**How To Configure An GUI**

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## GUI Construction

A general GUI includes three parts, top level frame, middle level page and inner component. That means a whole GUI needs a window, a load of panels and enormous non-container components.

If you wanna configure an application running on JVM, you need to declare a window firstly. And then you need to describe pages switching in this window. On a time point, window will only show a page. That means you need to define page relationship depending on business requirements. In each page, you can lay out different components, such as button, table etc. how to design a page, you need to consider page business purpose. Following paragraph will narrate detailed configuration of each plain-vanilla part.

### Window

A window is the outer frame or the top level container, it can be a Frame or Dialog. Currently, a window only contain panel type, meanwhile only one panel will be show on one time point.

A window can be represented as a xml file, as a default setting, system will access ‘./conf/xml\_window.xml’ in running folder as startup entry.

A typical and ordinary entry file ‘xml\_window.xml’ is as below

<?xml version="1.0" encoding="UTF-8"?>

<window

xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'

xsi:noNamespaceSchemaLocation='WindowXmlSchema.xsd'> <!--window schema and namespace declaration -->

<id>0</id> <!--window container id, an unique number. As top frame we suggest giving its zero value -->

<type>Frame</type> <!--window type, optional value is Frame or Dialog -->

<ui-style> <!--window UI style setting -->

<lookandfeel> <!--GUI look&feel name, this is optional. if no setting, default value will be used -->

com.jgoodies.looks.windows.WindowsLookAndFeel

</lookandfeel>

<font> <!--System default font setting, optional setting. -->

<name>Fangsong</name>

<size>21</size>

<style>BOLD</style>

</font>

<background>/image/5.jpg</background> <!--System background setting, optional setting -->

<progress>/image/loader\_orange\_256.gif</progress> <!--System progress animation setting, optional setting -->

<color>115,164,209</color> <!--System basic color setting, you can change base color via RGB value. optional setting -->

<textcolor>64,0,64</textcolor> <!--System text color setting, optional setting -->

</ui-style>

<driver> <!--System peripheral drivers setting, optional setting -->

<device>

<type>magnetCard</type> <!--peripheral device type -->

<port>com3</port> <!--serial port name-->

<dll>emptydll</dll> <!--driver dll name -->

</device>

<device>

<type>ICCard</type>

<port>com3</port>

<dll>emptydll</dll>

</device>

<device>

<type>sensorCard</type>

<port>com3</port>

<dll>emptydll</dll>

</device>

<device>

<type>printer</type>

<port>com3</port>

<dll>emptydll</dll>

</device>

<device>

<type>keyboard</type>

<port>com3</port>

<dll>emptydll</dll>

</device>

</driver>

<attribute> <!--Window attribute setting -->

<text>Application of Bank</text> <!-- title text -->

<icon>/image/bank-icon-256.png</icon> <!--window icon -->

</attribute>

<menubar> <!--Menu bar setting, optional setting. If you need no menu, remove it -->

<menu>

<id>-10</id>

<name>Operation of Conduction</name>

<item>

<id>-11</id>

<name>User Management</name>

<action>

<jumpPanelAction>

<nextPanel>200</nextPanel>

</jumpPanelAction>

</action>

</item>

<item>

<id>-12</id>

<name>Device Management</name>

<action>

<jumpPanelAction>

<nextPanel>300</nextPanel>

</jumpPanelAction>

</action>

</item>

</menu>

<menu>

<id>-20</id>

<name>About</name>

<enable>true</enable>

<item>

<id>-21</id>

<name>Version</name>

<action>

<customizedAction>

<className>king.flow.action.customization.AboutAction</className>

</customizedAction>

</action>

</item>

</menu>

</menubar>

<contents> <!--Page setting, this mandatory setting, you must assign page files here-->

<page>./conf/100/panel-100.xml</page> <!--page file link, if you wanna load panel in a window, you should add a link of panel file here -->

<page>./conf/200/panel-200.xml</page>

<page>./conf/300/panel-300.xml</page>

<page>./conf/300/panel-330.xml</page>

<page>./conf/300/panel-360.xml</page>

<page>./conf/900/panel-900.xml</page>

<page>./conf/900/panel-970.xml</page>

</contents>

</window>

That’s a standard window as picture below, it’s constructed wholly based on configuration above



### Page

Page is really container of component, which is loaded by window and contains all working components such as button, table , combobox and so on.

The system just support one type page, which is Panel, a middle-level container. A panel cannot show solely, only when a window has loaded it, it can show.

