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- 1.2 Make Splash window - Splash
- 1.3 Make a beautiful status bar - StatusBar
- 1.4 Create icon bar application - Systray
- 1.5 MDI window display background image - MDIBmp
- 1.6 ToolTips - ToolTips in the window control display
- 1.7 Create a different command button - PictureButton/IconButton
- 1.8 Implementation of Transparent Text - TransparentST/TransParentButton
- 1.9 Making the navigation map interface - FlowChat
- 1.10 Make a menu with pictures and texts - BmpMenu
- 1.11 The size of the controls in the window is synchronized with the size of the window - Autosize
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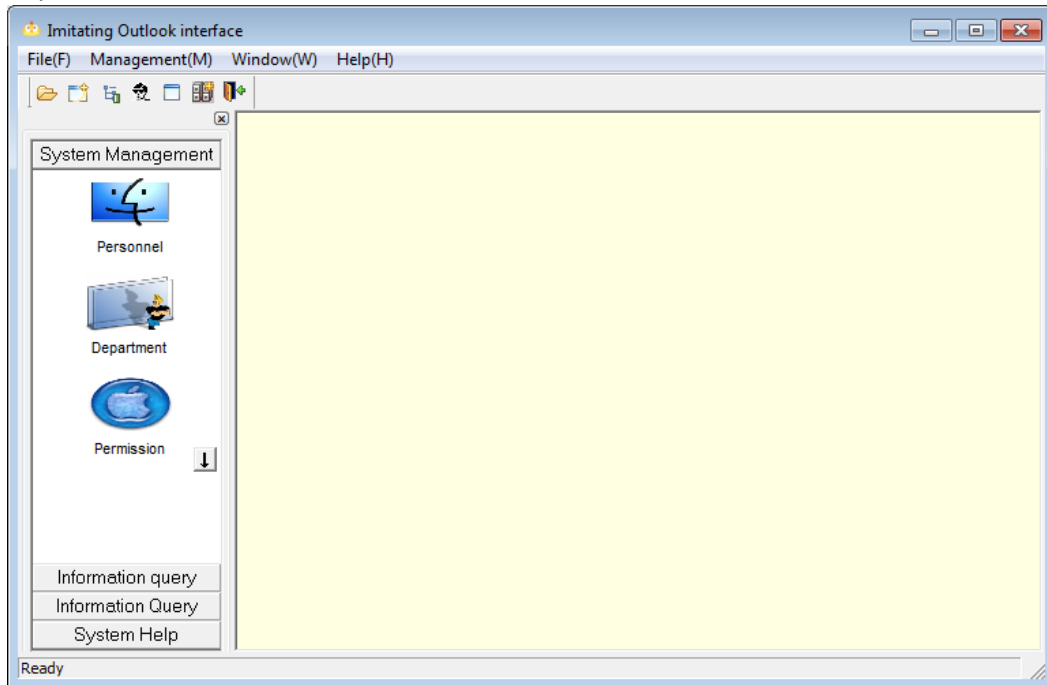
Contains the source program of two examples of developing Jaguar components and calling Jaguar components

## Chapter 12 PBNI

PBNI application technology – PBNI

## Chapter 1 Window, Control and Interface

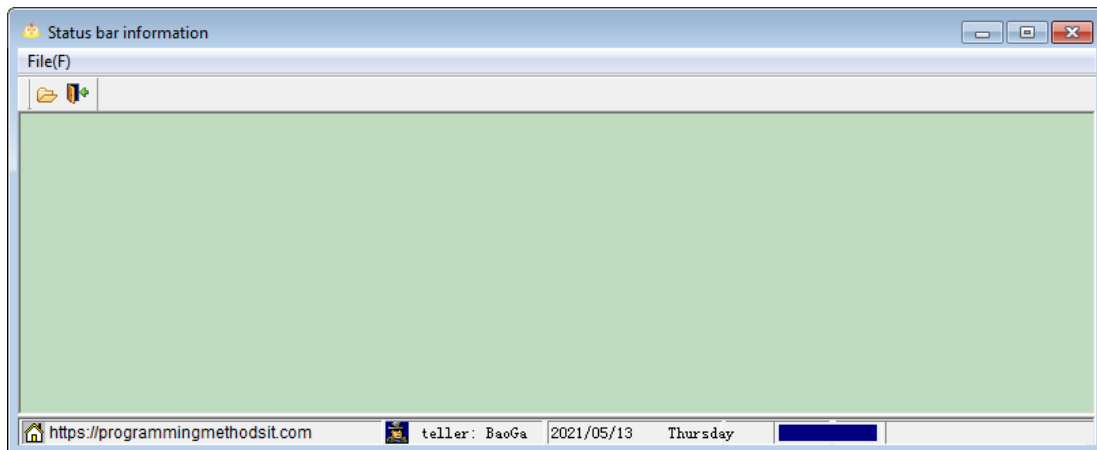
### 1.1 Implementation of Outlook Toolbar Interface – Outlook



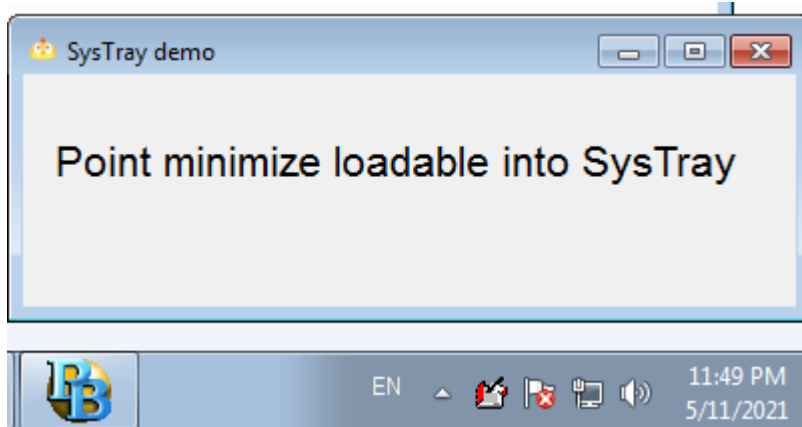
### 1.2 Make Splash window - Splash



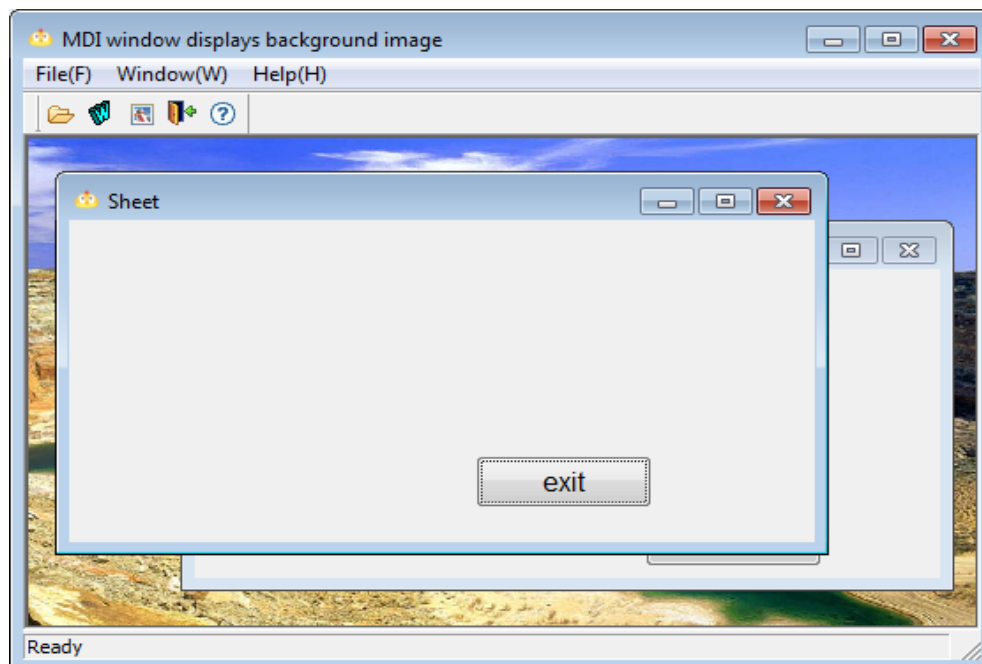
## 1.2 Make a beautiful status bar – StatusBar



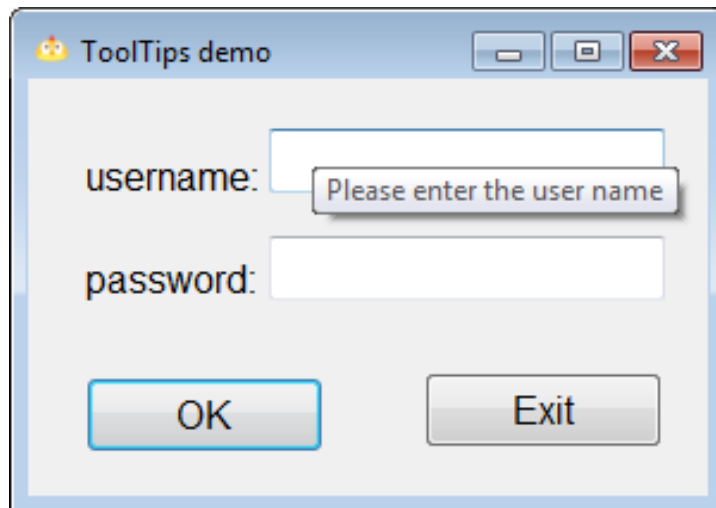
## 1.3 Create icon bar application – SysTray



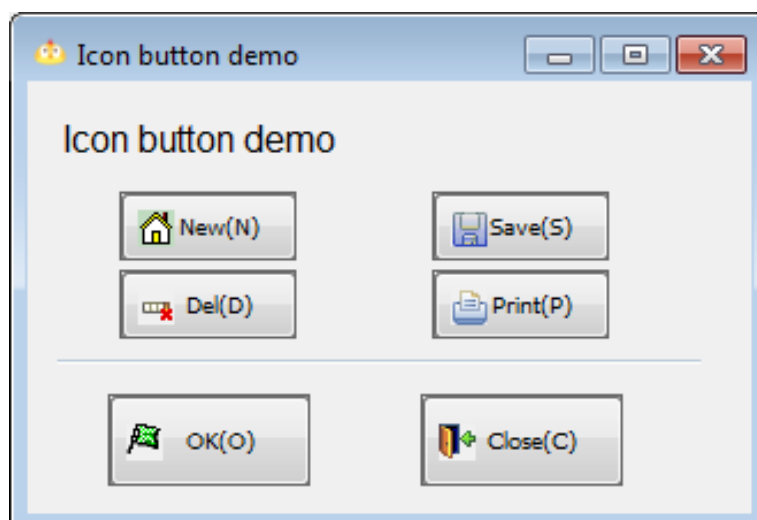
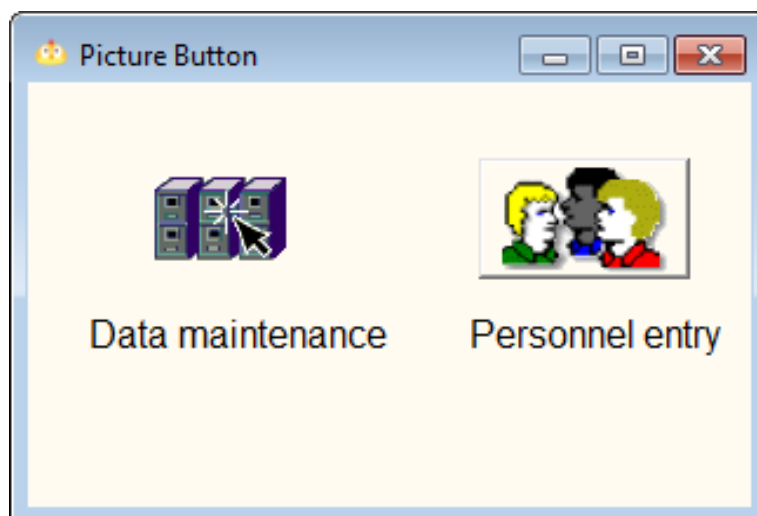
## 1.5 MDI window display background image – MDIBmp



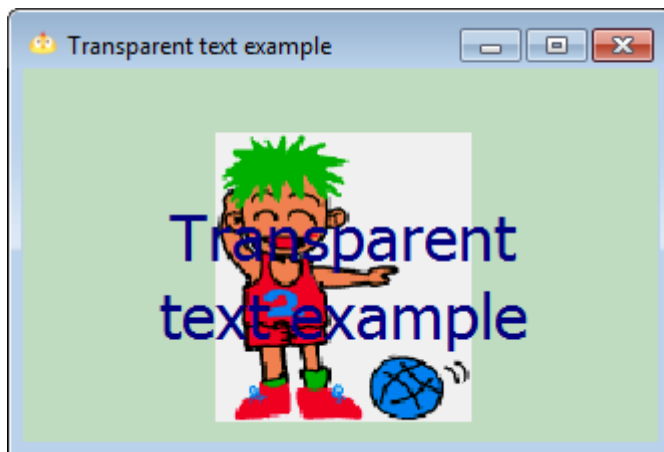
### 1.6 ToolTips - ToolTips in the window control display



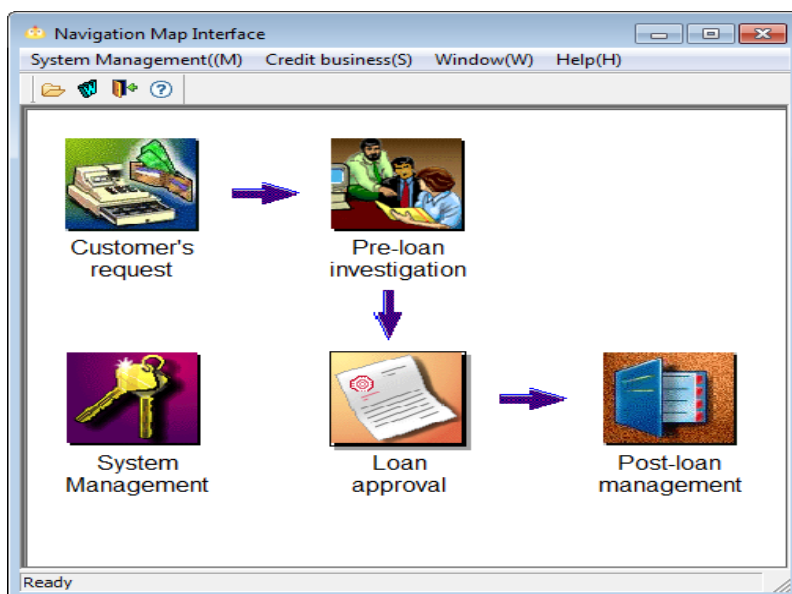
### 1.7 Create a different command button - PictureBox/IconButton



