

User Interface Resources

Constructing an application starts by deciding the use of different UI resources. There are many different UI resources in our system that can be used for designing different layouts of the applications. The following table lists all UI resources provided by our system. In this chapter, the resources are introduced. The behavior, different styles, user-input parameters, comments and event flows are presented.

1. FORM

1a. UI Object Type

This is under the category of FORM object type.

1b. Characteristics and Behavior

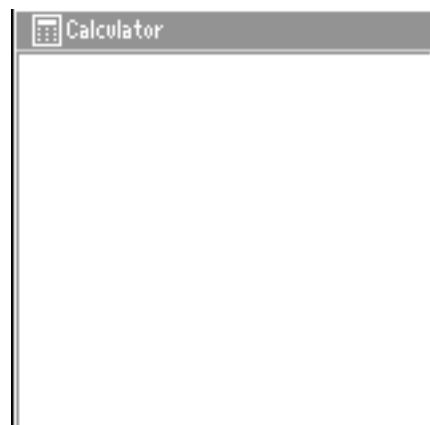
FORM resource is a container-type object. It acts like a container to contain other UI objects. The UI objects, which are on the form, can be placed in all positions within the bounds of their corresponding form object. Form resource can be viewed as one page of an application and it is the basic unit in the structure of an application.

1c. Styles

By default, form resources contain four different types: Background, Normal, Bitmap dialog and Non-bitmap dialog. Base on the requirement of the applications to select the type.

A background form basically is a floor ground, contains other UI objects on it.

i) A normal form can be as large as the screen with default layout, all the applications should preset with this kind of form. (Form Style = NORMAL)



Dialog box title	Title of that form. Actually all the normal, bitmap dialog and non-bitmap dialog should have a title. By convention, the name of the application and the name of the screen, if possible, for example Calculator . The title of the particular form must be single line, and depend on the type of the form its may use different number of pixels of the top of the form.
Form Bitmap	All Normal forms and bitmap dialogs will contain a bitmap on the upper left corner of the form. Used for icons in Alert dialogs to indicate a warning, error, information and so on. You have to associate a Bitmap with the Form Bitmap to actually make a picture appear on the form. This parameter contains the bounds and the pointer of the predefined bitmap on the given form.
Number of Objects in form	Indicate the number of objects in a particular form.
Object list	A list to contain all the ObjectID and the relative object types of the object in the particular form.

1e. Comments

The whole display is 160 pixels by 160 pixels. To display the whole form on screen, make sure your diagrams are fitted within this display area.

A form is the Graphic User Interfaces area for each view of any applications. For example the To Do List application offers a Listing Records screen, Editing Records screen, Alarm Editing screen and so on. Each application has to have at least one form, and most applications have more than one. To actually create the display diagram on screen, you have to organize all the related UI elements to the form. This can be done simply by adding the ObjectID and Object type of the related object to the object list of the specified form object.

Each form should have a title that displays the name or view of the application, or both.

Normal forms, Bitmap dialogs and Non-bitmap dialogs always occupy the full width of the screen. Bitmap and Non-bitmap dialogs display in the middle of original form, they appear to indicate a warning, confirmation, Information and Error to the users. They hide the original area and all the command buttons of the base form are disabled and not response to the pen action.

2. BITMAP

2a. UI Object Type

This is under the category of BITMAP object type.

2b. Characteristics and Behavior

Bitmap resource is a UI object that can be used to place a predefined bitmap onto a form or can be used as an icon. It has the behavior of a button. It means that action is taken when a pen is clicked and lifted within the bounds of the object. Therefore, bitmap object is useful if a customizable button is required.

When the bitmap object is being pressed, the display of the bitmap object is inverted in color or a complete different will be shown up. It depends on the choice of the style of the bitmap object.

The following diagram is an example of a bitmap object:



2c. User Input Parameters

Object type	To specify the type of the specified UI Object.
Related table	To indicate the button is pasted into a table or not. \$FFFF = the particular bitmap not belongs to a table or the ObjectID of the table that belongs to.
X coordinate	Screen-relative position of left side of the bitmap. Valid values: 0 ~ 159.
Y coordinate	Screen-relative position of top of the bitmap. Valid values: 0 ~ 159.
Height	Height of the bitmap in pixels. Valid values: 1 ~ 160.
Width	Width of the bitmap in pixels. Valid values: 1~ 160.

Bitmap style	Define the style of the bitmap object. For example: BITMAP_STYLE_0 = When the bitmap is clicked, the bitmap is inverted. BITMAP_STYLE_1= When the bitmap is clicked, another is pasted on it.
Bitmap 1	Contain the pointer to the predefined bitmap object 1. Normally bitmap object 1 is the original bitmap.
Bitmap 2	Contain the pointer to the predefined bitmap object 2. It contains the pointer to the secondary bitmap. If the particular Bitmap is clicked, then a secondary bitmap may use to paste on the screen instead.
Bitmap enable	An attribute to show whether the bitmap is already enabled on the display or not. Enable means the bitmap will response to the pen action.
Bitmap active	An attribute to show whether the bitmap is active on the display or not. Active means the bitmap is being used in this moment.
Bitmap visible	An attribute to show whether the bitmap is visible on the display or not.

3. BUTTON

3a. UI Object Type

This is under the category of CONTROL object type.