A typical and ordinary page configuration is a single xml file as below,

<?xml version="1.0" encoding="UTF-8"?>

<panel

xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'

xsi:noNamespaceSchemaLocation='../WindowXmlSchema.xsd'> <!-- Panel declaration -->

<id>100</id> <!--Panel id, an unique number -->

<type>Panel</type>

<active>true</active> <!--Panel initial show on/off setting, true means this panel will show firstly in a window, false means hide after loaded. Only one page should be true among lots of pages-->

<background>/image/5.jpg</background> <!—Panel background setting, optional setting -->

<component> <!-- Component setting in a panel container-->

<id>101</id> <!-- Component unique id -->

<type>Label</type> <!-- Component type, current supported type are Button, Table, AdvancedTable, ComboBox, Label, TextField, PasswordField, TextArea, Date -->

<attribute> <!-- Component attribute setting-->

<rect> <!--Component rectangle attribute -->

<x>600</x>

<y>0</y>

<width>600</width>

<heigh>150</heigh>

</rect>

<text>Welcome to use bank application</text> <!--Component text property, optional setting -->

<icon>/image/5.ico</icon> <!-- Component icon property, optional setting -->

<debug >false</debug> <!--debug attribute, true will show component border, false no border show. Optional setting -->

</attribute>

<action> <!-- Component action setting, optional setting -->

<fontSetAction>

<fontSize>45</fontSize>

</fontSetAction>

</action>

</component>

<component>

<id>104</id>

<type>ComboBox</type>

<attribute>

<rect>

<x>700</x>

<y>400</y>

<width>300</width>

<heigh>40</heigh>

</rect>

</attribute>

<action>

<comboShowAction>

<items>CNY/Yuan, USD/Dollar, JPY/Yen</items>

</comboShowAction>

<mediaPlayAction>

<media>./media/goodbye.wav</media>

</mediaPlayAction>

</action>

</component>

</panel>

### Component

Component is the plain-vanilla unit of GUI system. A page is composed of some components, and current supported types include Button, Table, AdvancedTable, ComboBox, Label, TextField, PasswordField, Date.

#### Button

<component>

<id>102</id>

<type>Button</type>

<attribute>

<text>查询业务</text>

<rect>

<x>200</x>

<y>300</y>

<width>300</width>

<heigh>50</heigh>

</rect>

<debug>false</debug>

</attribute>

</component>



#### ComboBox

<component>

<id>104</id>

<type>ComboBox</type>

<attribute>

<rect>

<x>700</x>

<y>400</y>

<width>300</width>

<heigh>40</heigh>

</rect>

</attribute>

<action>

<showComboBoxAction>

<items>CNY/人民币, USD/美元, JPY/日元</items>

</showComboBoxAction>

</action>

</component>



#### Label

<component>

<id>101</id>

<type>Label</type>

<attribute>

<rect>

<x>600</x>

<y>0</y>

<width>600</width>

<heigh>150</heigh>

</rect>

<text>欢迎使用自助银行查询业务</text>

</attribute>

<action>

<fontSetAction>

<fontSize>45</fontSize>

</fontSetAction>

</action>

</component>



#### TextField

<component>

<id>107</id>

<type>TextField</type>

<attribute>

<rect>

<x>400</x>

<y>500</y>

<width>300</width>

<heigh>40</heigh>

</rect>

</attribute>

</component>



#### PasswordField

<component>

<id>105</id>

<type>PasswordField</type>

<attribute>

<rect>

<x>400</x>

<y>400</y>

<width>300</width>

<heigh>40</heigh>

</rect>

</attribute>

</component>



#### Date

<component>

<id>302</id>

<type>Date</type>

<attribute>

<rect>

<x>180</x>

<y>30</y>

<width>300</width>

<heigh>50</heigh>

</rect>

</attribute>

</component>



#### Table

<component>

<id>311</id>

<type>Table</type>

<attribute>

<rect>

<x>0</x>

<y>100</y>

<width>300</width>

<heigh>450</heigh>

</rect>

<debug>false</debug>

</attribute>

<action>

<showTableAction>

<columnNames>流水号, 名称, 开始时间, 结束时间, 费用</columnNames>

</showTableAction>

</action>

</component>



If you need a scroll bar aside a table, you need to put a table component in a decorator as below, otherwise there is no scroll bar showing with this table.