### 1.8 Implementation of Transparent Text - TransparentST/TransParentButton

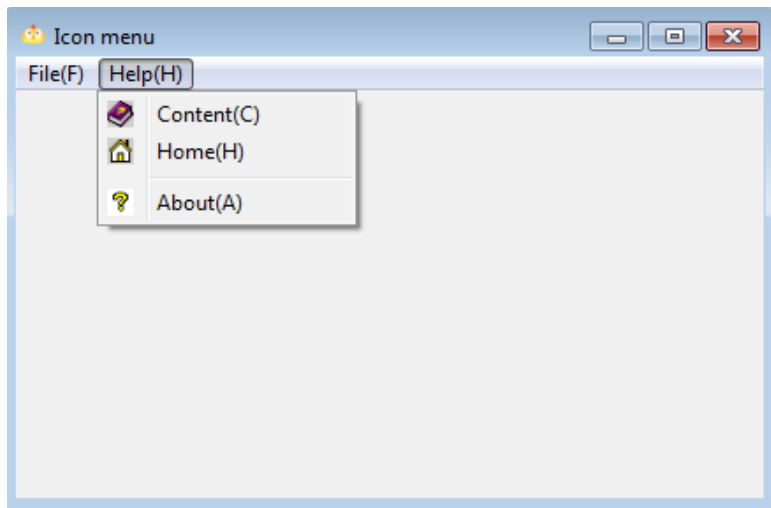


### 1.9 Making the navigation map interface – FlowChat

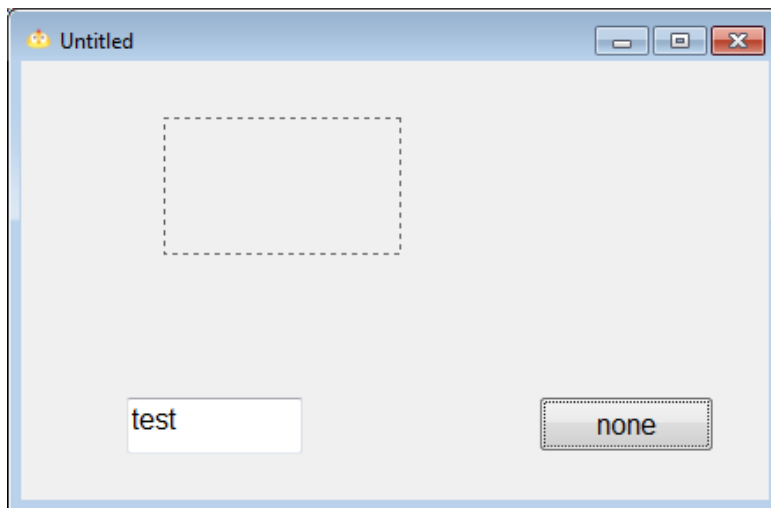




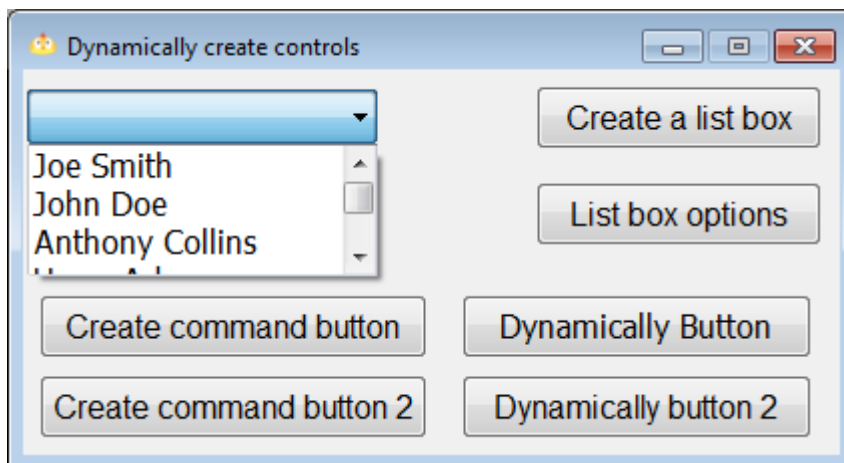
### 1.10 Make a menu with pictures and texts – BmpMenu



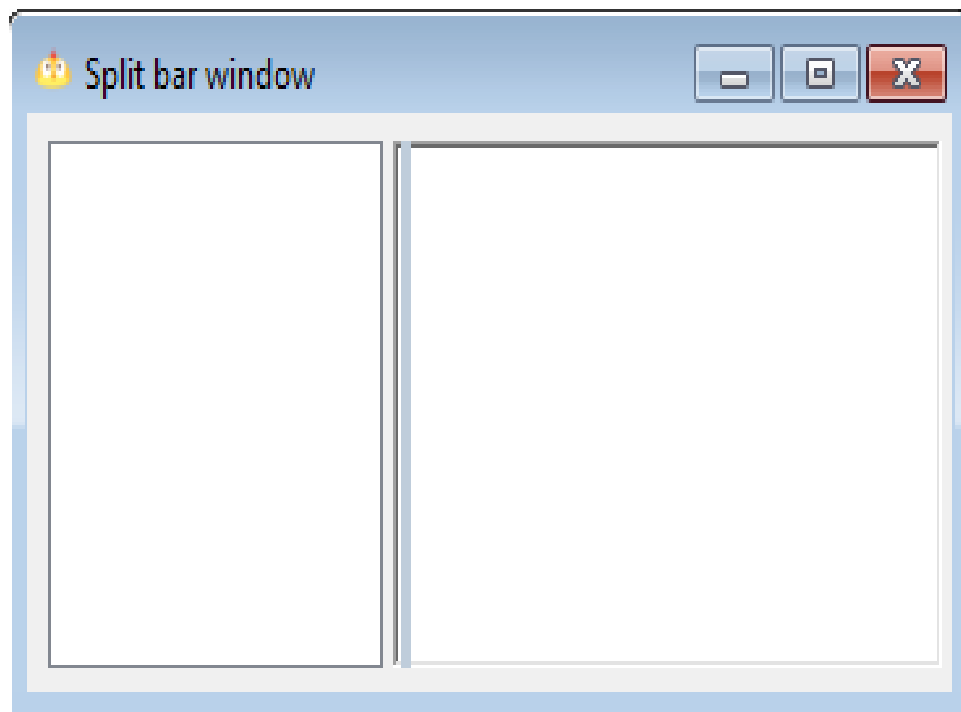
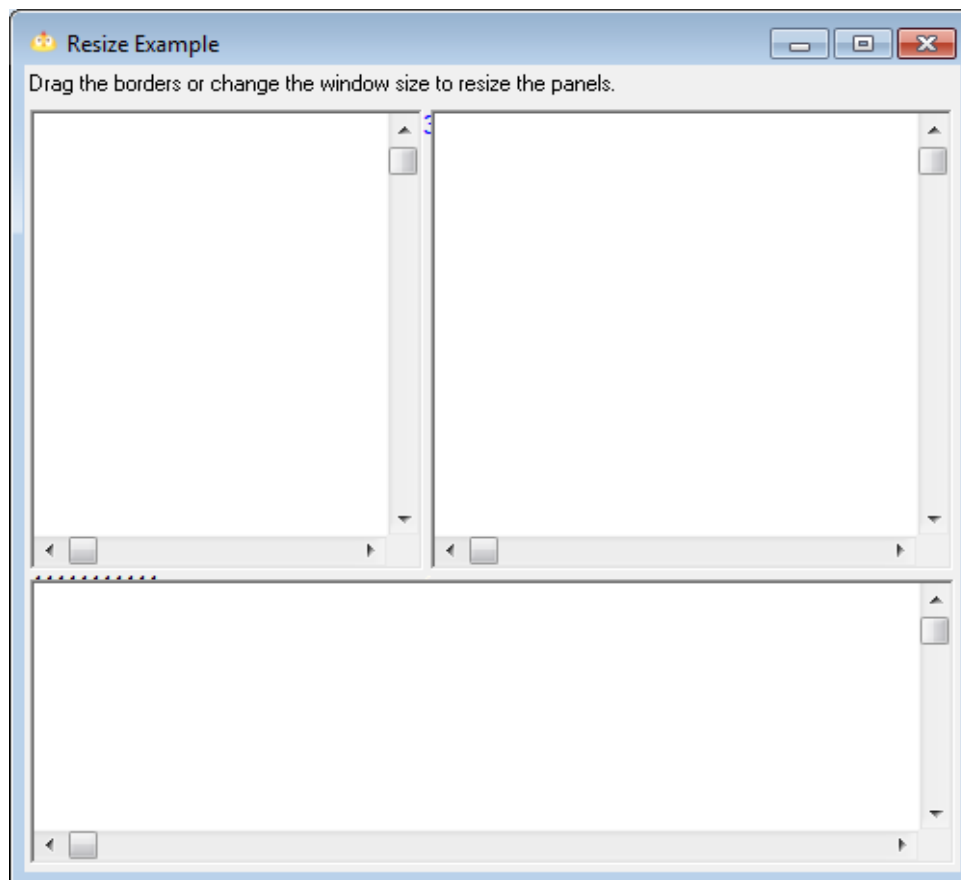
### 1.11 The size of the controls in the window is synchronized with the size of the window – Autosize



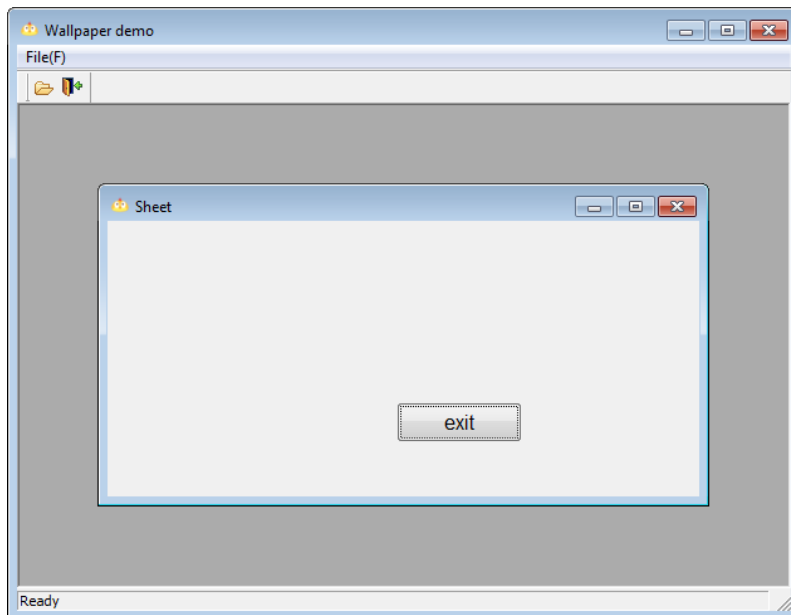
### 1.12 Dynamically create controls – DynamicControl



### 1.14 Control Fusion Technology - SplitBar/SplitResize

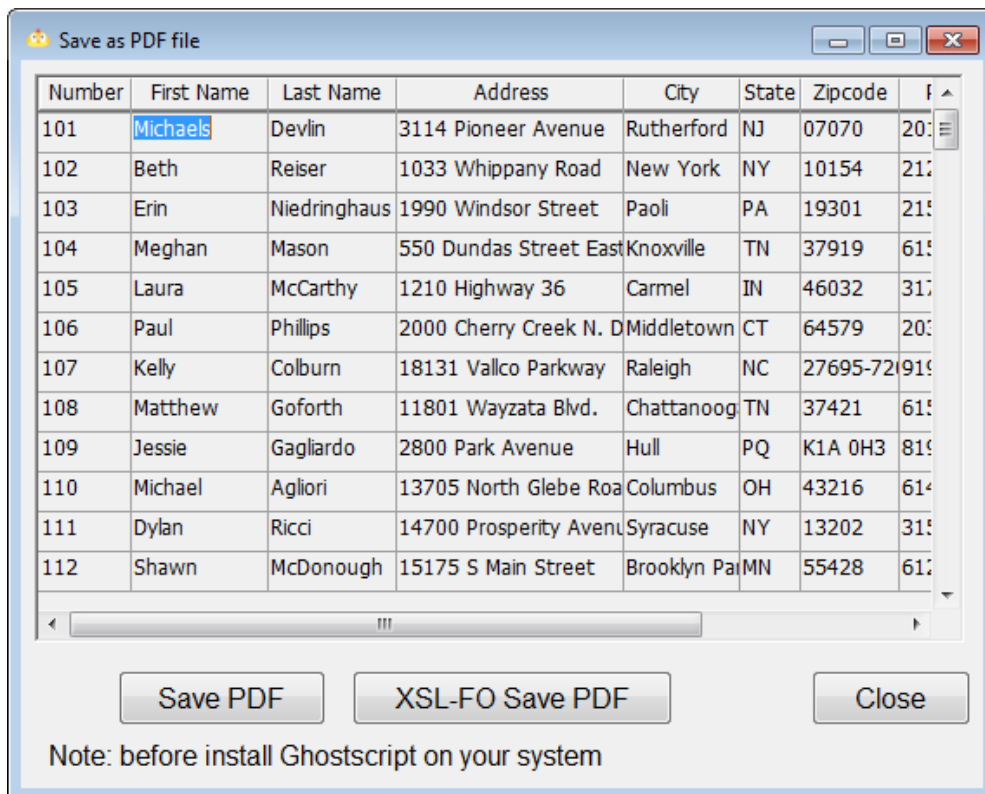


## 1.15 Wallpaper



## Chapter 2 Data Window

### 2.1 Data window PDF format document output – PDF



## 2.2 Data window combination condition query – Query

Combination condition query

column name	compare	value	And/OR
	=		and

employee id	employee fname	employee lname	dept id	city	phone	status	salary
102	Fran	Whitney	R & D	Needham	(617) 555-3985	<input checked="" type="radio"/> Active <input type="radio"/> Terminate <input type="radio"/> On Leave	45,700.00
105	Matthew	Cobb	R & D	Waltham	(617) 555-3840	<input checked="" type="radio"/> Active <input type="radio"/> Terminate <input type="radio"/> On Leave	62,000.00
129	Philip	Chin	Sales	Atlanta	(404) 555-2341	<input checked="" type="radio"/> Active <input type="radio"/> Terminate <input type="radio"/> On Leave	38,500.00
148	Julie	Jordan	Finance	Winchester	(617) 555-7835	<input checked="" type="radio"/> Active <input type="radio"/> Terminate <input type="radio"/> On Leave	51,432.00