3b. Characteristics and Behavior

Button resource is a UI object that can be clicked and action will be taken. It can be seen as a switch to trigger something to happen in an application. When it is being pressed, the color of the button object is inverted in order to show that it is being clicked.

3c. Styles

BUTTON_STYLE_0 of a button displays as a text label without any frame around.

BUTTON_STYLE_1 of a button displays as a text label surrounded by a rectangular frame. The frame has rounded corners with text has regular size. The text can be selected displays at the left, right or in the middle of the frame. If the text is too long to be fully displayed in the frame, the characters of the text will be automatically minimized to make room to fit the remainder into the frame. Dot sign will then be added to the end of the remained characters.

The following diagram is an example of a button (subtype BUTTON_STYLE_1) with text aligned in the middle of the frame.



3d. User Input Parameters

Object type	To specify the type of the specified UI Object.
Related table	To indicate the button is pasted into a table or not. \$FFFF = the particular button not belongs to a table or the ObjectID of the table that belongs to.
X coordinate	Screen-relative position of left side of the button. Valid values: 0 ~ 159.
Y coordinate	Screen-relative position of top of the button. Valid values: 0 ~ 159.
Height	Height of the button in pixels. Valid values: 1 ~ 160.
Width	Width of the button in pixels. Valid values: 1~ 160.
Control style	Define the style of the control object. For example: BUTTON, PUSH_BUTTON, REPEAT_BUTTON, CHECKBOX, POPUP_TRIGGER
Control subtype	The pattern for each control style. There are two patterns for buttons: For example: BUTTON_STYLE_0 (No frame buttons) BUTTON_STYLE_1 (Button with predefined frame)

Control text	Text displayed inside the button, single line of text, or a single character in small font.
Control text alignment	Alignment of the text in the frame. For example: LEFT, CENTRE or RIGHT.
Control enable	An attribute to show whether the button is already enabled on the display or not. Enable means the button will response to the pen action.
Control active	An attribute to show whether the button is active on the display or not. Active means the button is being used in this moment.
Control visible	An attribute to show whether the button is visible on the display or not.
Button radius	Radius of the specified button. (This value should be set to 2 for gray design)
Button on color	Color of the button when it is on. For example: COLOR_WHITE, COLOR_GREY1, COLOR_GREY2, COLOR_BLACK
Button off color	Color of the button when it is off.

4. REPEAT BUTTON

4a. UI Object Type

This is under the category of CONTROL object type.

4b. Characteristics and Behavior

Repeat Button resource is a UI object that can be clicked and events of an application can be triggered continuously while the pen is held on the repeat button continuously. The display of a repeat button is a predefined bitmap. If it is pressed, then the bitmap will be inverted in color.

4c. Styles

A repeat button is an arrow or an arrow in the middle and surrounded by a rectangular frame. The frame has rounded corners. A good example for a repeating button is the scroll arrow.

The following diagram is 2 examples of repeat buttons:

i) Normal repeat button



ii) A repeat surrounded by a rectangular frame



4d. User Input Parameters

Object type	To specify the type of the specified UI Object.
Related table	To indicate the repeat button is pasted into a table or not. \$FFFF = the particular repeat button not belongs to a table or the ObjectID of the table that belongs to.
X coordinate	Screen-relative position of left side of the repeat button. Valid values: 0 ~ 159.
Y coordinate	Screen-relative position of top of the repeat button. Valid values: 0 ~ 159.
Height	Height of the repeat button in pixels. Valid values: 1 ~ 160.
Width	Width of the repeat button in pixels. Valid values: 1~ 160.
Control style	Define the style of the control object. (Set to REPEAT_BUTTON)
Control text	No text will be contains in the repeat buttons, so this value should be set to 0.
Control subtype	The pattern for each control style. There is only one pattern for repeat buttons so this value should be set to 0.
Control text alignment	No text will be contains in the repeat buttons, so this value should be set to 0.
Control enable	An attribute to show whether the repeat button is already enabled on the display or not. Enable means the repeat button will response to the pen action.

Control active	An attribute to show whether the repeat button is active on the display or not. Active means the button is being used in this moment.
Control visible	An attribute to show whether the repeat button is visible on the display or not.
Repeat Bitmap	Contains the pointer to the bitmap diagram.

5. CHECKBOX

5a. UI Object Type

This is under the category of CONTROL object type.

5b. Characteristics and Behavior

Checkbox resource is a clickable UI object. The main feature of checkbox resource is that a number of checkboxes can be grouped together. Then if one of them is selected, then all of the other checkboxes in the same group are unchecked automatically by the system. It is very useful and it saves lots of work. The appearance of a checkbox changes when it is being pressed. If the checkbox is checked and the pen goes onto it, then it appears as unchecked. On the other hand, it is vice versa if the checkbox is unchecked at the start.

5c. Styles

A check box is a small square control object with an optional text label beside the box.

The following diagram shows a clicked check box:

i) A check box is already clicked



5d. User Input Parameters

Object type	To specify the type of the specified UI Object.
Related table	To indicate the check box is pasted into a table or not. \$FFFF = the particular repeat button not belongs to a table or the ObjectID of the table that belongs to.

