets On/Off according to the condition of the input 'SWITCH1'.
- Variable 'ABC_ADD' is increased by 1 according to the result of variable 'ABC'.

3.2. Configuration of Screen



3.2.1. The Menu Bar



To access the pull-down menus, click on a menu using a mouse or key.

If menu item has the hot-key (Ctrl+X, Ctrl+C ...), you can select the menu directly by pressing hot-keys.

1) Project

Items		Description
New		Create a new project
Open		Open an existing project
Open From PLC		Up-load and open a project in PLC
Save		Save a project (Not program)
Save as		Save a program as another name
Close		Close a project
Add Project Item		Add new items (Program or Resource.: Resource can be added only in GM1.) to a project
Edit Project Item		Edit an item in a project
Delete Project Item		Delete items(Program, Resource) in a project
Up(Program)	Ctrl+U	Exchange a program order with the upper item in the project window
Down(Program)	Ctrl+W	Exchange a program order with the lower item in the project window
Print		Print all or part of the contents in the active window
Printer Setup		Select the printer and Setup the options of the printer
Options		Setup options in GMWIN Connect Option, Monitor/Debug Option...)
Library Manager		Create or edit library files
Insert Library		Insert a library file into the project
Start Simulation		Start or stop the simulation
Exit		Quit the application

2) Program

Items		Description
New	Ctrl+N	Make a new program
Open	Ctrl+O	Open an existing program
Save	Ctrl+S	Save a program
Save as		Save a program as another name
Close		Close a program
Properties		Change program properties
Local Variables		Show and edit local variable
In/Out Variables		Show and edit Input/Output variables for Function or Function block

In SFC Program Menu, more menus are added as below.

Items	Description
Action List	Show action lists
Transition List	Show transition lists

3) Edit

Items		Description
Undo	Ctrl+Z	Undo the last action
Cut	Ctrl+X	Cut the selection and move it to Clipboard
Copy	Ctrl+C	Copy the selection to Clipboard
Paste	Ctrl+V	Copy the selection to edit window from Clipboard
Delete	Del	Delete the selection
Find	Ctrl+F	Search for letter
Replace	Ctrl+H	Search for letter and replace with another letter
Find Again	Ctrl+F3	Run again 'Find' or 'Replace' command
Find-Move		Move a cursor to desired place

In SFC Program Menu, more menus are added as below.

Items		Description
Condense screen	Ctrl_P	Determine the rate of the screen size
Comments		Show comments of action and transition
Arrange Number		Readjust step and transition numbers

In LD Program Menu, more menus are added as below.

Items		Description
Condense screen	Ctrl+E	Determine the rate of the screen size
Variable Comments	Ctrl+M	Show comments of variable in LD window
Delete Line	Ctrl+D	Delete a line
Delete Cell	Del	Delete a cell
Insert Line	Ctrl+L	Insert a line
Insert Cell	Ctrl+I	Insert a cell

4) Toolbox

Item	Description
Toolbox Type	Open/close a toolbox and adjust a position of toolbox

In IL mode,

Items		Description
Function	F2	Insert a function
Function Block	F3	Insert a function block
Label	F4	Insert a label
Operator	F5	Insert an operator
Delete	F6	Delete one line of program
Variable Comment	F7	Show or hide comment column
Insert/Overwrite	F8	Change a mode (Toggled)

In LD mode,

Insert contact, coil, function, function block, jump, return and etc.

In SFC mode,

Items	Description
Step F2	Insert a step or transition
Branch F3	Insert a selective or simultaneous branch
Action/Transition F4	Define a name of action or transition including Qualifier
Label F5	Insert a label
Jump F6	Insert a jump
Zoom F7	Open action or transition window
Arrow Mode Ctrl+A	Switch to Arrow mode

In monitoring mode for LD and IL,

Item	Description
Select Array Subscript	Specify array index for monitoring

In Variable monitoring mode,

Items	Description
Start/Stop F2	Select start/stop mode for monitoring
View F3	Select an information of the variable to monitor
Force F4	Enter the specified value for variable forcibly
Select F5	Select a variable to monitor
Display Form F6	Show the variable to be monitored with hexadecimal or decimal format selectively
Array Number select F7	Specify array range of variable for the type of Array

In Time Chart monitoring mode,

Items	Description
Start/Stop F2	Select start/stop mode for monitoring
View F3	Select an information of the variable to monitor
Force F4	Enter the specified value for variable forcibly
Select F5	Select a variable to monitor
Time F6	Select the period to monitor