## 2.3 Universal Sorting of Data Window – UniversalSort

Customer information

Customer Number	First name	Last name	Address	City	St
122	Al	Dente	25 N.E. 38th Place	McLean	VA
146	Alberto	Yost	375 White Horse Road	Spokane	WA
193	Alfred	Newman	2721 Northeast 99th	Kansas City	MO
142	Alfredo	Margolis	400 Bloor Street East	Kansas City	MO
168	Almen	de Joie	1750 Sweitzer Lane	Huntington	CA
123	Amanda	Lin	25 North Pine Grove	Winnipeg	MB
201	Amit	Singh	1986 Yonge Street	Overland	PKS
174	Anabai	Zoblotny	12600 N.E. Airport Way	Denver	CO
184	Anoush	Serafina	4643 Greenway Place	Overland	PKS
164	Aram	Najarian	200 Cambridge Center	Danbury	CT
151	Balwinder	Sinitskaya	1133 Century Blvd	Overland	PKS
135	Belinda	Clarke	204 Constitution Ave	New York	NY
102	Beth	Reiser	1033 Whippany Road	New York	NY
148	Beth	Crooker	501 College Road	Winnipeg	MB
116	Brian	Gugliuzza	39111 Wyman Street	Mamaroneck	NY

## 2.4 Implementation of custom window for general display of data window – ColumnVisible

Customer information

Employee ID	First Name	Last Name	Department	City	Phon
102	Fran	Whitney	100	Needham	(617) 555
105	Matthew	Cobb	100	Waltham	(617) 555
129	Philip	Chin	200	Atlanta	(404) 555
148	Julie	Jordan	300	Winchester	(617) 555
160	Robert	Breault	100	Milton	(617) 555
184	Melissa	Espinoza	400	Stow	(508) 555
191	Jeannette	Bertrand	500	Acton	(508) 555
195	Marc	Dill	200	Milton	(617) 555
207	Jane	Francis	400	Concord	(508) 555
243	Natasha	Shishov	100	Waltham	(617) 555
247	Kurt	Driscoll	100	Waltham	(617) 555
249	Rodrigo	Guevara	100	Framingham	(508) 555
266	Ram	Gowda	100	Natick	(508) 555

customize close

## 2.5 Incremental query in the data window – zlcx

Incremental sample queries

Please enter the customer number: 150

Customer Number	Last name	First Name	Address	City	State	Postal code	Phone Number	Company Name
150	Carl	Mason	1000 Powell Street	Don Mills	ON	3 3-4	(416) 555-5108	Power Play
151	Balwinder	Sinitskaya	1133 Century Blvd	Overland	PKS	66210-	(913) 555-4519	Toto's Active Wear
152	Davey	Jones	1218 Inelt Business C	Austin	NY	11746-	(516) 555-5952	Play it again Sports
153	Paul	Jones	1221 Innovation Drive	Cincinnati	OH	45202-	(513) 555-7622	Three Rivers Pro Shop
154	Marvin	Smythe	1291 North 27th Ave	North Mian	FL	33181-	(305) 555-9457	Marlin Mainia
155	Milo	Phipps	1380 Osterbrogade	Lakewood	OH	44107-	(216) 555-2264	Things Remembered
156	Sue	DuCode	1515 San Thomas Av	St Louis	MO	63131-	(314) 555-8227	Ozzie's Haven
157	William	Watcom	1615 Silver Lake Roac	Chicago	IL	60645-	(312) 555-7433	The Cub's Den
158	Jack	Cass	3626 West Court Str	Lexington	MA	02173-	(617) 555-8610	Jordan's Basement
159	Rick	Shaw	3715 West Loop Sou	West Bloor	MI	48324-	(313) 555-3638	ScrimShaw's
160	Clara	Nette	3773 Wilshire Blvd	Port Washi	NY	11050-	(516) 555-6250	Discount Department S
161	Gene	Poole	3860 Vreeland Road	Washington	DC	20581-	(202) 555-6537	State House Active We
162	Melba	Toste	3930 51st Ave North	Powell	OH	43065-	(614) 555-8983	The Real Deal
163	R.I.	Peese	4199 Buckingham	Mississauga	ON	4 2-6	(416) 555-6026	Mount Eastern Sports
164	Aram	Najarian	200 Cambridge Cente	Danbury	CT	6811 -	(203) 555-7907	Bloomfield's
165	Tamara	Mournen	42 Choke Cherry Roa	Ft. Wayne	IN	46808-	(219) 555-4297	Moran's Gift Shop
166	Malcolm	Naddem	4255 Commerce Park	Buford	GA	30518-	(404) 555-2529	Hospital Gift's
167	Nicklas	Cara	1700 State Highway	Lakewood	OH	44107-	(216) 555-2264	The Road Side Inn
168	Almen	de Joie	1750 Sweitzer Lane	Huntingtor	CA	92649-	(714) 555-5475	Surf's Up!
169	Laura	Terlemezian	240 First Street	Matthews	NC	28105-	(704) 555-8411	CoMed
170	Manh	Neubauer	2140 Haddington Str	Jacksonville	FL	32206-	(904) 555-3551	Jason's Sporting Goods
171	Vincent	Nahra	2180 Harwin Drive	West Chic	IL	60185- 112	(312) 555-5551	Iron Mke's Apparel
172	Grace	Perez	395 Market Street	Landover	MA	20785-	(301) 555-7728	Avon Inc.

## 2.6 Multi-table update of data window – UpdateMultable

Data window multi-table update

Department Number	Department Name	Employee ID	First Name	Last Name
100	R & D	102	Fran	Whitney
100	R & D	105	Matthew	Cobb
100	R & D	160	Robert	Breault
100	R & D	243	Natasha	Shishov
100	R & D	247	Kurt	Driscoll
100	R & D	249	Rodrigo	Guevara
100	R & D	266	Ram	Gowda
100	R & D	278	Terry	Melkisetian
100	R & D	316	Lynn	Pastor
100	R & D	445	Kim	Lull
100	R & D	453	Andrew	Rabkin
100	R & D	479	Linda	Siperstein
100	R & D	501	David	Scott
100	R & D	529	Dorothy	Sullivan

update

## 2.7 Click the title bar to sort the data window – TitleSort

Click the title bar of the data window to sort

Employee ID	Last name	First Name	Department	City	Phone	Salary
604	Albert	Wang	100	Waltham	(617) 555-8741	68,400
1751	Alex	Ahmed	400	Needham	(617) 555-8748	34,950
1142	Alison	Clark	200	Emeryville	(510) 555-9437	45,000
453	Andrew	Rabkin	100	Burlington	(617) 555-4444	64,500
930	Ann	Taylor	200	Atlanta	(404) 555-1515	46,800
1570	Anthony	Rebeiro	500	Waltham	(617) 555-5737	34,500

Click the title bar of the data window to sort

Employee ID	Last name	First Name	Department	City	Phone	Salary
1751	Alex	Ahmed	400	Needham	(617) 555-8748	34,950
1013	Joseph	Barker	500	Bedford	(617) 555-8021	27,200
591	Irene	Barletta	400	Bedford	(617) 555-8345	45,450
191	Jeannette	Bertrand	500	Acton	(508) 555-8138	32,700
1336	Janet	Bigelow	300	Waltham	(617) 555-1493	31,200
1062	Barbara	Blaikie	400	Needham	(617) 555-9345	54,900
750	Jane	Braun	500	Cambridge	(617) 555-7857	37,700
160	Robert	Breault	100	Milton	(617) 555-3099	57,400
1191	Matthew	Bucceri	400	Lexington	(617) 555-5336	45,900
992	Joyce	Butterfield	400	Cambridge	(617) 555-2232	34,000
1039	Shih Lin	Chao	200	Lexington	(617) 555-5921	33,800
888	Doug	Charlton	400	Concord	(508) 555-9246	28,300
129	Philip	Chin	200	Atlanta	(404) 555-2341	38,500
1142	Alison	Clark	200	Emeryville	(510) 555-9437	45,000
105	Matthew	Cobb	100	Waltham	(617) 555-3840	62,000

## 2.8 Dynamic Data Window – DynamicDataWindow

The screenshot shows a window titled "Dynamic datawindow". At the top, there is a text input field containing the SQL query "select \* from department". To the right of this field is a "Create" button. Below the query field is a text area containing a style definition: `style(type=grid) column(color=0 background.mode=1 font.face='tahoma' Font.Family=0 Font.Height=-12 Font.pitch=2 Font.charset=134) text(color=255) datawindow (color=16777215)`. Below the style area are two tabs: "Datawindow" (which is selected) and "Syntax". The "Datawindow" tab displays a table with the following data:

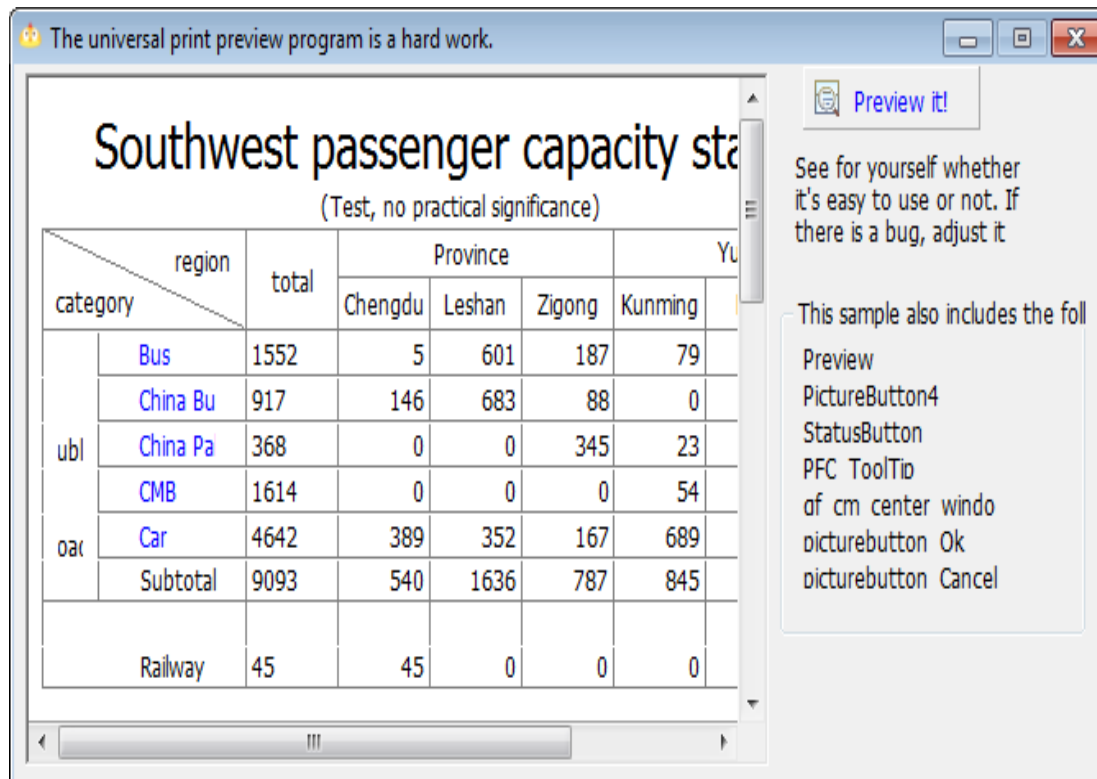
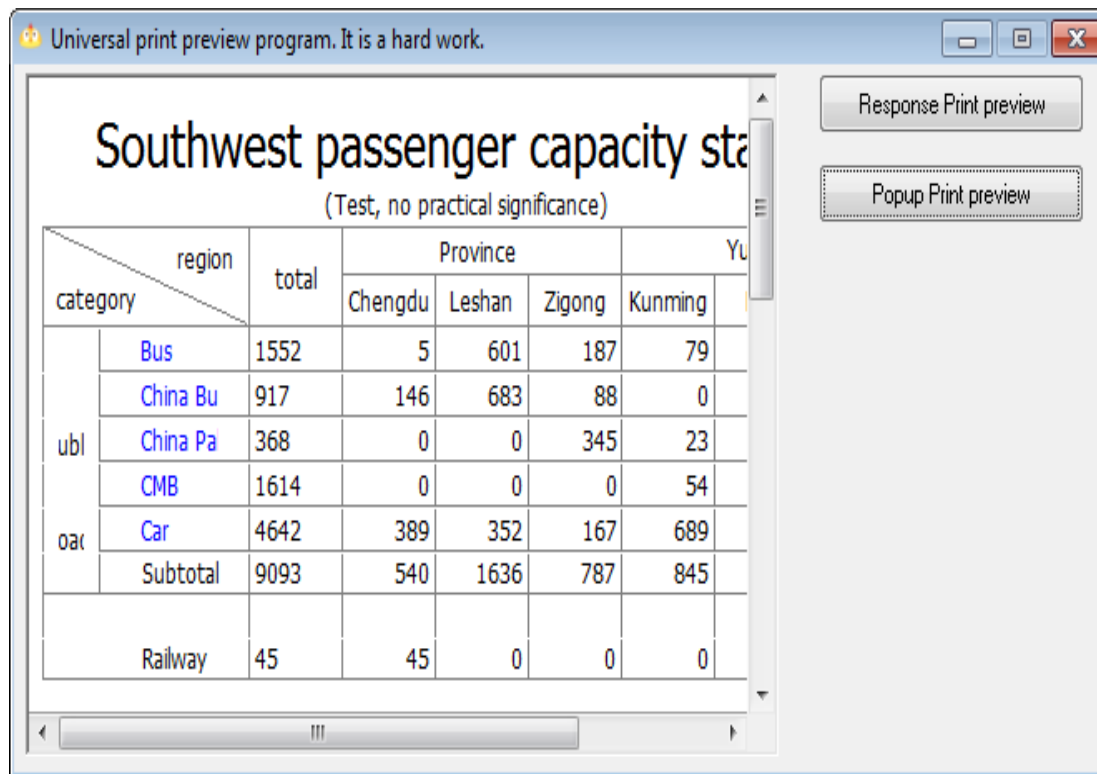
Department ID	Department Name	Manager ID
100	R & D	501
200	Sales	902
300	Finance	1293
400	Marketing	1576
500	Shipping	703

## 2.9 Composite Data Window – AddTitle

The screenshot shows a window titled "Automatically add title". At the top, there is a text input field containing "Test title". To the right of this field is an "Add title" button. Below the title field is a table with the following data:

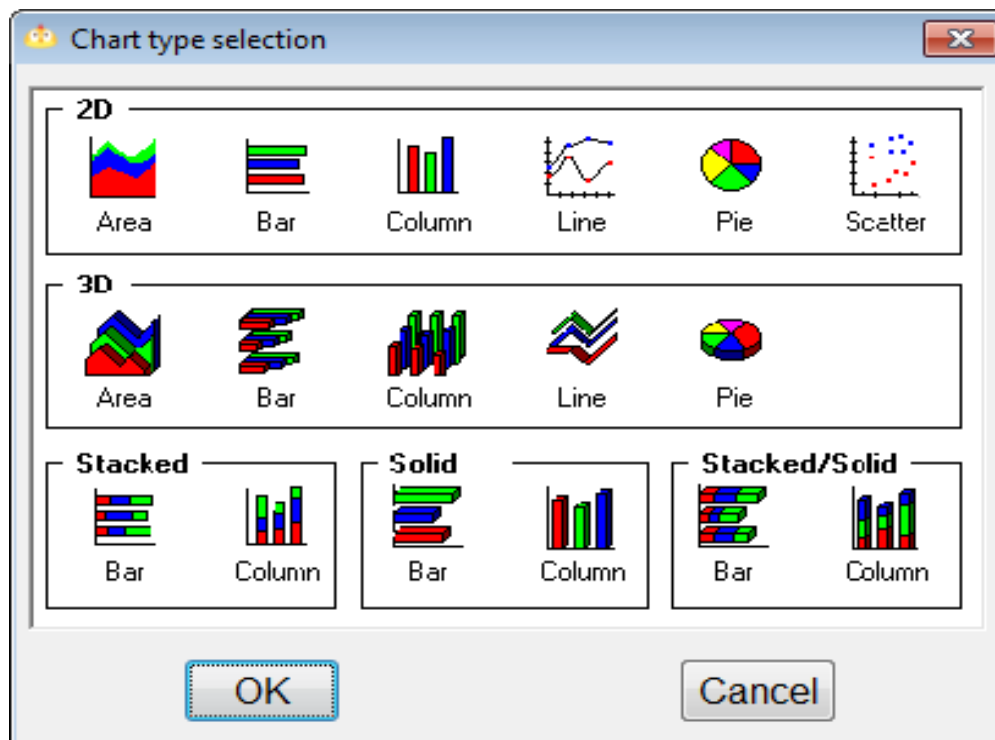
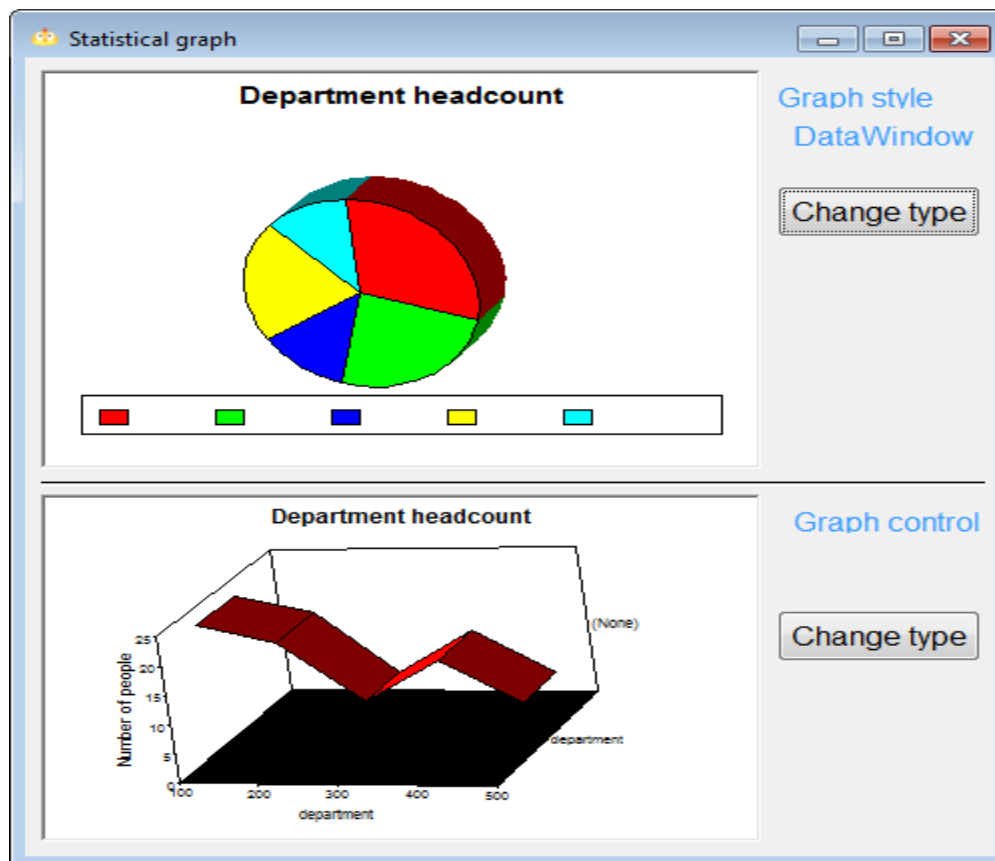
Department number	Department name	Department manager
100	R & D	501
200	Sales	902
300	Finance	1293
400	Marketing	1576
500	Shipping	703

2.10 Data window print processing - PrintPreview/PrintPreview3 (The contents of PrintPreview and PrintPreview3 are the same, but there are some differences in implementation)

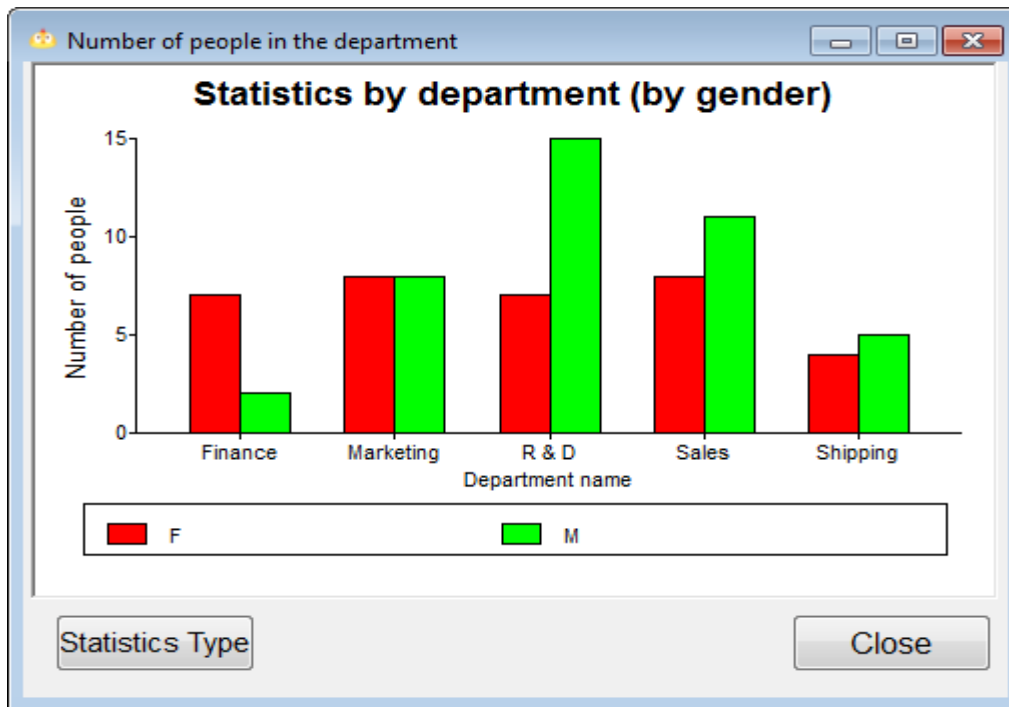




## 2.11 The dynamic change of the data window statistical graph type – GraphType



## 2.12 Realization of dynamic display of statistical graph values ??in data window – GraphValue



## 2.13 The encapsulation of the button in the data window – DwButton

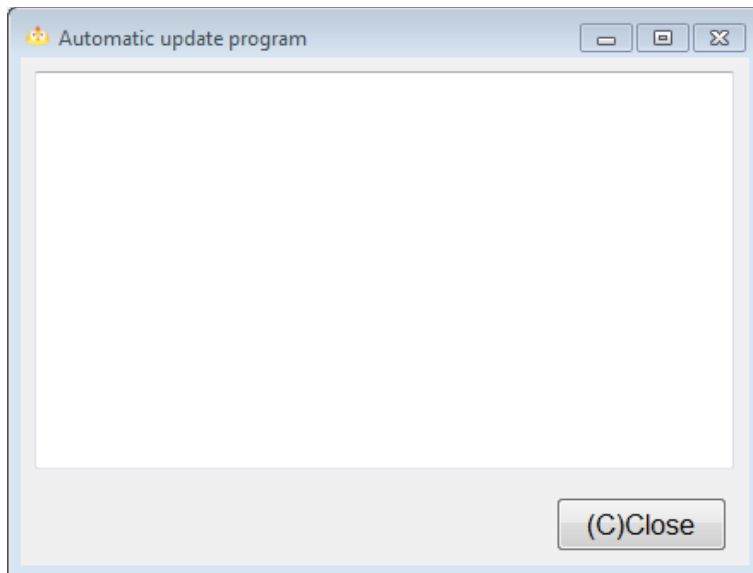
Automatic button data window

Employee ID	First Name	Last Name	Department	City	Phone	Salary	Birth
102	Fran	Whitney	100	Needham	(617) 555-3985	45,700.00	1962-01-01
105	Matthew	Cobb	100	Waltham	(617) 555-3840	62,000.00	1964-01-01
129	Philip	Chin	200	Atlanta	(404) 555-2341	38,500.00	1970-01-01
148	Julie	Jordan	300	Winchester	(617) 555-7835	51,432.00	1955-01-01
160	Robert	Breault	100	Milton	(617) 555-3099	57,490.00	1951-01-01
184	Melissa	Espinoza	400	Stow	(508) 555-2319	36,490.00	1943-01-01
191	Jeannette	Bertrand	500	Acton	(508) 555-8138	32,780.00	1968-01-01
195	Marc	Dill	200	Milton	(617) 555-2144	54,800.00	1967-01-01
207	Jane	Francis	400	Concord	(508) 555-9022	53,870.00	1975-01-01
243	Natasha	Shishov	100	Waltham	(617) 555-2755	72,995.00	1953-01-01
247	Kurt	Driscoll	100	Waltham	(617) 555-1234	48,023.69	1959-01-01
249	Rodrigo	Guevara	100	Framingham	(508) 555-0029	42,998.00	1960-01-01
266	Ram	Gowda	100	Natick	(508) 555-8722	59,840.00	1951-01-01
278	Terry	Melkisetian	100	Watertown	(617) 555-5188	48,500.00	1970-01-01
299	Rollin	Overbey	200	Emeryville	(510) 555-7255	39,300.00	1968-01-01
316	Lynn	Pastor	100	Burlington	(617) 555-2001	74,500.00	1966-01-01
318	John	Crow	400	Watertown	(617) 555-3332	41,700.75	1966-01-01

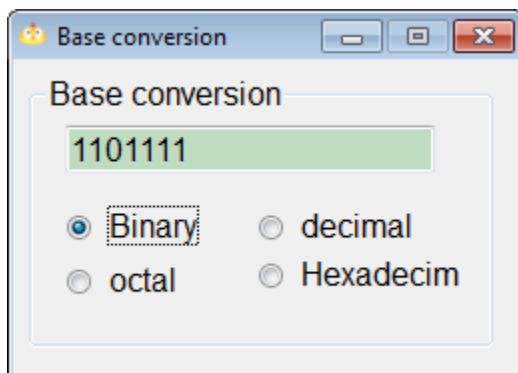
Search Home Previous Next Last Add Insert Delete Save Print

## Chapter 3 PowerShell

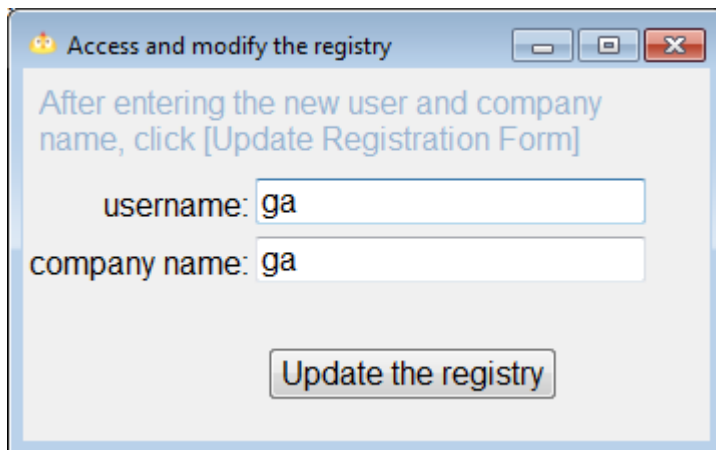
### 3.2 Realize the automatic upgrade of the client program – CSUPgrade



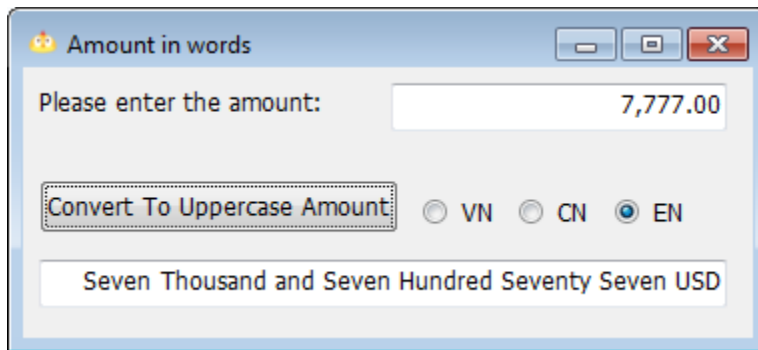
### 3.3 Base Conversion – NumberConvert



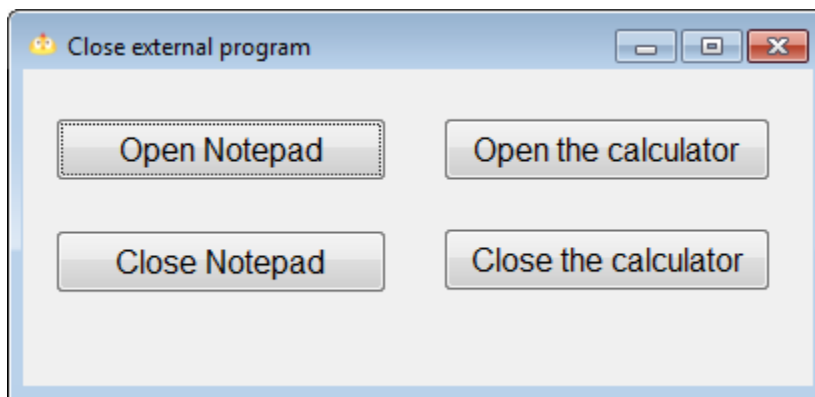
### 3.4 Registry function application – Regedit