X coordinate	Screen-relative position of left side of the check box. Valid values: 0 ~ 159.
Y coordinate	Screen-relative position of top of the check box. Valid values: 0 ~ 159.
Height	Height of the check box in pixels. Valid values: 1 ~ 160.
Width	Width of the check box in pixels. Valid values: 1 ~ 160.
Control text	No text will be contains in the check box, so this value should be set to 0.
Control style	Define the style of the control object. (Set to CHECKBOX)
Control subtype	Same pattern for each control style. (Ignore this value)
Control text alignment	No text will be contains in the check box, so this value should be ignore.
Control enable	An attribute to show whether the check box is already enabled on the display or not. Enable means the check box will response to the pen action.
Control active	An attribute to show whether the check box is active on the display or not. Active means the check box is being used in this moment.
Control visible	An attribute to show whether the check box is visible on the display or not.
Check box group ID	The group id of the check box. Only one check box can be clicked in a time.
Control value	An On/Off value to show whether the check box is pressed or not.
Check box bitmap 1	Contain the pointer to the check box bitmap 1. Normally it contains the pointer to the original check box.
Check box bitmap 2	Contain the pointer to the check box bitmap 2. It contains the pointer to the secondary check box.

5e. Comments

All check boxes should have same size. The Height and width of the related box determine the toggle area, which provided the region to the user to press to check or uncheck the box. If a couple of check boxes is grouped, make sure that they have the same group id and only one check box in a group is initially checked.

6. POPUP TRIGGER

6a. UI Object Type

This is under the category of CONTROL object type.

6b. Characteristics and Behavior

Popup trigger resource is a UI object that provides a list of items for selection. When the popup trigger object is selected, then the list of selections will be pop up. The user can select an item from the list. There are also two little arrows in the pop up list (POPUP_TRIGGER_STYLE_1) when the number of items is more than the number of items that can be displayed. When the user clicks on the arrow, the list of items will be scrolled.

6c. Styles

POPUP_TRIGGER_STYLE_0 of a popup trigger displays as a text label without any frame around. A good example of this popup trigger is the priority numbers show on the “To Do List” application.

POPUP_TRIGGER_STYLE_1 of a popup trigger displays as a text label surrounded by a rectangular frame and an upside-down triangle on the right hand side of the label. The frame has rounded corners with text has regular size. The text can also be selected to display at the left, right or in the middle of the frame by the setting of the control_text_alignment attribute. If the text is too long to be fully displayed in the frame, the characters of the text will be automatically minimized to make room to fit the remainder into the frame. Dot sign will add to the end of the remained characters.

POPUP_TRIGGER_STYLE_2 of a popup trigger display similar to the Style 1, expect that the Style 2 without two little arrows in the popup list when the number of items is more than the number of items that can be displayed. So make sure that the number of items in the list will never more then the list can be displayed before select this style of the popup trigger.

The following diagram show an examples of POPUP_TRIGGER_STYLE_2 of a popup trigger:

i) A popup trigger before clicked.



ii) A popup trigger being clicked



6d. User Input Parameters

Object type	To specify the type of the specified UI Object.
Related table	To indicate the popup trigger is pasted into a table or not. \$FFFF = the particular popup trigger not belongs to a table or the ObjectID of the table that belongs to.
X coordinate	Screen-relative position of left side of the popup trigger. Valid values: 0 ~ 159.
Y coordinate	Screen-relative position of top of the popup trigger. Valid values: 0 ~ 159.
Height	Height of the popup trigger in pixels. Valid values: 1 ~ 160.
Width	Width of the popup trigger in pixels. Valid values: 1~ 160.
Control text	Text displayed inside the popup trigger, single line of text, or a single character in small font.
Control style	Define the style of the control object. (Set to POPUP_TRIGGER)
Control subtype	The pattern for each control style. There are three patterns for buttons: For example: POPUP_TRIGGER_STYLE_0 (No frame buttons) POPUP_TRIGGER_STYLE_1 and POPUP_TRIGGER_STYLE_2 (Button with predefined frame)
Control text alignment	Alignment of the text in the frame. For example: LEFT, CENTRE, RIGHT.

Control enable	An attribute to show whether the popup trigger is already enabled on the display or not. Enable means the popup trigger will response to the pen action.
Control active	An attribute to show whether the popup trigger is active on the display or not. Active means the popup trigger is being used in this moment.
Control visible	An attribute to show whether the popup trigger is visible on the display or not.
Popup trigger radius	Radius of the specified popup trigger. (This value should be set to 2 for gray design)
Popup number of objects	Number of items in the popup list.
Popup selected item	Item number of the selection.
Popup top item	Top item number of the popup list.
Popup list items	Pointer pointed to the list of items in the popup list.

6e. Comments

Normally a Popup trigger will pop up a list from their original position and going down to show all the items on the list. But if the list is longer than the region can be displayed, then it will align at the bottom of the particular form. If the number of items are more than the form can be fully displayed, two small arrow indicators appear to indicate the user more items on the previous / next page of the list. When the user clicks on the arrow, the list of items will be scrolled.

7. PUSH BUTTON

7a. UI Object Type

This is under the category of CONTROL object type.

7b. Characteristics and Behavior

Push Button resource is a UI object that has the same feature as checkbox resource. The only difference between the two resources is that the display of checkboxes (checked or unchecked) is drawn by pasting user-predefined bitmaps and the display of push buttons are pre-set by the system.