**<decorator>**

**<id>310</id>**

**<type>ScrollPanel</type>**

**<attribute>**

**<rect>**

**<x>0</x>**

**<y>100</y>**

**<width>1600</width>**

**<heigh>600</heigh>**

**</rect>**

**<debug>false</debug>**

**</attribute>**

<component>

<id>311</id>

<type>Table</type>

<attribute>

<rect>

<x>0</x>

<y>100</y>

<width>300</width>

<heigh>450</heigh>

</rect>

<debug>false</debug>

</attribute>

<action>

<fontSetAction>

<fontSize>15</fontSize>

</fontSetAction>

</action>

<action>

<showTableAction>

<columnNames>流水号, 名称, 开始时间, 结束时间, 费用</columnNames>

</showTableAction>

</action>

</component>

**</decorator>**

****

#### AdvancedTable

<component>

<id>330337</id>

<type>AdvancedTable</type>

<attribute>

<rect>

<x>0</x>

<y>95</y>

<width>1275</width>

<heigh>600</heigh>

</rect>

</attribute>

<action>

<showTableAction>

<columnNames>流水号, 名称, 开始时间, 结束时间, 费用</columnNames>

</showTableAction>

</action>

<action>

<sendMsgAction>

<cmdCode>330</cmdCode>

<prsCode>queryAcount</prsCode>

<conditions>330332,330334</conditions>

<nextStep>

<nextPanel>330</nextPanel>

<display>330337</display>

</nextStep>

<exception>

<nextPanel>970</nextPanel>

<display>971</display>

</exception>

<checkRules>

<notEqual>

<more>330334</more>

<less>330332</less>

<errMsg>查询开始时间不能够大于结束时间</errMsg>

</notEqual>

</checkRules>

</sendMsgAction>

</action>

</component>



### Action configuration

After GUI is constructed, you need to configure component action to deal with business requirements. There are several action type here, each of them can do specific functionality.

#### customizedAction

This is an entry for outer developers, they can develop customized action plugin and put into current GUI system. Moreover, third party user can implement special functionality to meet ad-hoc requirementn.

##### FingerPrintDriverAction

It’s about finger printing action

<action>

<customizedAction>

<className>king.flow.action.customization.FingerPrintDriverAction</className>

<constructorParameters>

<parameter> <!-- the first constructor parameter, represents whether it’s a finger print registration or reading a finger print saved. True is registry of finger print, false is reading print -->

<type>boolean</type>

<value>true</value>

</parameter>

<parameter> <!-- the second constructor parameter, represents next jumping component after finger print operation is over -->

<type>int</type>

<value>104</value>

</parameter>

</constructorParameters>

</customizedAction>

</action>

##### OpenBroswerAction

It’s about browser action

<action>

<customizedAction>

<className>king.flow.action.customization.OpenBroswerAction</className>

<constructorParameters>

<parameter>

<type>string</type>

<value>http://www.baidu.com</value>

</parameter>

</constructorParameters>

</customizedAction>

</action>

#### jumpPanelAction

This action is about page jumping. that says if you click this button, I will switch the next page you wanna go.

<action>

<jumpPanelAction>

<nextPanel>200</nextPanel>

</jumpPanelAction>

</action>

#### setFontAction

<action>

<setFontAction>

<fontSize>45</fontSize>

</setFontAction >

</action>

#### cleanAction

when you leave some page, you hope to clean all data in that page, you can use this action.

<action>

<buttonJumpPanelAction>

<nextPanel>200</nextPanel>

</buttonJumpPanelAction>

<cleanAction>

<conditions>311,307, 337</conditions><!-- when I jump to page200, please clean component 311,307 and 337 value -->

</cleanAction>

</action>

#### limitInputAction

this action will limit input format in text field and password field component

<action>

<limitInputAction>

<length>6</length> <!-- limit 6 characters of text component -->

</limitInputAction>

</action>

#### useTipAction

give component tip show when cursor moves to this component

<action>

<limitInputAction>

<length>6</length>

</limitInputAction>

<useTipAction>

<tip>&lt;html&gt;&lt;center&gt;&lt;h1&gt;Hello,&lt;/h1&gt;&lt;h2 style=&#39;color: red; font-style: italic;&#39;&gt;World&lt;/h2&gt;&lt;b&gt;Modified&lt;br/&gt;ToolTipText&lt;/b&gt;&lt;/center&gt;&lt;br/&gt;so simple.请输入账号密码</tip> <!-- tip content -->

