MCL-Technologies

Sample "Meter_Reading" – Project Notes

Contents

Overview

The purpose of this document is to provide an explanation for certain screens/related options concerning this demo application and to offer a few tips on *MCL-Designer V4* application development.

Project Description

This application sample intends to demonstrate the usual features of a meter reading application (data capture, data review and data edition/deletion). As an advanced feature, the application is configured to use three different languages (English, Dutch and French). This is set in the project's properties ("Localization" tab).
The application illustrates:

- The standard use of an "Input Keyboard" control (data input via a keyboard).
- The standard use of an "Advanced List Box" control (data display) and as a search tool (with the use of "Where" clauses).
- Two data file uses - as a data source (*lookup* file type) or as a repository for captured data (*capture* file type).

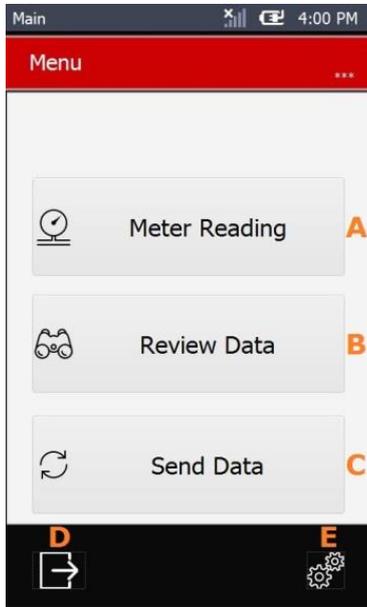# Application Workflow

S:Login
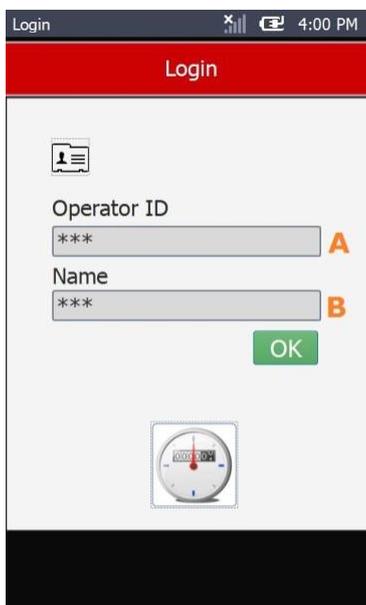
This is the first screen. Its purpose is to have the device operator identify himself.
It includes several controls:

- "Input Keyboard" **(A)** - receives the operator's ID number which is stored in the "G_Operator_ID" variable.
- "Input Keyboard" **(B)** - receives the operator's name which is stored in the "G_Operator_Name" variable.
- "Button" ("OK") – directs the workflow to the *S:Main* screen (with a "Go to: S:Main" process added to its "On Click" event).
- "Display Image" and "Display Text" controls – only have a visual purpose.

S:Main

This is the second screen which includes several options that redirect the application's workflow:

Meter Reading **"Button"** control **(Option A)** – includes a "Go to" process that leads to the *S:Address_Selection* screen.

Review Data "**Button**" control (**Option B**) – includes a "Call MCL Program" process which redirects the workflow to the "P:Review_Data" program (specifically to its *S:Review_Data* screen).

Send Data "**Button**" control (**Option C**) – is used to redirect the workflow via a "Call MCL Program" process to the "P_Send_Data" program (opens the *S:Send_Data* screen).

"Display Image" control **(Option D)** – is used to exit the application (contains a "Go to <Exit>" process).

"Display Image" control **(Option E)** – includes a "Go to" process that leads to another screen (*S:Set_Language*).

Option A ("Meter Reading")

S:Address_Selection

This screen includes several controls with different purposes.
"Display Text" controls that provide information on the screen's purpose.
An "Input Keyboard" **(A)** and an "Advanced List Box" **(B)** that, combined, create a *search* tool (the result is the filtered display of data file records).
"Button" controls that, when clicked, redirect the application's workflow.

"Input Keyboard" **(A)** - is used to select and filter the record(s) to be displayed in the "Advanced List Box". The user's selection is saved into the "P_Search_Name" variable.

"Advanced List Box" **(B)** – is used to display the records of the *lookup* data file <Maddress> ("Read a Record" process). The records are filtered in the control's "Query" tab via a "Where" clause (only the fields that contain the value of the "P_Search_Name" variable are displayed).
The style of the "Advanced List Box" is customized so it can include several text elements and an image element, each displaying the value of a specific data file field.
The "Variable Combine" process creates a resource out of the value contained in the "P_meterimage" variable to be used in the *S:Meter_reading* screen.