7c. Styles

PUSHBUTTON_STYLE_0 of a Push button displays as a text label without any frame around the text.

PUSHBUTTON_STYLE_1 displays the text label surrounded by a rectangular frame.

PUSHBUTTON_STYLE_2 displays the text label surrounded by a round corner frame and finally PUSHBUTTON_STYLE_3 displays as a Tap Folder. Text with regular size and if it is too long to be fully displayed in the frame, the characters of the text will be automatically minimized to make room to fit the remainder into the frame. Dot sign will add to the end of the remained characters.

Push buttons appear in a horizontal or vertical row with no pixels between the buttons. The buttons sharing a common border so they appear to be one pixel line between two push buttons. The current selection is highlighted.

The following diagram shows 3 examples of push button:

i) Right corner push button (Style 1)



ii) Round corner push button (Style 2)



iii) Particular push button used by Phone book, E-mail and Memo applications (Style 3)



7d. User Input Parameters

Object type To specify the type of the specified UI Object.

Related table	To indicate the push button is pasted into a table or not. \$FFFF = the particular push button not belongs to a table or the ObjectID of the table that belongs to.
X coordinate	Screen-relative position of left side of the push button. Valid values: 0 ~ 159.
Y coordinate	Screen-relative position of top of the push button. Valid values: 0 ~ 159.
Height	Height of the push button in pixels. Valid values: 1 ~ 160.
Width	Width of the push button in pixels. Valid values: 1~ 160.
Control style	Define the style of the control object. (Set to PUSH_BUTTON)
Control subtype	The pattern for each control style. There are four patterns for Push buttons (With round corner or without). For example: PUSHBUTTON_STYLE_0 (No frame) PUSHBUTTON_STYLE_1 (With right corner) PUSHBUTTON_STYLE_2 (With round corner) PUSHBUTTON_STYLE_3 (Particular style for Phone Book, Memo and E-mail applications)
Control text	Text displayed inside the button, single line of text, or a single character in small font.
Control text alignment	Alignment of the text in the frame. For example: LEFT_ALIGN, CENTRE_ALIGN, RIGHT_ALIGN
Control enable	An attribute to show whether the push button is already enabled on the display or not. Enable means the push button will response to the pen action.
Control active	An attribute to show whether the push button is active on the display or not. Active means the push button is being used in this moment.
Control visible	An attribute to show whether the push button is visible on the display or not.

Push button on color	Color of the push button when it is on.
Push button off color	Color of the push button when it is off. For example: COLOR_WHITE, COLOR_GREY1, COLOR_GREY2, COLOR_BLACK
Push button group ID	The group id of the check box.
Control value	An On/Off value to show whether the push button is pressed or not.
Push button radius	Radius of the specified push button. (This value should be set to 2 for gray design)

7e. Comments

The push button group id is used to link up more than one push button together. Only one push button which have same group id in a particular form can be enable in a time.

To create a row of push buttons, make sure that they have the same height and align them by specifying the same top position for each button.

8. FIELD

8a. UI Object Type

This is under the category of FIELD object type.

8b. Characteristics and Behavior

Field resource is a UI object that can provide spaces for user-data input in an application. It can display more than one line of editable text. It supports drag-scrolling, highlight, cut, paste and copy.

8c. Styles

Text fields can be located anywhere in a form but in menus and in the command button area.

FIELD_STYLE_0 of a field object display without any frame around the text.

FIELD_STYLE_1 of a field object display the text surrounded by a BACK rectangular frame.

The following is an example of field data:

i) Field object without frame (Style 0)

A series of 12 horizontal lines, each preceded by a small vertical bar, representing a text field without a frame. The lines are stacked vertically, with a small gap between each line.

8d. User Input Parameters

Object type	To specify the type of the specified UI Object.
Related table	To indicate the field is pasted into a table or not. \$FFFF = the particular field not belongs to a table or the ObjectID of the table that belongs to.
X coordinate	Screen-relative position of left side of the field. Valid values: 0 ~ 159.
Y coordinate	Screen-relative position of top of the field. Valid values: 0 ~ 159.
Height	Height of the field in pixels. Valid values: 1 ~ 160.
Width	Width of the field in pixels. Valid values: 1~ 160.
Field text	Text displayed inside the field object.

Field style	Style to draw the specified field object: FIELD_STYLE_0 = No frame, FIELD_STYLE_1 = framed.
Field back line	Set the style of lines under the text. For example: NO_LINE, DOT_LINE, GREY_LINE
Field font Id	Font of the text in the field object. For example: SMALL_FONT, MEDIUM_FONT LARGE_FONT
Field font color	Color of the text in the field object.
Field background color	Background color of the field object.
Field text Alignment	Alignment of the text in the frame. For example: LEFT_ALIGN, CENTRE_ALIGN, RIGHT_ALIGN
Field maximum characters	Maximum number of characters accepted by the field.
Field top line	Define the top line number of the field object.
Field insert pt position	Insert point position of the specified field.
Field highlight start character	Character position of the starting character of a highlight section.
Field highlight end character	Character position of the ending character of a highlight section.
Field active	An attribute to indicate whether the field is active on the display or not.
Field enable	An attribute to indicate whether the field is already enabled on the display or not.
Field dirty	An attribute to indicate the field object has been changed. (e.g. cut, paste)

Field highlight	An attribute to indicate whether the field is highlighted.
Field insert pt visible	An attribute to indicate whether the insert point of the field is visible or not.
Field scrollbar	An attribute to indicate the particular field has a scrollbar.
Field full size	An attribute to indicate the particular field with full size of the table object.
Field visible	An attribute to indicate the field object is visible or not.