In case of monitoring I/O

Items	Description
Select Base F2	Select a base board to monitor
Start/Stop F3	Select start/stop mode for monitoring

5) Compile

Items	Description
Compile	Compile a program
Make	Build a PLC execution file after compiling an active program in a project
Build All	Make a PLC execution file after compiling all programs in a project
Message	Show an error message after compiling
Memory Reference	Show used global or direct variables

6) Online

Items	Description	
Connect+Write+Run+Monitor On Ctrl+R	Connect GMWIN to PLC, write a program created by user, change the operation mode and monitor it	
Connect	Connect GMWIN to PLC	
Disconnect	Disconnect GMWIN from PLC	
Read	Read PLC data	
Write	Write to PLC	
Monitor	Monitor On/Off	Start monitoring / Stop monitoring
	Variable Monitor	Monitor variables
	I/O Monitor	Monitor I/O's
	Time Chart Monitor	Monitor Boolean variables in time chart format
	Link Parameter Monitor	Monitor High speed link parameter
Mode Change	Change PLC operation mode	
Clear Data	Clear PLC data to '0'	
Reset	Reset CPU of PLC	
Flash Memory	Show the type of the flash memory in CPU Write data on a flash memory	
Link Enable	Enable or disable the execution of the high speed link	
PLC Info	Show PLC information	
I/O Info	Show the information of PLC I/O's	
I/O Forcing	Setup the forced I/O	
Link Info	Show the information of link module	
Mnet Parameter	Show the information of Mnet parameter	
Mnet Info	Show Mnet information	
I/O Skip	Specify I/O to skip	
Fault Mask	Set Fault Mask	
Initialize Special Modules	Initialize Special Modules	
Start Online Edit	Select a target source	
Write for Online Edit	Compile and write for Online Edit	
Cancel Online Edit	Cancel current Online Edit	
Data Share	Share the data for monitoring	

7) Debug

Items	Description
Debug Start/Stop	Start/stop debugging (Toggled)
Go Ctrl+F9	Start or continue the program execution
Step Over Ctrl+F8	Step over the next statement
Step Into	Step into the next statement
Step Out	Step out of the current function or function block
Pause	Pause the program execution
Run to Cursor Ctrl+F2	Run to cursor position
Add/Remove Breakpoint Ctrl+F5	Insert or remove a breakpoint
Breakpoint List/Condition	Show breakpoints and break conditions
Task Enable	Enable or disable the task execution

8) Window

Items	Description
Cascade	Arrange the windows as overlapping tiles
Tile Horizontally	Arrange the windows as horizontal, non- overlapping tiles
Tile Vertically	Arrange the windows as vertical, non-overlapping tiles
Arrange Icons	Arrange icons
Close All	Close all active windows

3.2.2. The Tool Bar



Tool Bar buttons represent single action functions that you can perform by simply clicking on the appropriate button.

Tool	Comment	Tool	Comment
	New Project		Connect + Write + Mode Change To Run + Start Monitor
	Open Project		Connect
	Save Project		Disconnect
	New Program		Write
	Open Program		Monitor Start/Stop
	Save Program		Run
	Local Variable		Stop
	Undo		Pause
	Cut		Debug Start
	Copy		Debug Run
	Paste		Step Over
	Delete		Step Into
	Find		Step Out
	Replace		Pause
	Find Again		Run to Cursor
	Compile		Add/Remove Breakpoint
	Make Execution File		

3.2.3. The Toolbox



SFC toolbox



IL toolbox



LD toolbox

You can create or edit a program using the toolboxes for each language.

You can also execute the same function as the toolboxes by clicking **Toolbox** in the pull-down menu.

You can change the position of the toolbox or the property by selecting **Toolbox - Toolbox Type** in the pull-down menu.

3.2.4. The Status Bar



3.2.4.1. Description Mode

Describes the function of the command or menu.

3.2.4.2. PLC Mode

Shows PLC type, PLC operating mode, Monitoring mode and more.