</useTipAction>

<mediaPlayAction>

<media>./media/song.wav</media>

</mediaPlayAction>

</action>



#### showTableAction

show a table in page

<action>

<showTableAction>

<columnNames>流水号, 名称, 开始时间, 结束时间, 费用</columnNames>

</showTableAction >

</action>



#### showComboBoxAction

show a combobox in page

<showComboBoxAction>

<items>/, ACTION1/刷接触式卡, ACTION2/刷磁条卡, ACTION3/插入IC卡</items>

</showComboBoxAction >



#### swipeCardAction

<action>

<showComboBoxAction>

<items>/, ACTION1/刷接触式卡, ACTION2/刷磁条卡, ACTION3/插入IC卡</items>

</showComboBoxAction>

<swipeCardAction>

<nextCursor>333</nextCursor>

<editable>true</editable>

</swipeCardAction>

</action>

#### playMediaAction

Play a media when you move a cursor to this component

<action>

<playMediaAction>

<media>./media/goodbye.wav</media>

</playMediaAction>

</action>

#### runCommandAction

run local command

<action>

<runCommandAction>

<command>notepad</command> <!-- open notepad -->

</runCommandAction>

</action>



#### virtualKeyboardAction

open Chinese character input tool

<virtualKeyboardAction>

<start>AVF\_Display.exe</start>

<stop>AVF\_Hide.exe</stop>

</virtualKeyboardAction>

#### setPrinterAction

Setting receipt print output content

<action>

<setPrinterAction>

<header>通商银行</header>

<tail>此凭条仅供参照自助银行,如有异议请联系客服中心:96669</tail>

</setPrinterAction>

</action>

#### sendMsgAction

Sending user input to server

<action>

<sendMsgAction>

<prsCode>queryAcount</prsCode> <!-- operation prs code -->

<conditions>302,304,307,333,334,335</conditions> <!-- data need to send up to server, and we need to catch those data from these components -->

<nextStep>

<nextPanel>300</nextPanel> <!-- operation is successful, go to next page -->

<display>311</display> <!-- in new page, show result in this component -->

</nextStep>

<exception>

<nextPanel>970</nextPanel> <!-- operation is failed, go to error page -->

<display>971</display> <!-- in error page, show result to user -->

</exception>

<checkRules> <!-- rule checking before sending data to server -->

<notNull>

<content>333</content> <!-- component input must not be empty -->

<errMsg>密码不能为空</errMsg>

</notNull>

<notNull>

<content>334</content>

<errMsg>确认密码不能为空</errMsg>

</notNull>

<notNull>

<content>335</content>

<errMsg>账户不能为空</errMsg>

</notNull>

<validateCJK>

<content>335</content> <!-- component input must be Chinese character -->

<errMsg>账户名称必须是中文</errMsg>

</validateCJK>

<validateCJK>

<content>336</content>

<errMsg>输入必须是中文</errMsg>

</validateCJK>

<template>

<content>307</content> <!-- component input must start with pattern value -->

<pattern>6222</pattern>

<errMsg>当前使用非本行发行卡片，请使用本行卡</errMsg>

</template>

<equal>

<conditions>333,334</conditions> <!-- components input must be equal -->

<errMsg>两次输入的密码不一致,请重新输入</errMsg>

</equal>

<notEqual> <!-- component input must not be equal -->

<more>304</more>

<less>302</less>

<errMsg>查询开始时间不能够大于结束时间</errMsg>

</notEqual>

</checkRules>

</sendMsgAction>

</action>

#### insertICardAction

When you hit a button, activate IC card-inserting operation, you need to configure it

<action>

<insertICardAction>

<suceessfulPanel>370</suceessfulPanel> <!-- insert a valid IC, jumping to next page -->

<failedPanel>200</failedPanel> <!-- no valid IC found, jumping to a page-->

</insertICardAction>

</action>

#### writeICardAction

just like sendMsgAction, you can configure this action to write data to IC card after a transaction

<action>

<writeICardAction>

<prsCode>buygas</prsCode>

<conditions>370004,370005,370006</conditions>

<checkRules>

<notNull>

<content>370004</content>

<errMsg>370004输入不能够为空</errMsg>

</notNull>

<notNull>

<content>370005</content>

<errMsg>370005输入不能够为空</errMsg>

</notNull>

<notNull>

<content>370006</content>

<errMsg>370006输入不能够为空</errMsg>

</notNull>

</checkRules>

<exception>

<display>9101</display>

<nextPanel>910</nextPanel>

</exception>

<nextStep>

<display>9101</display>

<nextPanel>910</nextPanel>

</nextStep>

</writeICardAction>

</action>

#### moveCursorAction

this action will move cursor when you hit up/down arrow key

<action>

<moveCursorAction>

<upCursor>106</upCursor>

<downCursor>105</downCursor>

</moveCursorAction>

</action>