9. LINE

9a. UI Object Type

This is under the category of LINE object type.

9b. Characteristics and Behavior

Line resource is the simplest UI object. It can be used to draw line on the screen. Application can define the length, thickness and color of the line on the screen. The line object does not respond to any pen action.

9d. User Input Parameters

Object type	To specify the type of the specified UI Object.
Related table	To indicate the line is pasted into a table or not. \$FFFF = the particular line not belongs to a table or the ObjectID of the table that belongs to.
X coordinate	Screen-relative position of left side of the line. Valid values: 0 ~ 159.
Y coordinate	Screen-relative position of top of the line. Valid values: 0 ~ 159.
Height	Height of the line in pixels. Valid values: 1 ~ 160.
Width	Width of the line in pixels.

Valid values: 1~ 160.

Line color	Color of the line object. For example: COLOR_WHITE, COLOR_GREY1, COLOR_GREY2, COLOR_BLACK
Line style	The style of the specified line. For example: DOTTED_LINE, NON_DOTTED_LINE
Line thick	Thickness of the specified line.
Line end point x-coordinate	The x-coordinate of the end point.
Line end point y-coordinate	The y-coordinate of the end point.
Line visible	An attribute to indicate the line object is visible or not.

10. List

10a. UI Object Type

This is under the category of LIST object type.

10b. Characteristics and Behavior

List resource has the same features of a popup trigger resource and it is also used to provide a list of items for selection. The differences are that they have different appearances and the list object always stays on the screen. There are also scroll-arrows for scrolling the items in the list object when the total number of items is more than the number of items that can be displayed on the list object.

14c. Styles

By default, List objects contain eight different types:

LIST_STYLE_0 ~ String only and the whole row will be highlighted when a pen select on the specified row.

- LIST_STYLE_1 ~ With frame layout around the text and the whole line will be highlighted.
- LIST_STYLE_2 ~ With frame layout around the text and only the text will be highlighted.
- LIST_STYLE_3 ~ With gray frame layout around the text and the whole line will be highlighted.
- LIST_STYLE_4 ~ With gray frame layout around the text and only the text will be highlighted.
- LIST_STYLE_5 ~ String only and only the text will be highlighted.
- LIST_STYLE_6 ~ With pre-define gray frame, user define background color and the whole line will be highlighted.
- LIST_STYLE_7 ~ Specify used in the “Expense” application.

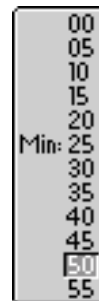
User can base on the requirement of the applications to select the type.

The following is an example of List object:

i) List object without pre-designed frame and the whole row will be highlighted when a pen select on the specified row. (Style 0)

Alan Chow	28818002
Amy Chan	26801697
Bernard	29801011
Brian Lee	26801002
Chan May	36801000
Chan Mary	(604)28810002
Christopher	26801011
Donald Newman	26801097
Jhon G.Ehrisman	86801697
Jhon Goodman	26802811
Ricky Leung	26801097
Rachel	604-28868002

ii) Pre-design List object used by Scheduler (Style 4)



10c. User Input Parameters

- Object type To specify the type of the specified UI Object.
- Related table To indicate the list is pasted into a table or not.
\$FFFF = the particular list not belongs to a table or the ObjectID of the table that belongs to.
- X coordinate Screen-relative position of left side of the list.
Valid values: 0 ~ 159.

Y coordinate	Screen-relative position of top of the list. Valid values: 0 ~ 159.	
Height	Height of the list in pixels. Valid values: 1 ~ 160.	
Width	Width of the list in pixels. Valid values: 1~ 160.	
List related list id	Object Id of the related list object. This value is used to allow one or more list objects work together. The items of the list may have relationship with the other.	
List total number of items	Total number of items on the list object.	
List number of items on display	Number of items are displayed on the list object.	
List top item	Define the top item number of the list.	
List text Alignment	Alignment of the text in the list. For example: LEFT_ALIGN, CENTRE_ALIGN, RIGHT_ALIGN	
List selected item	Define the selected item number of the list.	
List style	For example: LIST_STYLE_0 ~	No frame around the list object, and the whole line will be highlighted.
	LIST_STYLE_1 ~	With predefined frame around the list object and the whole line will be highlighted.
	LIST_STYLE_2 ~	With predefined frame around the list object and only the text will be highlighted.
	LIST_STYLE_3 ~	With predefined 3D frame around the list object and the whole line will be highlighted.
	LIST_STYLE_4 ~	With predefined 3D frame around the list object and

	LIST_STYLE_5 ~	only the text will be highlighted. No frame around the list object, and only the text will be highlighted.
	LIST_STYLE_6~	With predefined 3D frame around the list object, user can define the background color and the whole line will be highlighted.
	LIST_STYLE_7~	Specify used in the “Expense” application.
List font color	Color of the text in the list object. For example: COLOR_WHITE, COLOR_GREY1, COLOR_GREY2, COLOR_BLACK	
List background color	Background color of the list object.	
List items	Items in the list.	
List enable	An attribute to indicate whether the list is already enabled on the display or not.	
List visible	An attribute to indicate the list object is visible or not.	
List active	An attribute to indicate whether the list is active on the display or not.	
List Set Scroll	An attribute to indicate whether the list object will display the scrolling arrows or not if necessary.	
List synchronous	An attribute to indicate whether the list object is synchronous with the related list object or not.	