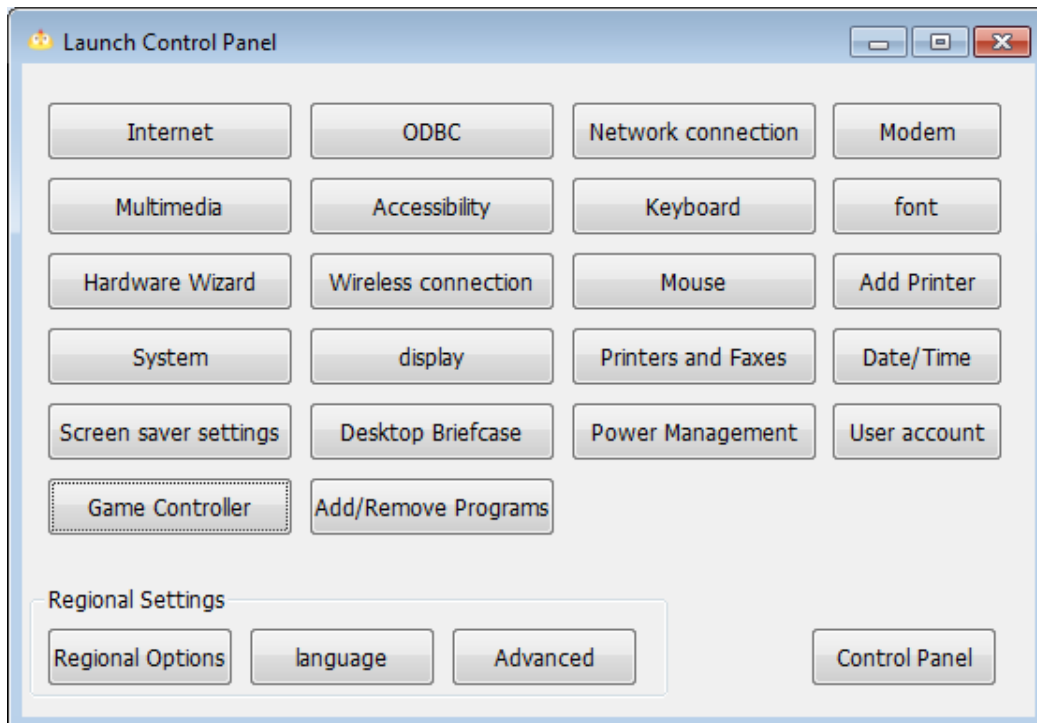
### 3.5 RMB uppercase conversion function – AmountUpdper



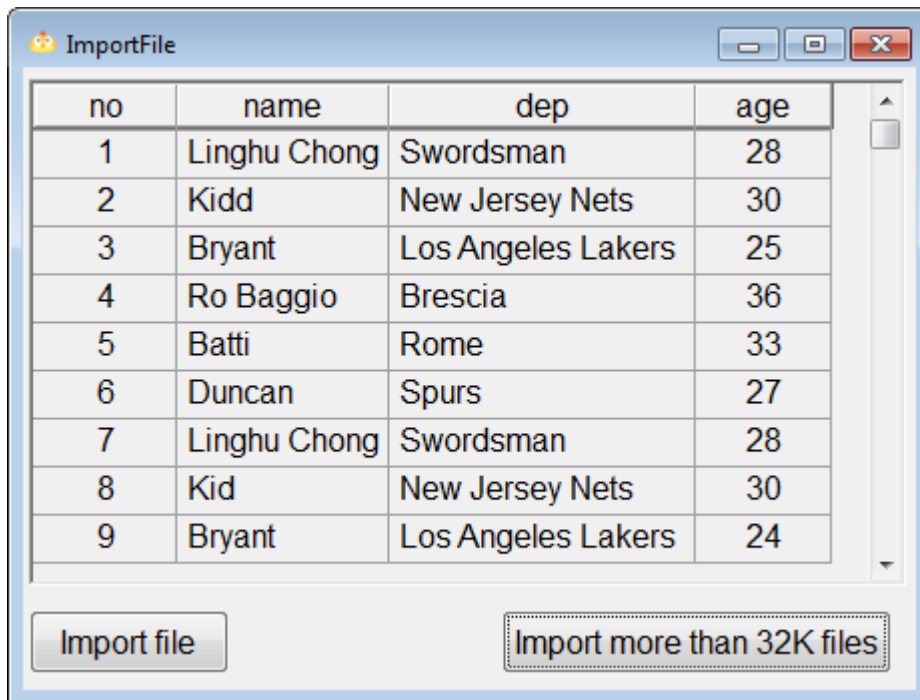
### 3.6 Close the external program in the application – CloseApp



### 3.7 Start the control panel project in the application – RunControl



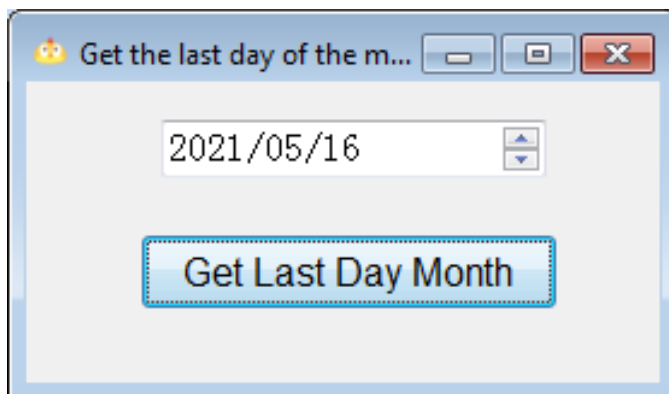
### 3.8 Import Data Window for Non-Tab Delimited Text File – ImportFile



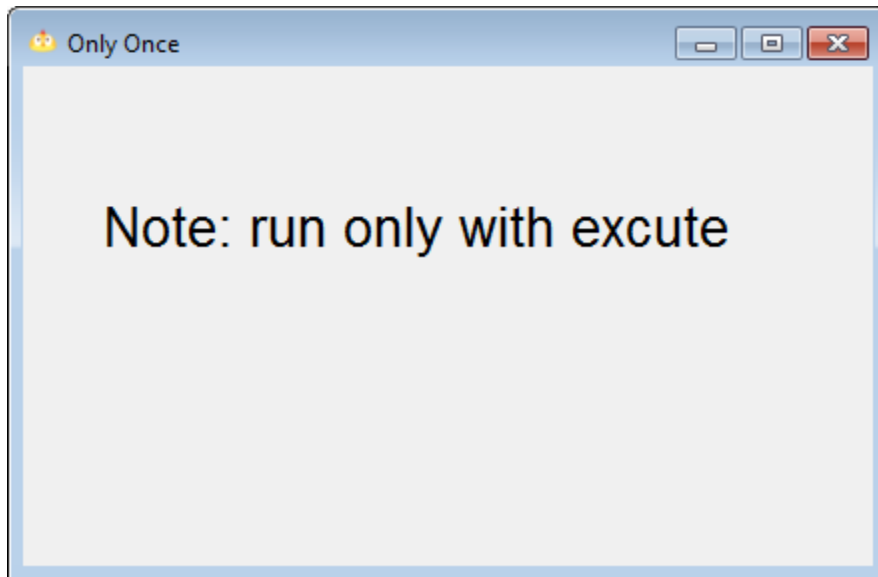
### 3.9 Run the compiled program with parameters – CommandParm

File Name	Modified	Type	Size
chicken.ico	1/14/2020 10:39 PM	Icon File	301 KB
myapp.exe	5/17/2021 10:48 PM	Application	331 KB
myapp.pbd	5/17/2021 10:48 PM	PBD File	9 KB
myapp.pbl	5/17/2021 10:48 PM	PBL File	13 KB
myapp.pbt	6/30/2001 9:20 PM	PBT File	1 KB
myapp usr.opt	5/17/2021 10:34 PM	OPT File	1 KB
myapp_mig.log	5/16/2021 9:14 PM	Text Document	0 KB

### 3.10 Get the last day of the month function – GetLastDay

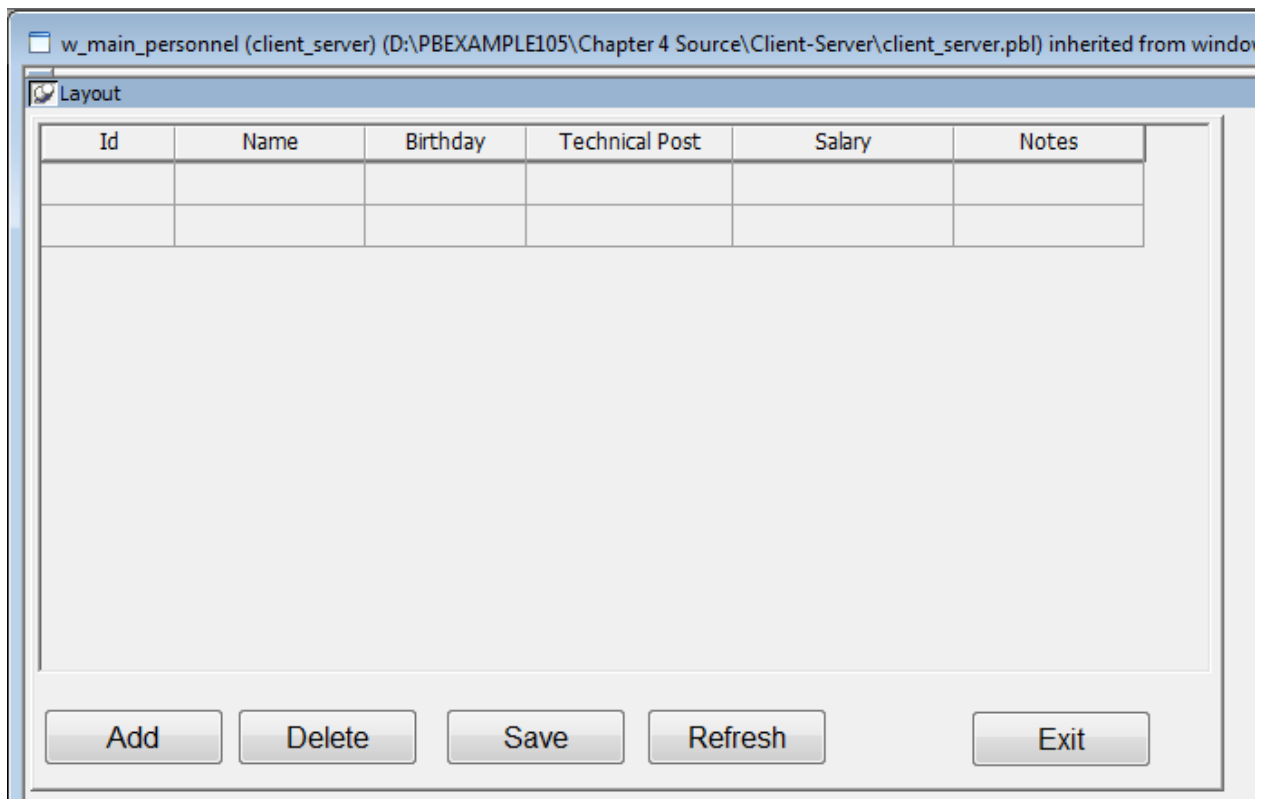


3.11 Restrict the same program to run multiple times - OnlyOnce Resource file used in this chapter – pic

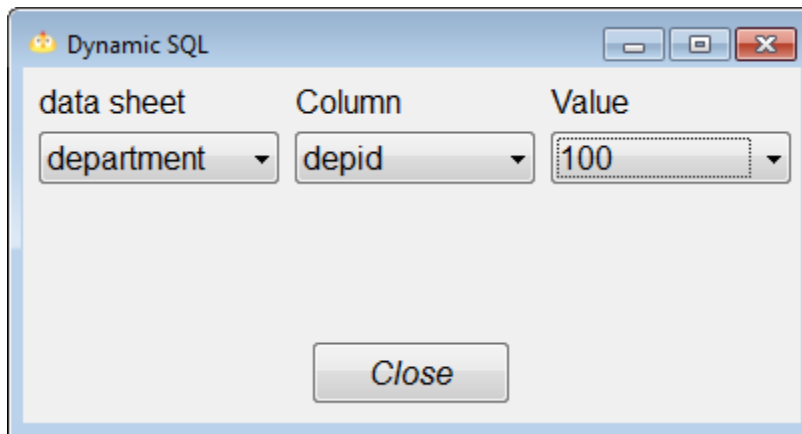


## Chapter 4 Database and SQL

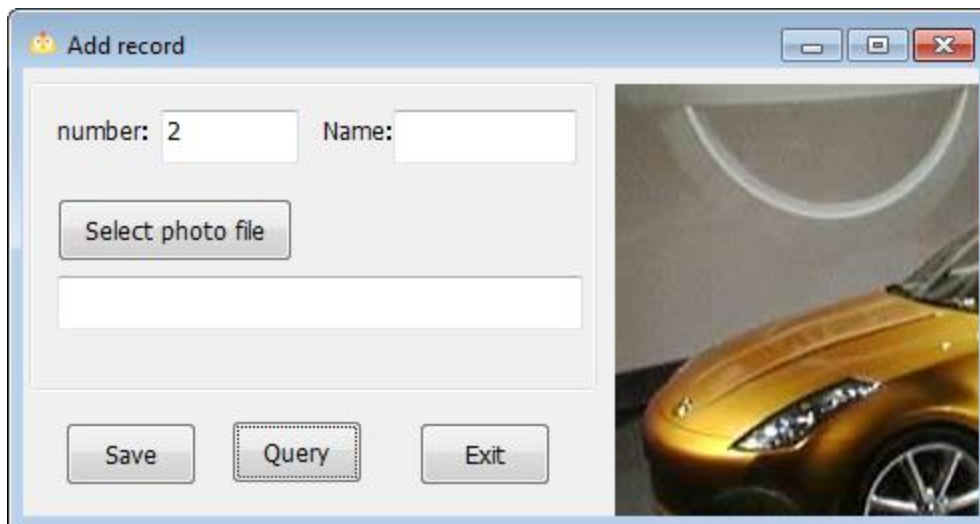
### 4.2 PowerBuilder + ASA8 C/S programming - Client-Server



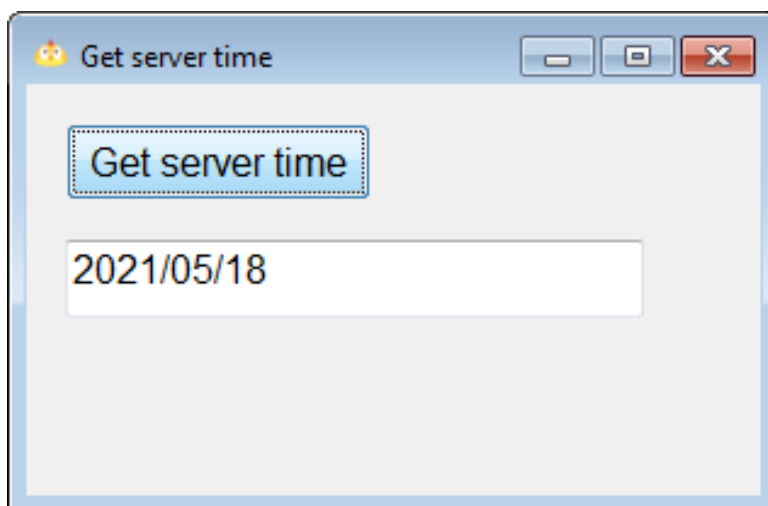
#### 4.4 Dynamic SQL and its application – DynamicSQL