"Display Image" **(C)** – includes a "Go to" process in its "On Click" event to call the *S:Main* screen.

"Display Image" **(D)** – Includes a "Get Value" process that retrieves the position of the selected value (record number) in the "Advanced List Box" and stores it in the "P_FCurrent_Record" variable. The added "GoSub" process redirects the workflow to the *S:Meter_reading* screen.

"Search" Example (*S:Address_Selection*)
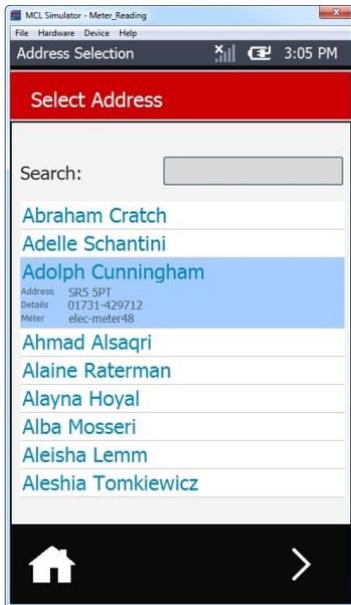
The <Maddress> data file (lookup file) is the data source for the "Advanced List Box".

The value entered in the "Input Keyboard" is stored in the "P_Search_Name" variable (**ex:**"cu") and is used as a filter for the "Advanced List Box" record display (the "Where" clause establishes that the control will only display the fields that contain the value of the "P_Search_Name" variable (**ex:**"cu"), meaning, what was entered in the "Input Keyboard" control).
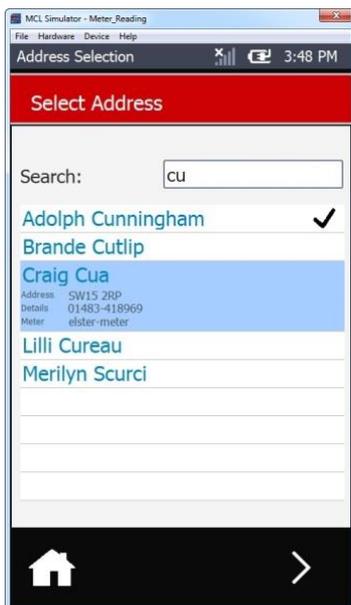
The "Advanced List Box" control has a customized style which is composed by several text elements that provide specific data file field values and an image element which displays a conditional value (if the value of the "Completed" data file field is "1", the image element will display the "checkmark.png" resource.

S:Meter_Reading

The meter reading is performed in this screen (data input) with the help of the existing controls and the processes added to the screen itself:

"**Display Image**" control **(A)** – Provides an image resource that was created through a "Variable Combine" process in the *S:Address_Selection* screen (in the "Advanced List Box" control).

"**Input Keyboard**" controls **(B; C; D; E; F; G)** - are used to enter data (the meter reading) which is stored in the corresponding variable.

"**Display Text**" control – a visual aid that provides instructions to the device operator.

"**Display Image**" control **(H)** – includes a "Go to <Exit>" process that redirects the workflow to the *S:Address_Selection* screen (because that is the screen that includes the control that called the current screen with a "Go Sub").

"**Display Image**" control **(I)** – has multiple purposes:
Combines the entered values in the various "Input Keyboard" controls **(B; C; D; E; F; G)** into one variable – "P_Meter_value_all".
Combines the operator's identification values (ID + Name) that were in separate variables into a single variable ("G_Operator_Combined").
Updates the "New Value" data file field, attributes a value (1) to the "Completed" data file field and writes the entered data into the <Meter_Read> data file (a *capture* file) by using the "Update Record" and "Write Record" processes.
Redirects the workflow to the *S:Address_Selection* screen.
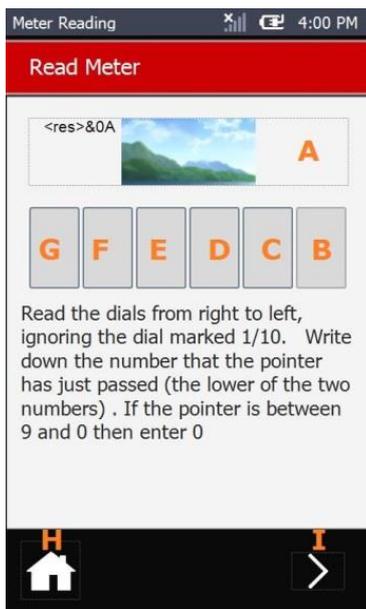
Current screen's "On Ready" event

The "Test & Branch" processes are responsible for the redirecting of the workflow, depending on the "If" condition results.
The "Set State" and "Set Focus" processes ensure that the control "Input_Keyboard_6_Dial" is enabled and highlighted, meaning, the first control to accept data input.