10d. Comments

If the number of items are more than the list can be fully displayed, two small arrow indicators appear to indicate the user more items on the previous / next page of the list. When the user clicks on the arrow, the list of items will be scrolled.

A couple of list objects can be linked together by edit their object Id to the List related list Id. List objects appear in a vertical row with no pixels between the lists. They share a common border so there appears to be one pixel line between two list objects. The current selection is highlighted. User can also set the first List synchronic with the other or not.

11. Menu

11a. UI Object Type

This is under the category of MENU object type.

11b. Characteristics and Behavior

Menu resource is a popup menu bar that is attached at the bottom of the screen. After it is initiated, a popup list of application commands is displayed. User can select a command and the specified event of the application is triggered correspondingly. After selection, the pop up list will disappear. The system only supports one vertical list of commands without scrolling. Therefore, the total number of commands that can be placed in one form is about 12.

11c. Styles

The menu bar shows at the bottom of the screen contains the names of the available menus. Each application has different sets of menu names, within an application, different views may have different menus. Copy, Cut and Paste are commonly found in the menu bar.

11d. User Input Parameters

Object type	To specify the type of the specified UI Object.
X coordinate	Screen-relative position of left side of the menu. Valid values: 0 ~ 159.
Y coordinate	Screen-relative position of top of the menu. Valid values: 0 ~ 159.
Height	Height of the menu in pixels. Valid values: 1 ~ 160.

Width	Width of the menu in pixels. Valid values: 1~ 160.
Menu number of items	Total number of items in the menu object.
Menu selected item	Define the selected item number of the menu.
Menu items	Items in the menu.

12. Scheduler Line

13a. UI Object Type

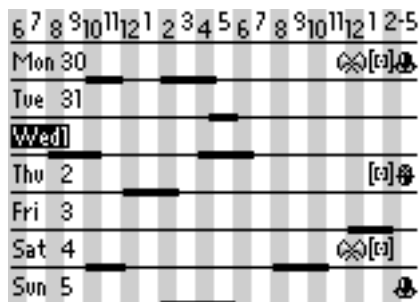
This is under the category of SCHEDULER LINE object type.

13b. Characteristics and Behavior

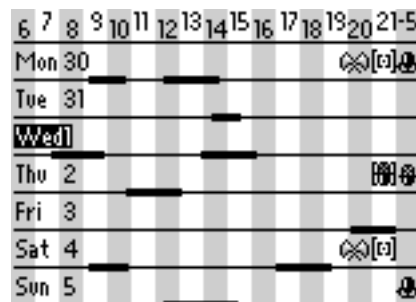
Schline (Scheduler Line) is a particular object and provides the special feature for the Scheduler application. The schline can be divided into 4 types of regions. The first and second regions are the labels of the schline object, which displays the date and time setting on the pre-design area. The third region are combined with 21 bitmaps diagram, they are placed into 3 different columns to indicate the activity's status of the specified date. The fourth region are combined with 7 horizontal lines, they are placed into 7 different rows to indicate the status of the schedule.

The following is the examples of the schline objects in 12 and 24 hours mode.

i) 12 Hours Mode



ii) 24 Hours Mode



12d. User Input Parameters

Object type	To specify the type of the specified UI Object.
Related table	To indicate the schline is pasted into a table or not. \$FFFF = the particular schline not belongs to a table or the ObjectID of the table that belongs to.
X coordinate	Screen-relative position of left side of the schline. Valid values: 0 ~ 159.
Y coordinate	Screen-relative position of top of the schline. Valid values: 0 ~ 159.
Height	Height of the schline in pixels. Valid values: 1 ~ 160.
Width	Width of the schline in pixels. Valid values: 1~ 160.
Scheduler String	Store the location of the particular label (e.g. Mon 30, Tue 1).
Scheduler Lines Location	Store the location of 7 scheduler lines.
Scheduler Bitmap 0	Location of the all bitmaps in column 1.
Scheduler Bitmap 1	Location of the all bitmaps in column 2.
Scheduler Bitmap 2	Location of the all bitmaps in column 3.
Scheduler Bitmap Number	Bitmap number or No bitmap (0) in the corresponding area.
Scheduler Text	Pointer reference to the address of the text.
Scheduler Text Highlight	To indicate the current date of the scheduler screen.
Scheduler Highlight Region	Value of the highlighted item.
Scheduler Bitmap Pointer	Pointer reference to the address of the particular bitmap diagram.
Scheduler Drawn	Indicate whether the Scheduler Line is drawn on screen or not.

Scheduler Visible	Indicate whether the Scheduler Line is visible on screen or not.
Scheduler Active	Indicate whether the Scheduler Line is being used or not
Scheduler Enable	Indicate whether the Scheduler Line response to the pen action.
Scheduler Enter	Indicate whether the Scheduler Line is entered by a pen or not.