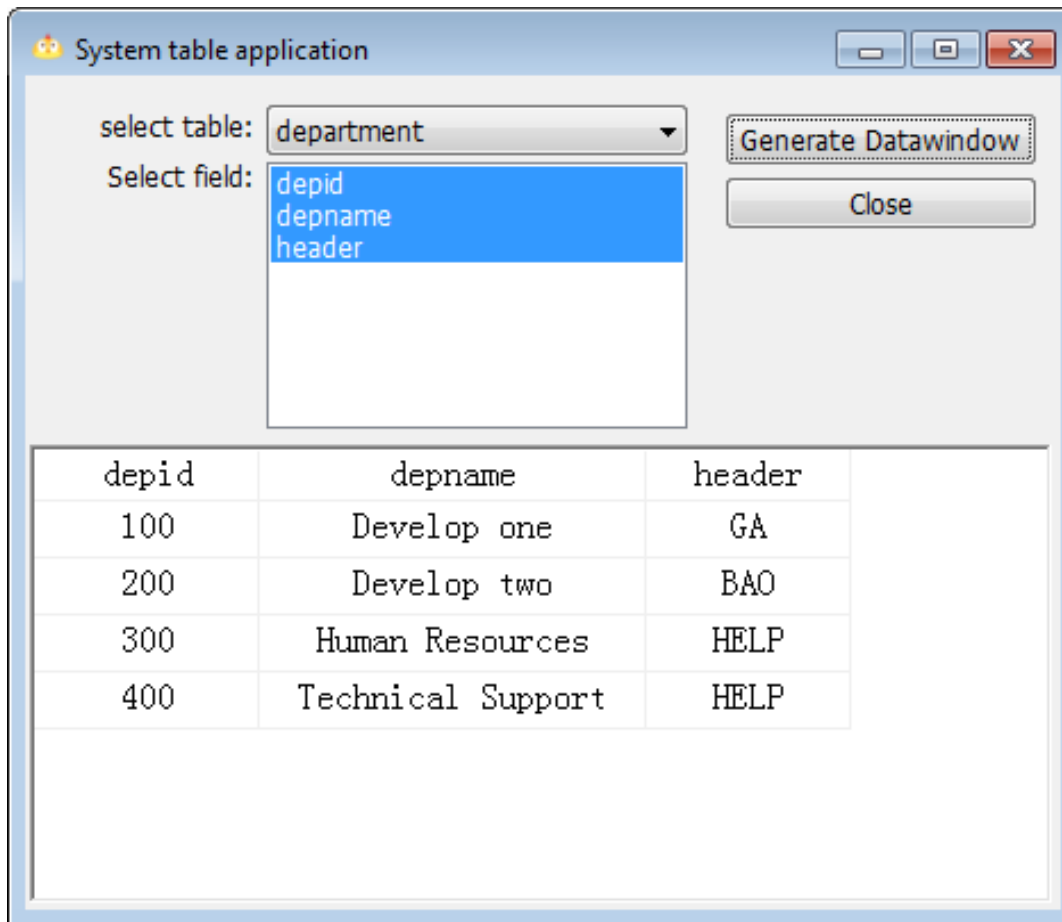
#### 4.5 Accessing Binary Large Objects – Blob



#### 4.6 PowerBuilder application gets server time – GetServerTime



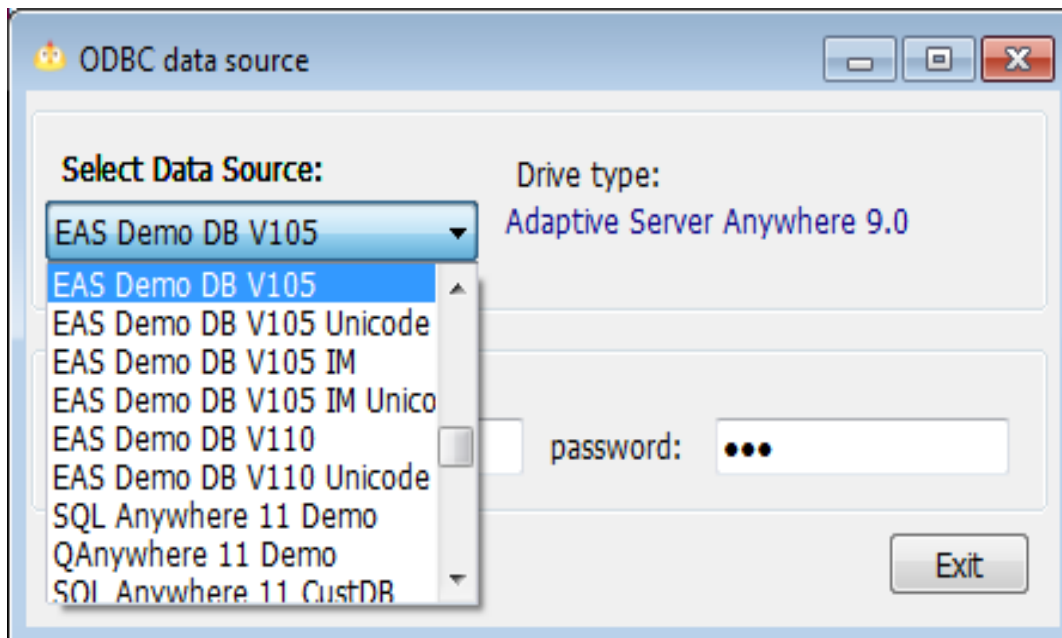
#### 4.7 PowerBuilder extended attribute system table and its application – SystemTable



The dialog box titled "System table application" features a "select table:" dropdown menu with "department" selected. Below it, a "Select field:" list box contains "depid", "depname", and "header", with "depid" selected. To the right are "Generate Datawindow" and "Close" buttons. At the bottom, a table displays the data from the selected table and fields.

depid	depname	header
100	Develop one	GA
200	Develop two	BAO
300	Human Resources	HELP
400	Technical Support	HELP

#### 4.8 Connect to any ODBC data source – ODBCList



The dialog box titled "ODBC data source" includes a "Select Data Source:" dropdown menu with "EAS Demo DB V105" selected. A list box below it shows the available data sources. To the right, the "Drive type:" is set to "Adaptive Server Anywhere 9.0". There is a "password:" field with masked characters and an "Exit" button.

Select Data Source: EAS Demo DB V105

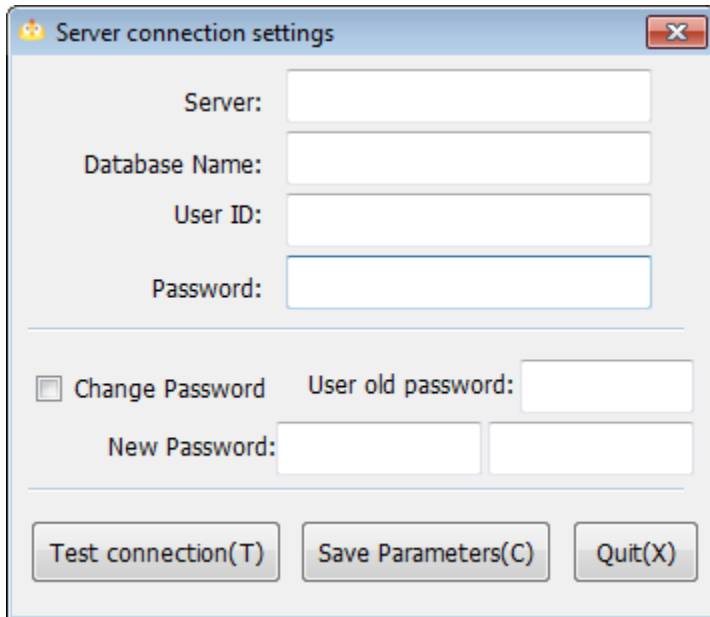
Drive type: Adaptive Server Anywhere 9.0

password: ...

Exit



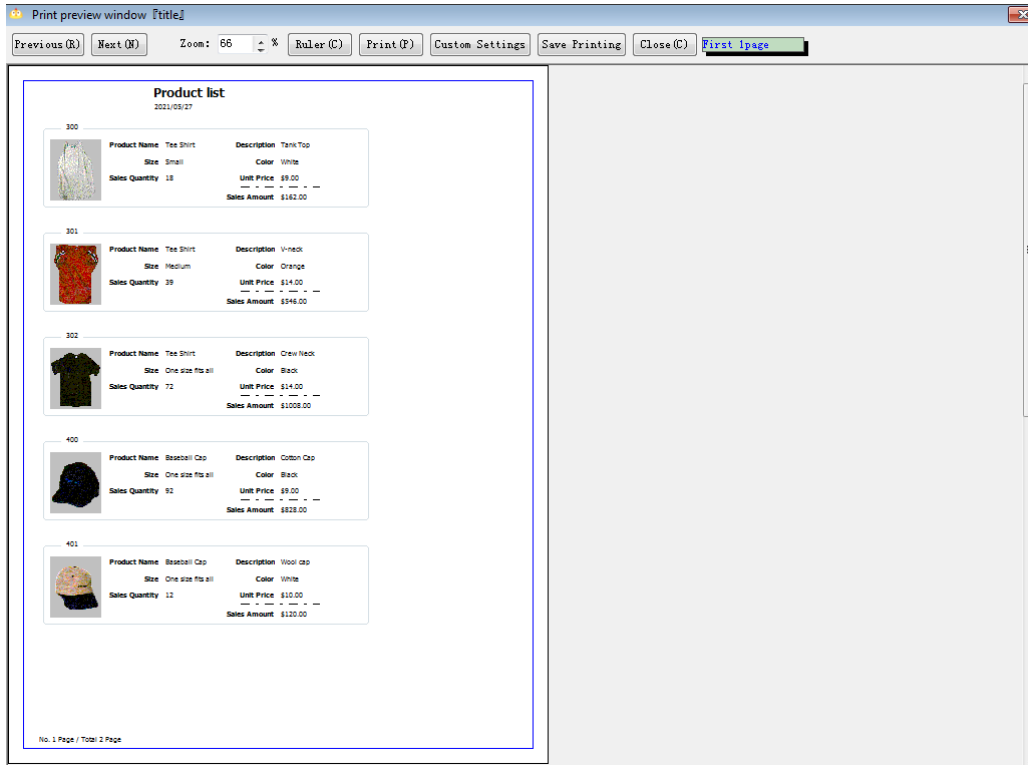
#### 4.9 Database connection with customizable parameters – ServerSet



A dialog box titled "Server connection settings" with a close button (X) in the top right corner. It contains four input fields for "Server:", "Database Name:", "User ID:", and "Password:". Below these is a section for password management with a checkbox "Change Password" and a "User old password:" field. The "New Password:" field is split into two adjacent boxes. At the bottom are three buttons: "Test connection(T)", "Save Parameters(C)", and "Quit(X)".

### Chapter 5 Printing Topics

#### General printing example – Print



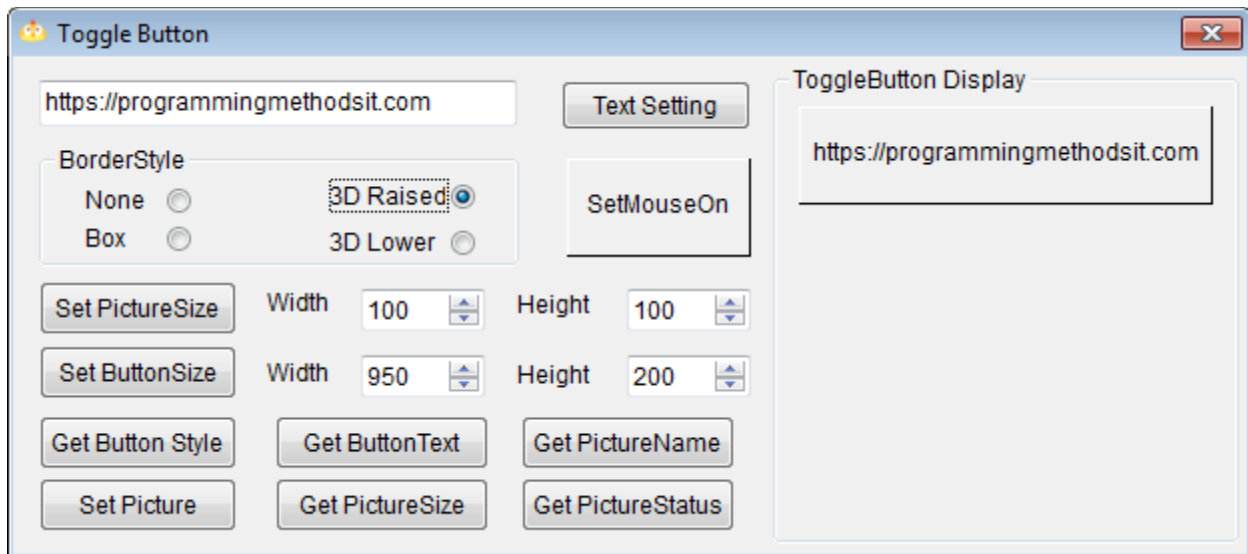
A print preview window titled "Print preview window [Title]" with a toolbar containing buttons for "Previous (R)", "Next (D)", "Zoom: 66 %", "Ruler (C)", "Print (P)", "Custom Settings", "Save Printing", "Close (C)", and "First Page". The main content area displays a "Product list" for the date "2021/05/27". The list contains five items, each with a small image, a table of details, and a sales summary.