3.2.4.3. Cursor Position

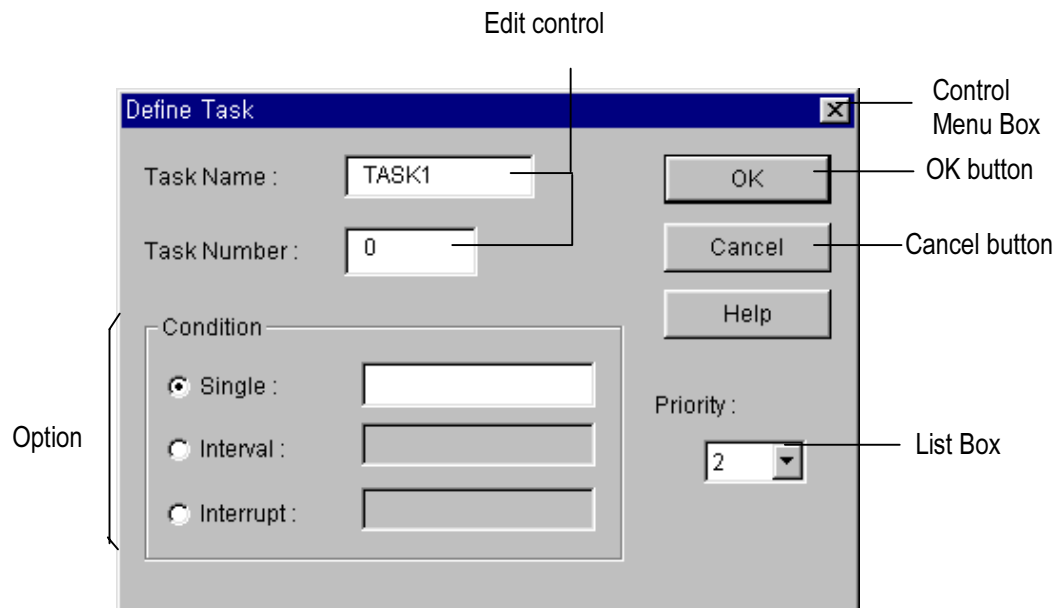
Shows the location of the cursor in the screen as Row/Column.

3.2.4.4. Status of GMWIN

Shows the status of GMWIN(Edit mode, Monitor mode and Debug mode).

3.3. How to use a Dialog Box

Edit control, OK/Cancel/Help button, Option and List Box are in dialog box so you can define a required value or input.



- Edit control** : Enter a required name or letter.
- Option Radio Button** : It is used to select only one in the same group.
: Click a mouse on a desired item.
- List Box** : Select one in the list.
: List is appeared by clicking a mouse on arrow in list box and you can select a list by clicking.
- OK button** : Click OK button to close a dialog box after entering a designated value.
- Cancel button** : Click Cancel button or double-click a mouse on adjustment menu box to cancel the setup and close the dialog box.

3.4. Files being created in GMWIN

If a user create a PLC execution file through building a project and editing a program, the following files are created.

- <Project Name>.PRJ** : Project file created by user.
- <Project Name>.BNO** : PLC execution file.
In GM1, files are created as many as resource.
<Project Name>.BNO□<Project Name>.BNi,(i is resource number).
- <Project Name>.MON** : Information file for Monitoring.
- <Project Name>.CRO** : It is created when user builds a PLC execution file.
It is the text file that expresses the global or direct variable used in each program (Cross Reference).

<Program Name>.SRC	: Program file created by user
<Program Name>.ASV	: Program created by user is saved as this name periodically. To create this file, you must setup the time value by setting up the time cycle in Option - Auto Save in the pull-down menu. This file is deleted automatically by closing a program window normally.
<Program Name>.OP?	: It is created as object file when user compiles a program. (in case of Program Block)
<Program Name>.OB?	: It is created as object file when user compiles a program. (in case of Function Block)
<Program Name>.OF?	: It is created as object file when user compiles a program. (in case of Function)

Example (OP3 : program block for GM3, OF4 : Function for GM4)

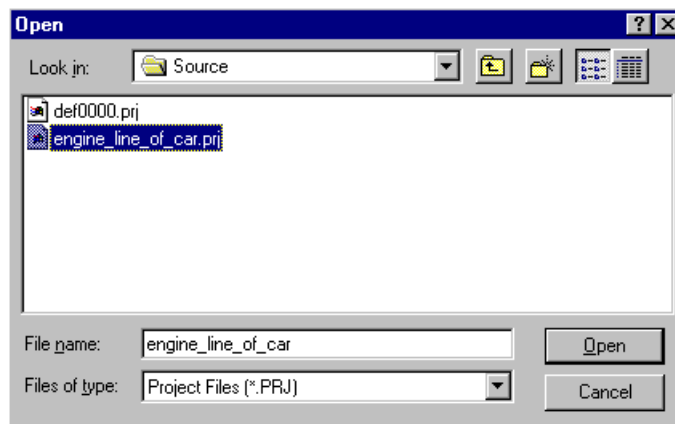
3.5. Open a File

To open a Project

- Select **Project - Open** in the pull-down menu.