13. Scrollbar

13a. UI Object Type

This is under the category of SCROLLBAR object type.

13b. Characteristics and Behavior

Scrollbar resource provides the ability of scrolling to only field resource and table resource. Therefore, scrollbar can only be used to scroll field and table objects.

13c. Styles

By default, scrollbar resources contain 4 different types: One vertical window type scrollbar, two vertical / horizontal control bar and a particular bar used by “System Setup” application. Apart from the particular bar used in the “System Setup” application, all the other bars will response to the Pen action. Developers can base on the requirement of their applications to select the type to use.

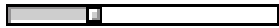
The vertical scrollbar contains two scroll arrow buttons on both sides and a scroll car with variable size in the middle of the bar. The size of the scroll car is indirect proportional to the number of lines of the scroll objects. To protect an invisible case occurs, there is a predefine minimum value for the scroll car.

The following shows 3 examples of the scrollbar objects.

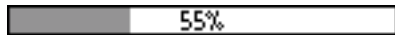
- i) A vertical windows type scroll bar (SCROLLBAR_STYLE_0)



- ii) A horizontal control bar (SCROLLBAR_STYLE_1)
Specify used in “Voice Memo” application.



- iii) A horizontal control bar (SCROLLBAR_STYLE_3)
Specify used in “System Setup” application.



13d. User Input Parameters

Object type	To specify the type of the specified UI Object.
Related table	To indicate the scrollbar is pasted into a table or not. \$FFFF = the particular scrollbar not belongs to a table or the ObjectID of the table that belongs to.
X coordinate	Screen-relative position of left side of the scrollbar. Valid values: 0 ~ 159.
Y coordinate	Screen-relative position of top of the scrollbar. Valid values: 0 ~ 159.
Height	Height of the scrollbar in pixels. Valid values: 1 ~ 160. (Depend on the type and style of the scrollbar. e.g. Horizontal scrollbar should set this value to 9.)
Width	Width of the scrollbar in pixels. Valid values: 1~ 160. (Depend on the type and style of the scrollbar. e.g. Vertical scrollbar should set this value to 9.)

Scrollbar max value	Position of the scroll car when the scrollbar is at the bottom. To compute this value, use the formula: $\text{Max value} = \text{Number of lines} - \text{Page size} + \text{Overlap value}$
Scrollbar min value	Position of the scroll car when the scrollbar is at the top. By default this value should be 0.
Scrollbar value	Indicate the current scrollbar value.
Scrollbar page size	Number of lines to scroll at a time.
Scrollbar total number of lines	Total number of lines in the scrollbar object.
Scrollbar type	Indicate the type of the scrollbar.
Scrollbar style	Indicate the scrollbar is Horizontal / Vertical.
Scrollbar items	Items in the scrollbar.
Scroll arrow 1	Template of the scroll arrow at the top of the scrollbar.
Scroll arrow 2	Template of the scroll arrow at the bottom of the scrollbar.
Scrollbar text	Text for the scrollbar. (Used by type 4)
Scrollbar active	An attribute to indicate whether the scrollbar is active on the display or not.
Scrollbar enable	An attribute to indicate whether the scrollbar is already enabled on the display or not.
Scrollbar visible	An attribute to indicate the scrollbar object is visible or not.

14. String

14a. UI Object Type

This is under the category of STRING object type.

14b. Characteristics and Behavior

String resource is a non-editable text object. It provides the ability to application to display a predefined string on the screen. It can be seen as a label on the screen. It does not respond to any pen action. It is only for display purpose.

14c. Styles

By default, string resources contain 3 different types:

STRING_STYLE_0 ~String only.

STRING_STYLE_1 ~With frame layout around the text.

STRING_STYLE_2 ~With gray frame layout around the text.

STRING_STYLE_3~Particular style used on the application title.

STRING_STYLE_4~ Specify used in the “Anniversaries” application.

STRING_STYLE_5~ Specify used in the “Scheduler” application.

The following is 3 examples of the scrollbar objects.

i) A string object without frame (Style 0)

9:00

ii) A string object surrounded by a box. (Style 1)

Mon

iii) A string object with predefined frame layout (Style 2)

ME 889,876,543,210.

14d. User Input Parameters

Object type	To specify the type of the specified UI Object.
Related table	To indicate the String is pasted into a table or not. \$FFFF = the particular String not belongs to a table or the ObjectID of the table that belongs to.
X coordinate	Screen-relative position of left side of the String Valid values: 0 ~ 159.
Y coordinate	Screen-relative position of top of the String Valid values: 0 ~ 159.
Height	Height of the String in pixels. Valid values: 1 ~ 160.
Width	Width of the String in pixels. Valid values: 1~ 160.

String text	Text displayed inside the String object.
String style	If set, the whole String object will draw into a frame box. For example: <code>STRING_STYLE_0</code> , <code>STRING_STYLE_1</code> , <code>STRING_STYLE_2</code>
String text color	Color of the text in the String object. For example: <code>COLOR_WHITE</code> , <code>COLOR_GREY1</code> , <code>COLOR_GREY2</code> , <code>COLOR_BLACK</code>
String background color	Background color of the String object.
String font Id	Font of the text in the String object. For example: <code>SMALL_FONT</code> , <code>MEDIUM_FONT</code> , <code>LARGE_FONT</code>
String text alignment	The text alignment in the String object For example: <code>LEFT_ALIGN</code> , <code>CENTRE_ALIGN</code> , <code>RIGHT_ALIGN</code>
String visible	An attribute to indicate the String object is visible or not.