Product ID	Product Name	Description	Size	Color	Sales Quantity	Unit Price	Sales Amount
300	Tee Shirt	Tank Top	Small	White	18	\$9.00	\$162.00
301	Tee Shirt	V-neck	Medium	Orange	39	\$14.00	\$546.00
302	Tee Shirt	Crew Neck	One size fits all	Black	72	\$14.00	\$1008.00
400	Baseball Cap	Cotton Cap	One size fits all	Black	92	\$9.00	\$828.00
401	Baseball Cap	Wool cap	One size fits all	White	12	\$10.00	\$120.00

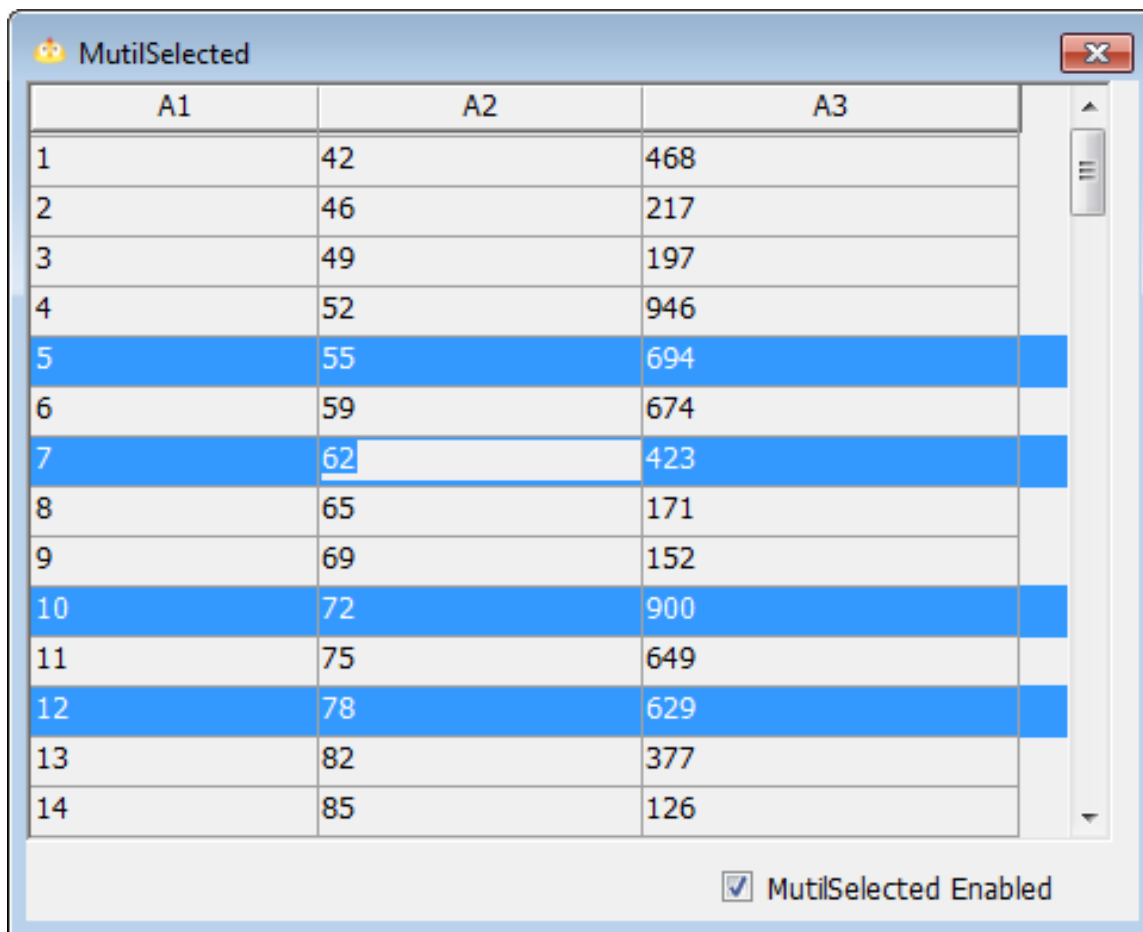
No. 1 Page / Total 2 Page

## Chapter 6 User Objects

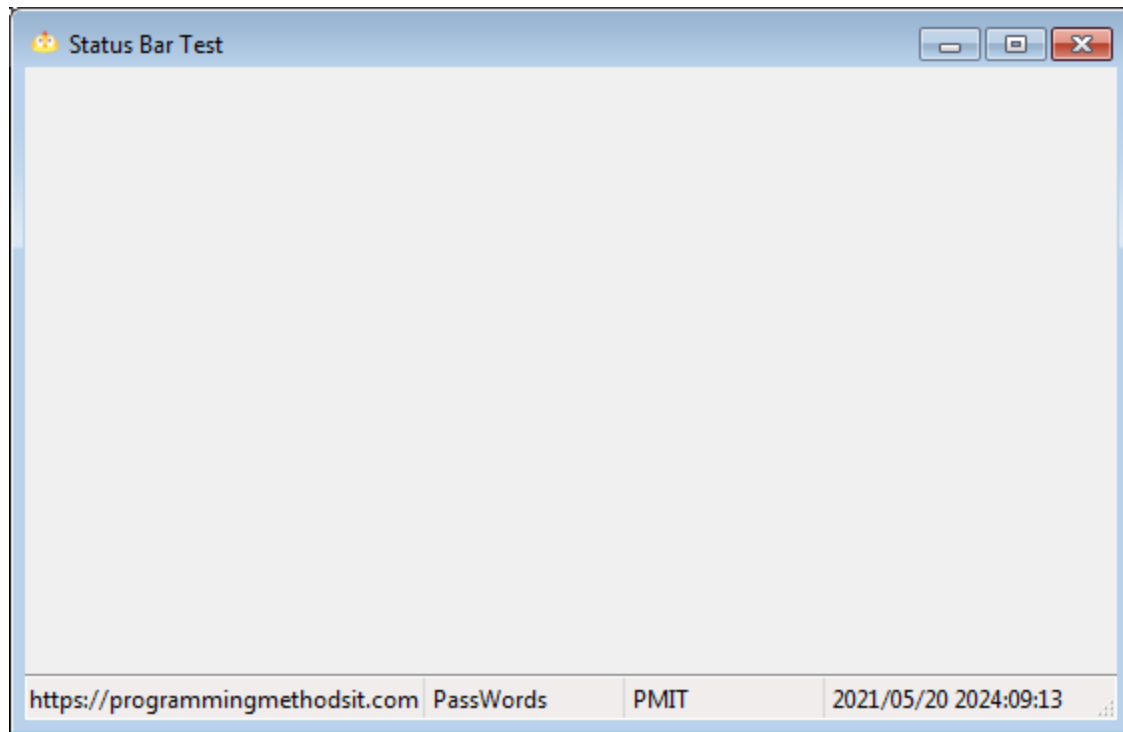
### 6.1.1 Create a customized user object (create a pop-up button) – ToggleButton



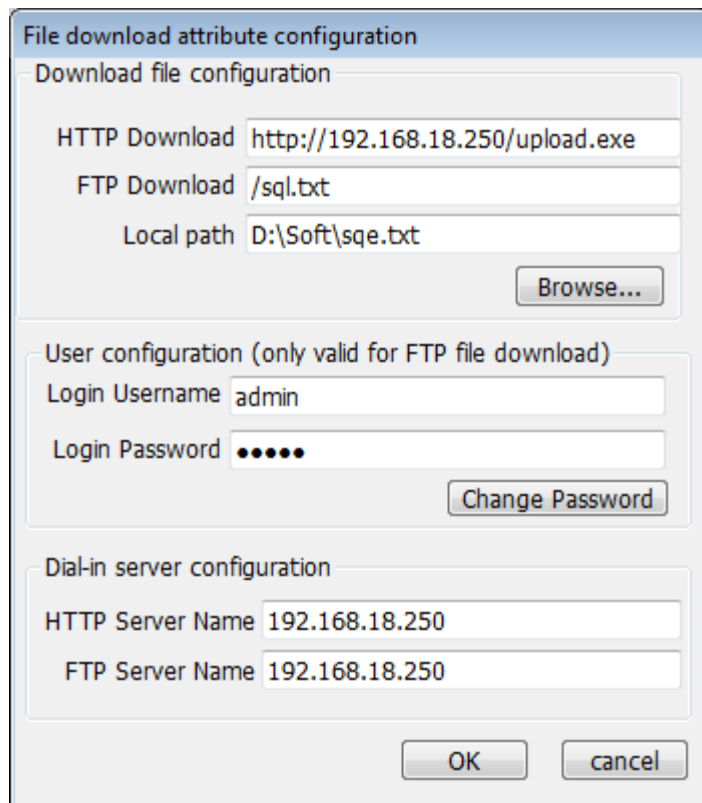
### 6.1.2 Create a standard visual user object (extended data window) – Datawindow



### 6.1.3 Create a visual external user object (status bar) – StatusBar

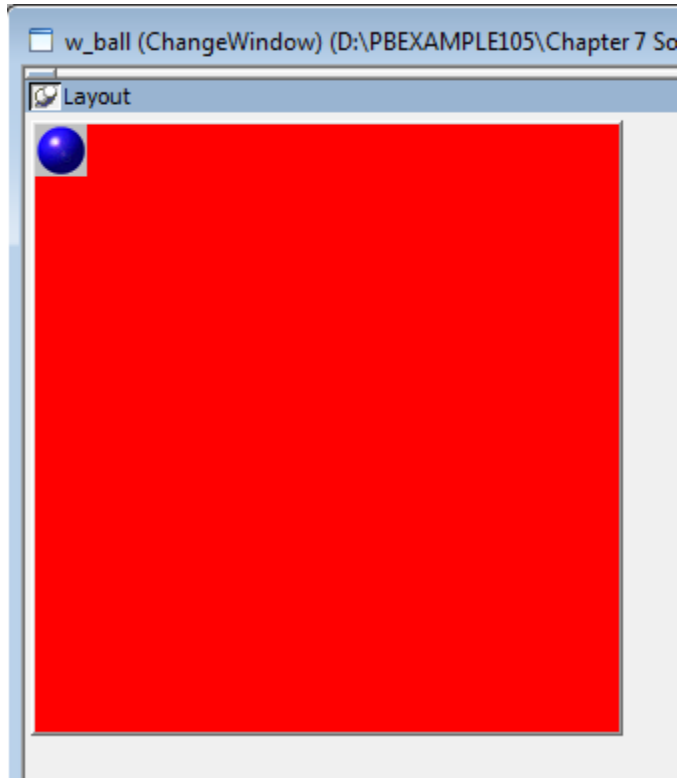


### 6.2.2 Create a general invisible user object (FTP application) – Ftp



## Chapter 7 API

### 7.2.1 Change the display style of the window – ChangeWindow



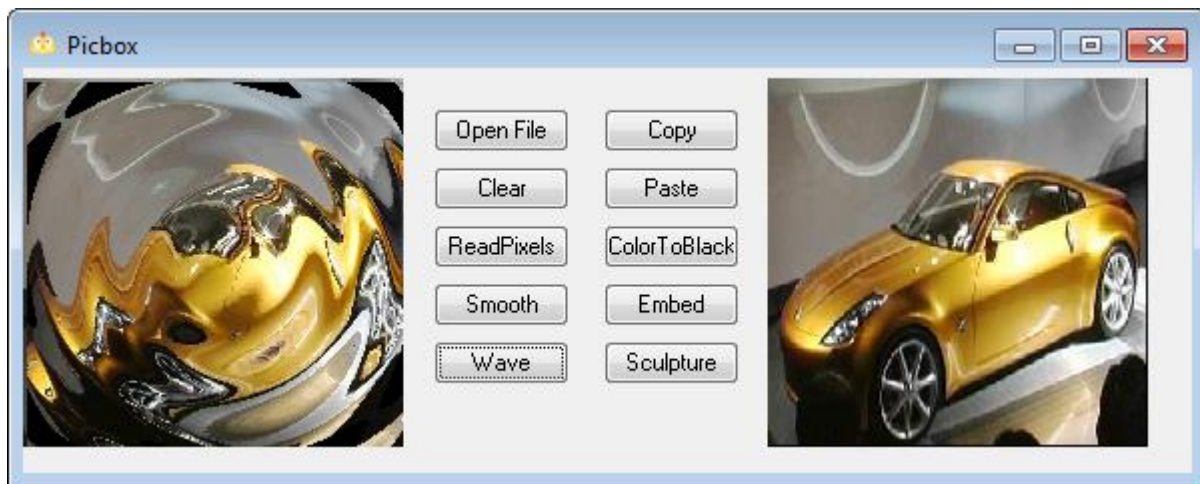
### 7.2.2 Make the picture of the window transparent – TransWindow



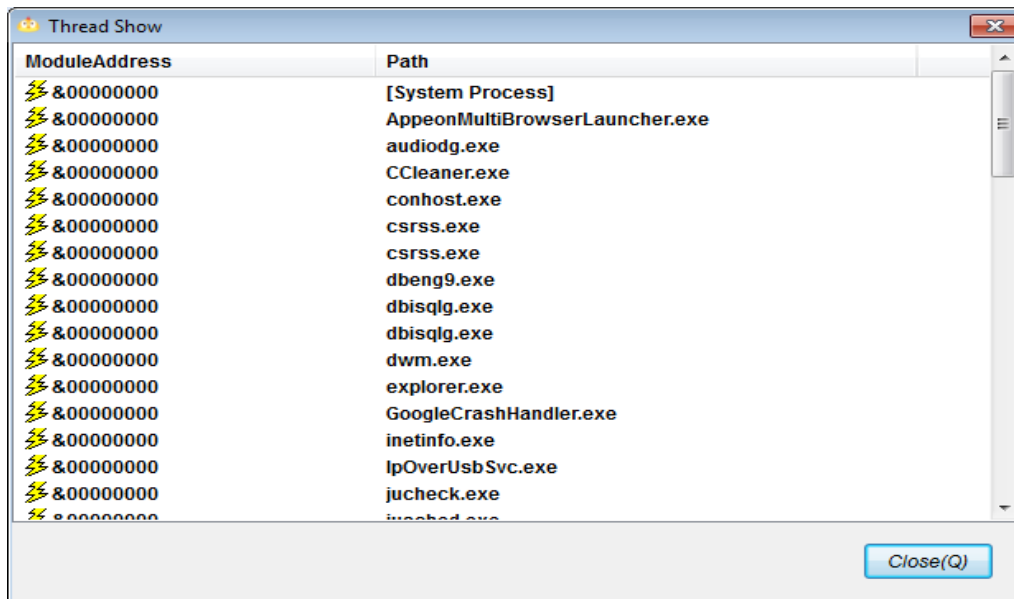
### 7.2.3 Change the closing style of the window – CloseStyle

chicken.ico	1/14/2020 10:39 PM	Icon File	301 KB
CloseStyle.pbt	9/5/2001 1:24 AM	PBT File	1 KB
CloseStyle usr.opt	5/20/2021 10:48 PM	OPT File	1 KB
CloseStyle_mig.log	5/20/2021 9:40 PM	Text Document	1 KB
closew.exe	5/20/2021 10:51 PM	Application	331 KB
closewindow.pbd	5/20/2021 10:51 PM	PBD File	23 KB
closewindow.pbl	5/20/2021 10:51 PM	PBL File	39 KB

### 7.2.4 Realize the copy and paste of graphics and simple processing of images in PB – PictureBox



### 7.3.1 Get the internal process of the system - System Thread



### 7.3.2 Obtain basic system information – SystemInformation

The screenshot shows the 'System Information' window with the title 'System Information UserObject'. It contains two columns of system properties, each with a button to refresh the value.