"Meter Reading" Example (*S:Meter_Reading*)
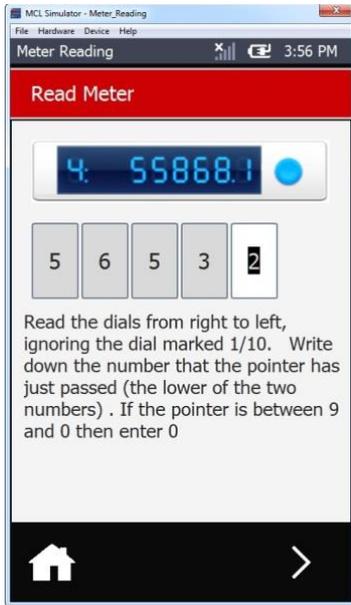
The screen displays the image resource that matches the data file value "meter type" (<Maddress.Meter_Type>).

The processes included in the screen's "On Ready" event ensure that the focus is on the "Input Keyboard" to the right, meaning, the data input pattern is from right to left.

Once the device operator clicks the button on the bottom right ("Display Image" control **(I)**, some source data file fields (<Maddress>) are updated, the meter readings are written/stored in another data file (<Meter_Read>) and the workflow returns to the *S:Address_Selection* screen.

If the device operator does not want to save the meter reading, he can use the "Button" "Home" (on the bottom left) to return to the *S:Address_Selection* screen.

Option B ("Review Data")

S:Review_Data

This screen is part of the "P:Review_Data" program. Its purpose is to display all the records of the source data file (<Maddress>).

"**Advanced List Box**" **(A)** – is used to display the records of the *lookup* data file <Maddress>.
The control's style is customized to display all the data file field values which are distributed by several text elements (**ex:** listed names, corresponding addresses, meter read completion, date of meter read, etc.) and an image element. The value being displayed by the image element is a conditional value – it will display the "checkmarck.png" resource if the data file field <Completed> is attributed the value "1" (a successful meter reading).

"**Display Image**" **(B)** – is used to return the workflow to the *S:Main* screen (the screen that called the "P:Review_Data" program with a "Call MCL Program" process.

"Data Review" Example (*S:Review_Data*)
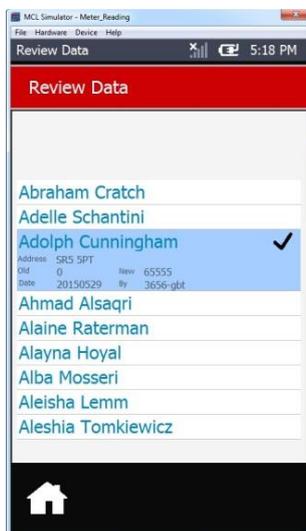
This screen's purpose is simply to display data - information from the <Maddress> source data file and data entered in the "P:Main" program (the meter readings).

A selected line (a listed customer name) provides further corresponding details:
- the customer's zip code (*Address*)
- the previous meter reading (*Old*)
- the date of the new meter reading (*Date*)
- the new meter reading (*New*)
- the code and name of the operator performing the meter reading (*By*)

The "Button" "Home" returns the operator to the *S:Main* screen.

Option C ("Send Data")

Clicking the "Exit" "Display Image" control which contains a "Go to <Exit>" closes the application.

S:Send_Data

This screen does not require device operator intervention (unless an error occurs during data file verification and/or delivery). The processes added to the screen's "On Ready" event are triggered when the screen is launched.

<u>"On Ready" event of the "Screen"</u>

The "File Check" process is used to check the <Meter_Read> data file and to redirect the workflow accordingly. If the data file contains records, the application's execution proceeds to the "START_SEND_FILE" label.