15. TABLE

15a. UI Object Type

This is under the category of TABLE object type.

15b. Characteristics and Behavior

Table resource provides a way to display and handle a collection of UI objects. Sometimes, the layout of an application may be larger than the size of the screen. It is possible to use table resource to arrange different UI objects on the screen. By using scrollbar, then UI Objects can be scrolled up and down to provide more virtual spaces of display. Also, by using table object, a number of numbers and text string can be aligned more easily.

15c. Styles

By default, table resources contain three different types:

TABLE_STYLE_0 ~ No line between the bounds, TABLE_STYLE_1 ~ with vertical lines to separate the cells in the table and TABLE_STYLE_2 ~ with vertical and horizontal lines to separate the cells in the table. User can base on the requirement of the applications to select the type.

The following is 2 examples of the table object.

i) A table object in Style 0.

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

ii) A table object in Style 1.

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

15d. User Input Parameters

Object type To specify the type of the specified UI Object.

X coordinate Screen-relative position of left side of the table.
Valid values: 0 ~ 159.

Y coordinate Screen-relative position of top of the table.
Valid values: 0 ~ 159.

Height Height of the table in pixels.
Valid values: 1 ~ 160.

Width Width of the table in pixels.
Valid values: 1~ 160.

Table number
column Number of columns on the table.

Table number row Number of rows on the table.

Table column width Width of the nth column.

Table row height Height of the nth row.

Table top row Top row number in the table.

Table left column	Left column number in the table.
Table style	Indicate the style of the specified table. For example: TABLE_STYLE_0, TABLE_STYLE_1, TABLE_STYLE_2
Table background color	Background color of the specified table. For example: COLOR_WHITE, COLOR_GREY1, COLOR_GREY2, COLOR_BLACK
Table cell bitmap	Bitmap pasted in the particular cell of the table.
Table items	Relative information of the items in the specified cell of the table.
Table enable	An attribute to indicate whether the table is already enabled on the display or not.
Table scrollbar	An attribute to indicate whether the table contains a scrollbar or not.
Table active	An attribute to indicate whether the table is active on the display or not.
Table enter	An attribute to indicate whether the specified cell is entered by a pen or not.
Table highlight	An attribute to indicate whether the text / data in the cell is highlighted or not.
Table visible	An attribute to indicate the table object is visible or not.

16. TEXTBOX

16a. UI Object Type

This is under the category of TEXTBOX object type.

16b. Characteristics and Behavior

Textbox resource is a UI object that can provide spaces for user-data input in an application. It has the same characteristics as field resource. The main difference between the textbox resource and the field resource is that only one line can be displayed in a textbox resource. The insertion point in a textbox can only be moved to left or right. It means that textbox only supports single line of text and there is no limit to the length of the text in a textbox virtually. It supports drag-scrolling, highlight, cut, paste and copy.

16c. Styles

By default, textbox resources contain three different types: TEXTBOX_STYLE_0 = non-framed, TEXTBOX_STYLE_1 = framed and TEXTBOX_STYLE_2 = 3D framed. User can base on the requirement of the applications to select the type.

The following shows an example of the text box:

- i) A text box object in style 2.



16d. User Input Parameters

Object type	To specify the type of the specified UI Object.	
Related table	To indicate the Textbox is pasted into a table or not. \$FFFF = the particular Textbox not belongs to a table or the ObjectID of the table that belongs to.	
X coordinate	Screen-relative position of left side of the Textbox. Valid values: 0 ~ 159.	
Y coordinate	Screen-relative position of top of the Textbox. Valid values: 0 ~ 159.	
Height	Height of the Textbox in pixels. Valid values: 1 ~ 160.	
Width	Width of the Textbox in pixels. Valid values: 1~ 160.	
Textbox text	Text displayed inside the Textbox object.	
Textbox style	For example: TEXTBOX_STYLE_0 ~	No frame around the object.

TEXTBOX_STYLE_1 ~ With predefined frame around object.

TEXTBOX_STYLE_2 ~ With 3D frame around object.

Textbox back line	Set the style of lines under the text. NO_LINE = No line, DOT_LINE = Dot line and GREY_LINE = gray line.
Textbox font Id	Font of the text in the Textbox object. NORMAL_FONT and LARGE_FONT
Textbox font color	Color of the text in the Textbox object.
Textbox background color	Background color of the Textbox object.
Textbox maximum characters	Maximum number of characters that can be handled by the textbox
Textbox insert pt position	Insert point position of the specified Textbox.
Textbox highlight start character	Character position of the starting character of a highlight section.
Textbox highlight end character	Character position of the ending character of a highlight section.
Textbox active	An attribute to indicate whether the Textbox is active on the display or not.
Textbox enable	An attribute to indicate whether the Textbox is already enabled on the display or not.
Textbox dirty	An attribute to indicate the Textbox object has been changed. (e.g. cut, paste)
Textbox highlight	An attribute to indicate whether the Textbox is highlighted.
Textbox insert pt visible	An attribute to indicate whether the insert point of the Textbox is visible or not.
Textbox visible	An attribute to indicate the Textbox object is visible or not.