Property	Value
GetComputerName:	BAOGAPB-PC
GetCpuInformation:	Cpu ID: x86 Family 6 Model 6C
GetCpuStatus:	0
GetDriverType:	a:\ Drive Does Not exist
GetLoginID:	Administrator
GetMacAddress:	8,0,39,118,145,70
GetMemory:	dmemoryload = 35%
GetMhz:	3579545
GetOSVersion:	Windows NT Work Station
GetServicePack:	
GetSystemDir:	C:\Windows\system32
GetTempDir:	C:\Users\ADMINI~1\AppData\Loc
GetSystemInfo:	NumberofProcessors = 1
GetTickCount:	0 H 58 M 31 S
GetKeyBoardType:	Japanese keyboard
GetWindowMode:	Normal Mode
GetWindowDir:	C:\Windows
GetWaveDevice:	1
GetIPAddress:	169.254.215.205
GetNetCard:	
GetDiskInfo:	

Driver	File System	Volume Name	Volume Serial Number	Mount Point
c:\	NTFS		2890826058	25
d:\	NTFS	DATA	751130785	25
f:\			0	0

### 7.4.1 Checking the connectivity of the physical network – Mping

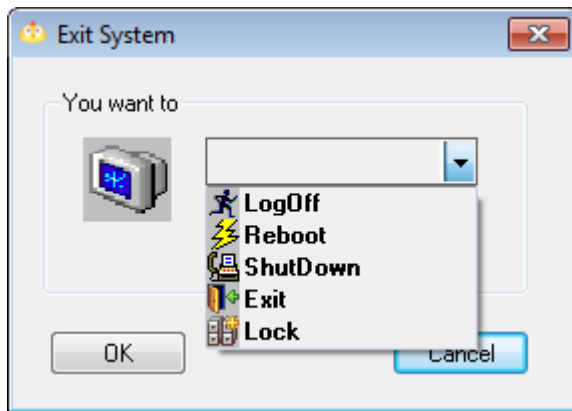
The screenshot shows the 'MPING' window. It has input fields for 'Start IP Address' (192.168.1.1) and 'End IP Address' (192.168.1.10). Below is a table of ping results.

IP Address	Status
192.168.1.1	Ping Successful
192.168.1.2	Ping Successful
192.168.1.3	Ping Failure
192.168.1.4	Ping Failure
192.168.1.5	Ping Failure
192.168.1.6	Ping Failure
192.168.1.7	Ping Failure
192.168.1.8	Ping Failure

Computer connectiong completed

[Ping] [Stop] [Exit]

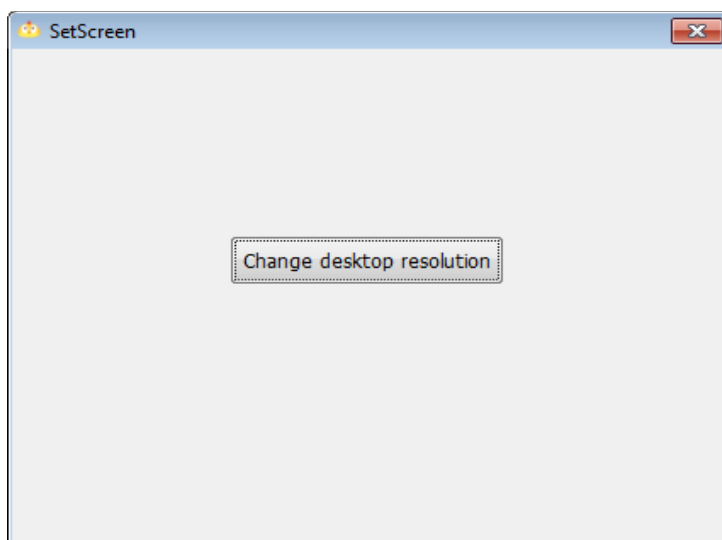
#### 7.4.2 Shut down, restart, log off the computer – ExitWindow



#### 7.5.1 Use Visual C++ to develop dynamic link library - DllForPb9



#### 7.5.2 Use Delphi to develop dynamic link library – SetScreen



### 7.5.3 Use Visual Basic to develop ActiveX dynamic link library - CPUInfo

## Chapter 8 pipeline

Data pipeline - pipeline

## Chapter 9 DDE, OLE, COM Use Technology

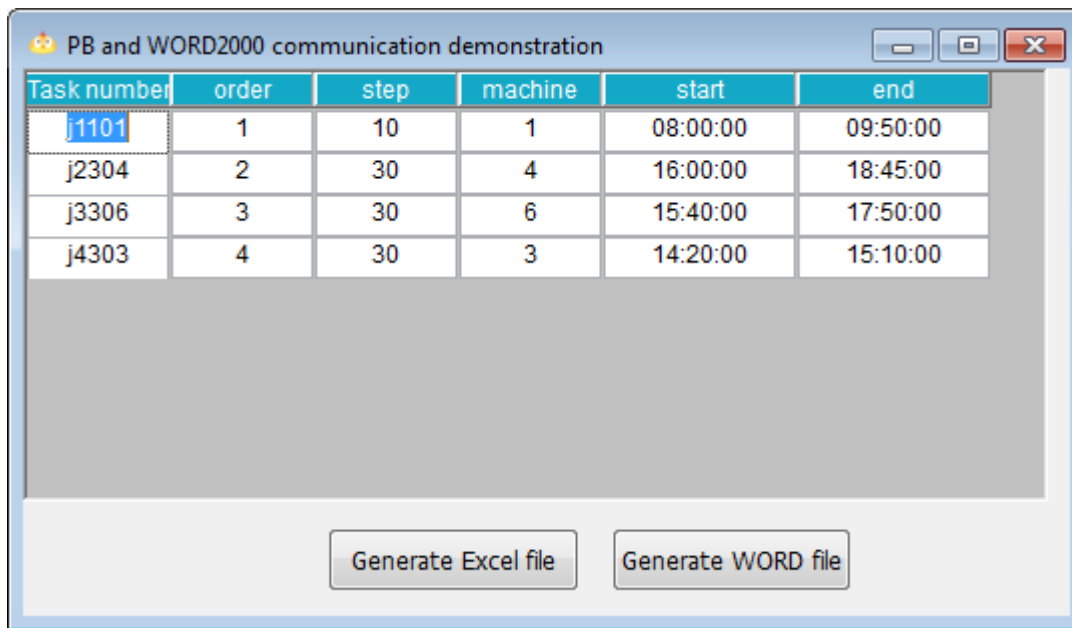
### 9.1.3 DDE client implementation steps – DDE

Customer	First Name	Last Name	Address
101	Michaels	Devlin	3114 Pioneer Avenue
102	Beth	Reiser	1033 Whippany Road
103	Erin	Niedringhaus	1990 Windsor Street
104	Meghan	Mason	550 Dundas Street East
105	Laura	McCarthy	1210 Highway 36
106	Paul	Phillips	2000 Cherry Creek N. Dr.
107	Kelly	Colburn	18131 Valico Parkway
108	Matthew	Goforth	11801 Wayzata Blvd.
109	Jessie	Gagliardo	2800 Park Avenue
110	Michael	Agliori	13705 North Glebe Road
111	Dylan	Ricci	14700 Prosperity Avenue
112	Shawn	McDonough	15175 S Main Street

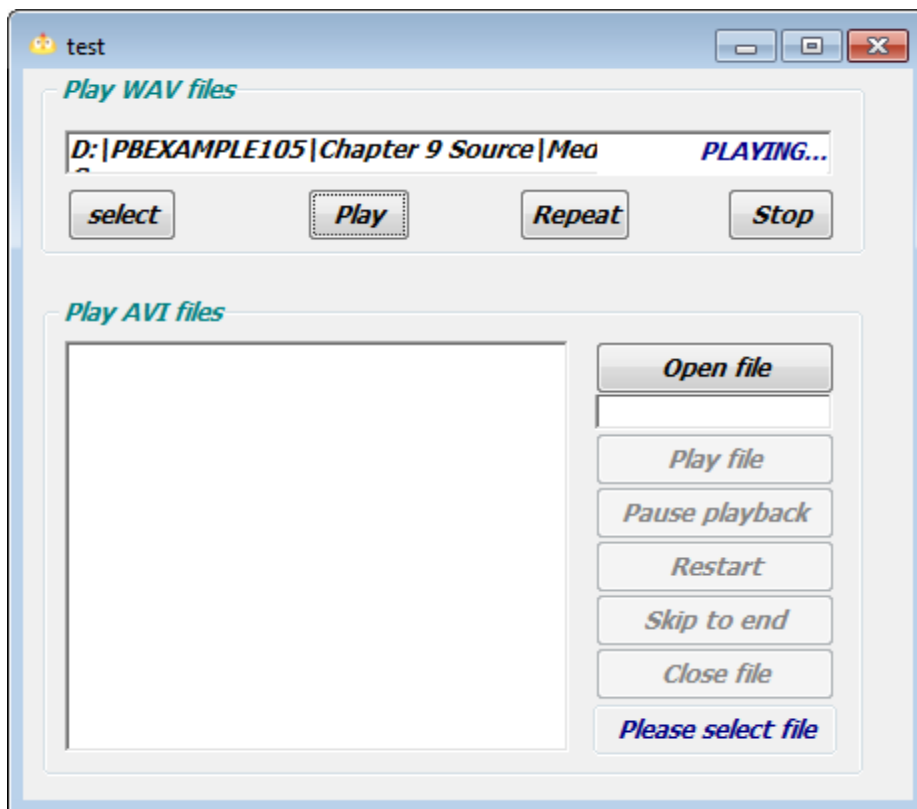
Open Excel      DDE Generate Excel     

### 9.2.5 Invisible OLE objects – pbtowordandexcel

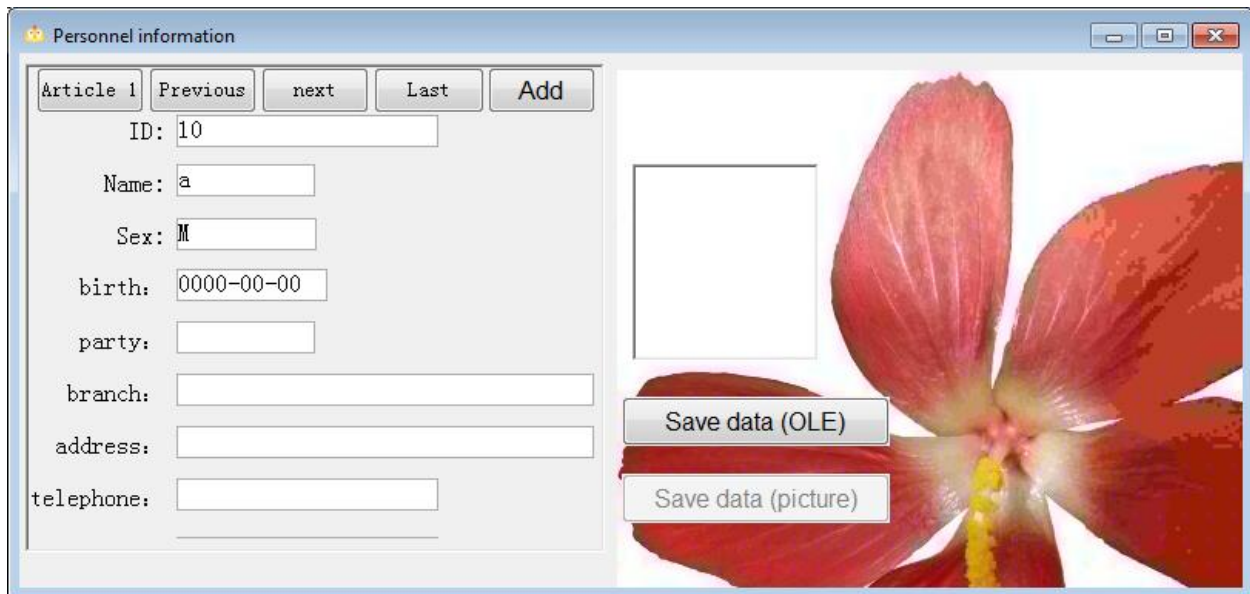




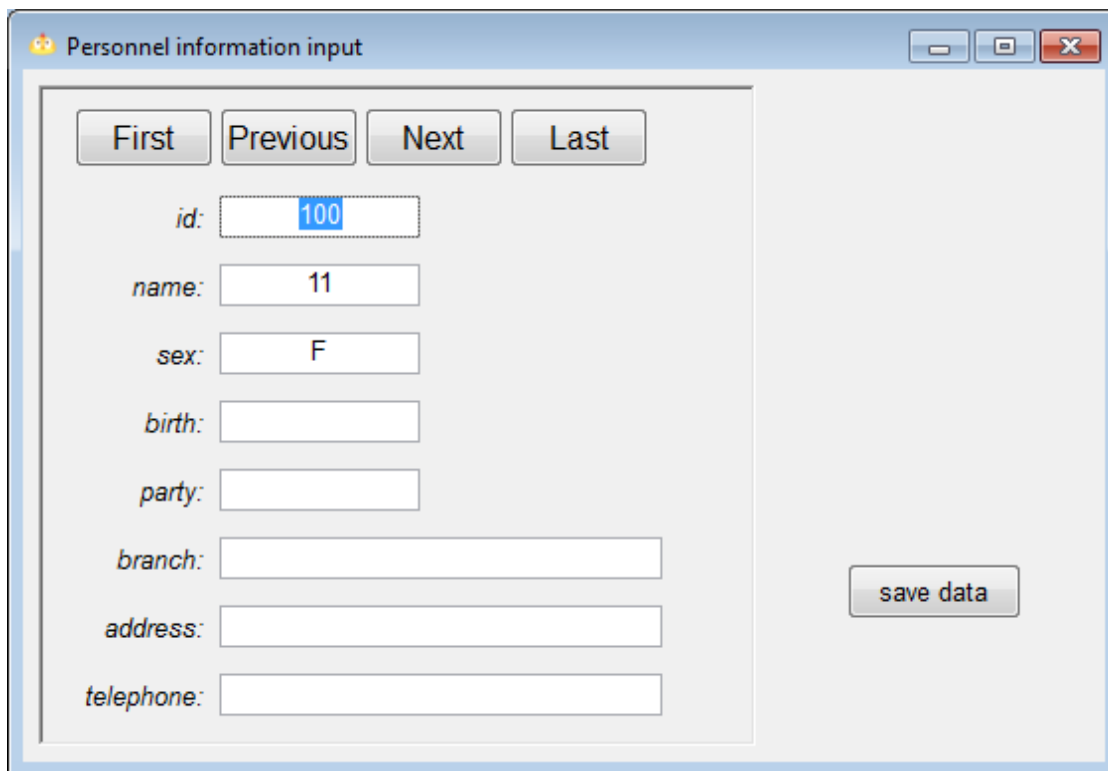
#### 9.2.6 ActiveX Control – Media



#### 9.2.7 Use external OLE controls to process binary data in the database – DBOLE



### 9.3.3 COM component implementation in PowerBuilder - pb9com



## Chapter 10 Compilation and Distribution

### Compile - TestInstall

## Chapter 11 Jaguar

Contains the source program of two examples of developing Jaguar components and calling Jaguar components

## Chapter 12 PBNI

PBNI application technology - PBNI