The "START_SEND_FILE" label includes several processes:

- the "Variable Combine" process is responsible for the remote file's name ("Meter_" + "X_DATETIME_TIMESTAMP" system variable) and file format (".dat").
- the "Send File to Host" process sends the defined file to the intended *MCL-Net* Host.
- Following the successful file delivery, the label ends with a "Go to <Exit>" to return the workflow to the *S: Main* screen.
- the "Set State" process turns the "Completed" button into a visible screen element which provides another alternative to return to the *S: Main* screen.
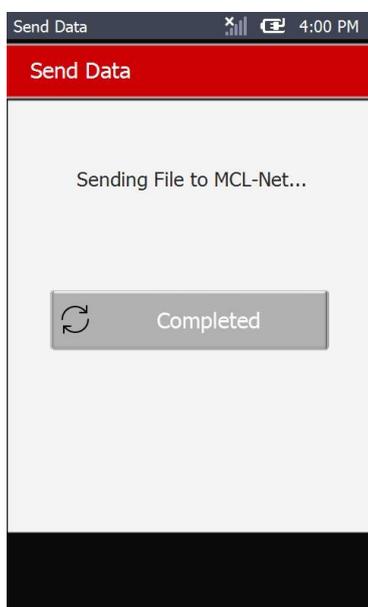
If the data file is empty or cannot be found, the workflow continues to the next execution line (a message box and the return to the *S:Main* screen).

Instead of adding a "Message Box" and a "Go to" process to redirect the workflow, you can simply use the "Go to" option(s) available within the "Message Box" to define the appropriate destination(s).

If there is a problem with file delivery, the application's workflow proceeds to the "ERROR_COMMS" label. At this point, an error message box is displayed which provides workflow redirection options (repeating the "START_SEND_FILE" label processes or canceling/exiting the current screen and returning to the *S:Main* screen).

"File Delivery to Host" Example (*S:Send_Data*)
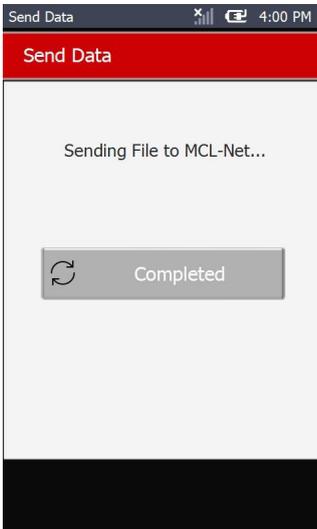
Once the screen is open, the processes added to its event are executed.

If the <Meter_Read> data file contains records, it will be sent to the intended host. Once this is successfully executed, a button becomes visible. This button includes a confirmation message and a "Go to <Exit>" process to return the device operator to the *S:Main* screen.

The device operator is not required to click it because the screen itself contains a "Go to <Exit>" process that, in case of file delivery success, eventually returns the application's workflow to the *S:Main* screen.

If the <Meter_Read> data file does NOT contain records or cannot be found, an error message box is called. The device operator must click "OK" so that the application's execution continues to the next line ("Go to <Exit> process).

If a communications error occurs, a customized error "Message Box" is displayed (with the possibility to retry or cancel the data file delivery).
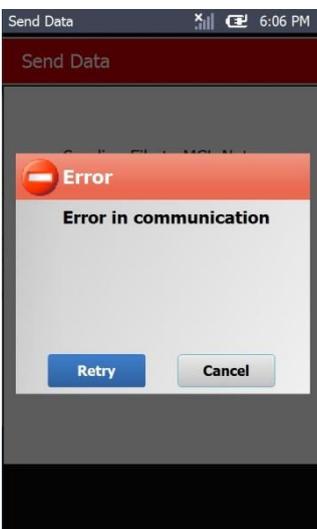
Option D

Clicking the "Exit" "Display Image" control which contains a "Go to <Exit>" closes the application.

Option E

S:Set_Language

This screen is responsible for setting the application's language.
It includes:

A – A "Display Image" control with an "On Click" event using process "Other – Set App. Language (en)" to set the application to the English language.
B – A "Display Image" control with an "On Click" event using process "Other – Set App. Language (fr)" to set the application to the French language.
C – A "Display Image" control with an "On Click" event using process "Other – Set App. Language (nl)" to set the application to Dutch.
D – A "Display Image" control with an "On Click" event using process "Branch - Go to: S:Main" to go to the operations/options selection screen.
E – A "Display Image" control with an "On Click" event using process "Branch - Go to: S:Login" to go to the *Login* screen.

"Setting a Language" Example (*S:Set_Language*)

To change the language for the current application, click the related flag ("Display Image" control).