To open a Program

- Select **Program - Open** in the pull-down menu.



- Look in the folder to open and select the file to open
List box displays only files having an extension name selected in **Files of type** list box.
(Project File : *.PRJ, Program File : *.SRC)
- Click **Open** button.

3.6. Save a File

3.6.1. Save a New File

Save a new file that is not ever saved.

To save a Project

- Select **Project - Save** in the pull-down menu.

To save a Program

- Select **Program - Save** in the pull-down menu.
- Select a drive and folder to save the file.
- Enter a file name in the **File Name** text box.
 - Input a **PRJ** extension for Project File and a **SRC** extension for Program File.
- Click **Save** button.

3.6.2. Save a File on Working

To save a project

- Select **Project - Save** in the pull-down menu.

To save a program

- Select **Program - Save** in the pull-down menu.

3.6.3. Save as another name

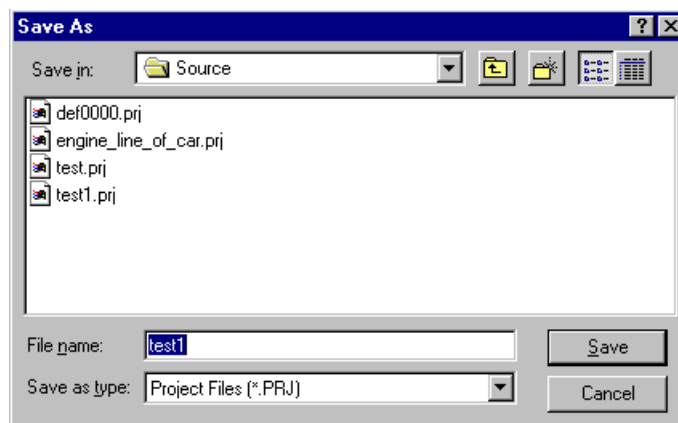
You can save a project or program as another file name.

To save a Project

- Select **Project-Save as...** in the pull-down menu.

To save a Program

- Select **Program - Save as...** in the pull-down menu.



- Select a drive and folder to save the file.
- Enter a file name in the **File Name** text box.
 - Input a **PRJ** extension for Project File and a **SRC** extension for Program File.
- Click **Save** button.

3.7. Close a File

<Method 1>

Double-click a mouse on the Adjustment Menu Box on the right-upper corner of the active window.

<Method 2>

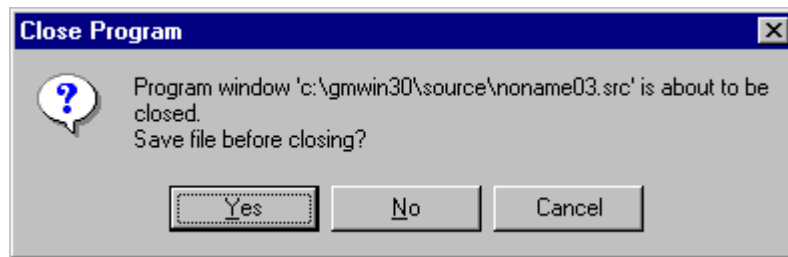
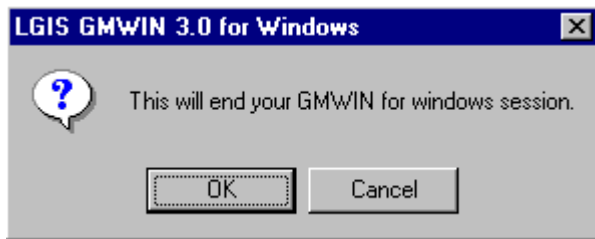
To close a Project

- Select **Project - Close** in the pull-down menu.

To close a Program

- Select **Program - Close** in the pull-down menu.

If the file was not saved, then following dialog box appears.



To save a file

- Click **Yes** button.

Not to save a file

- Click **No** button.

- Click **Cancel** button to cancel