NetRexx Graphical User Interfaces with Pivot

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To Get Started

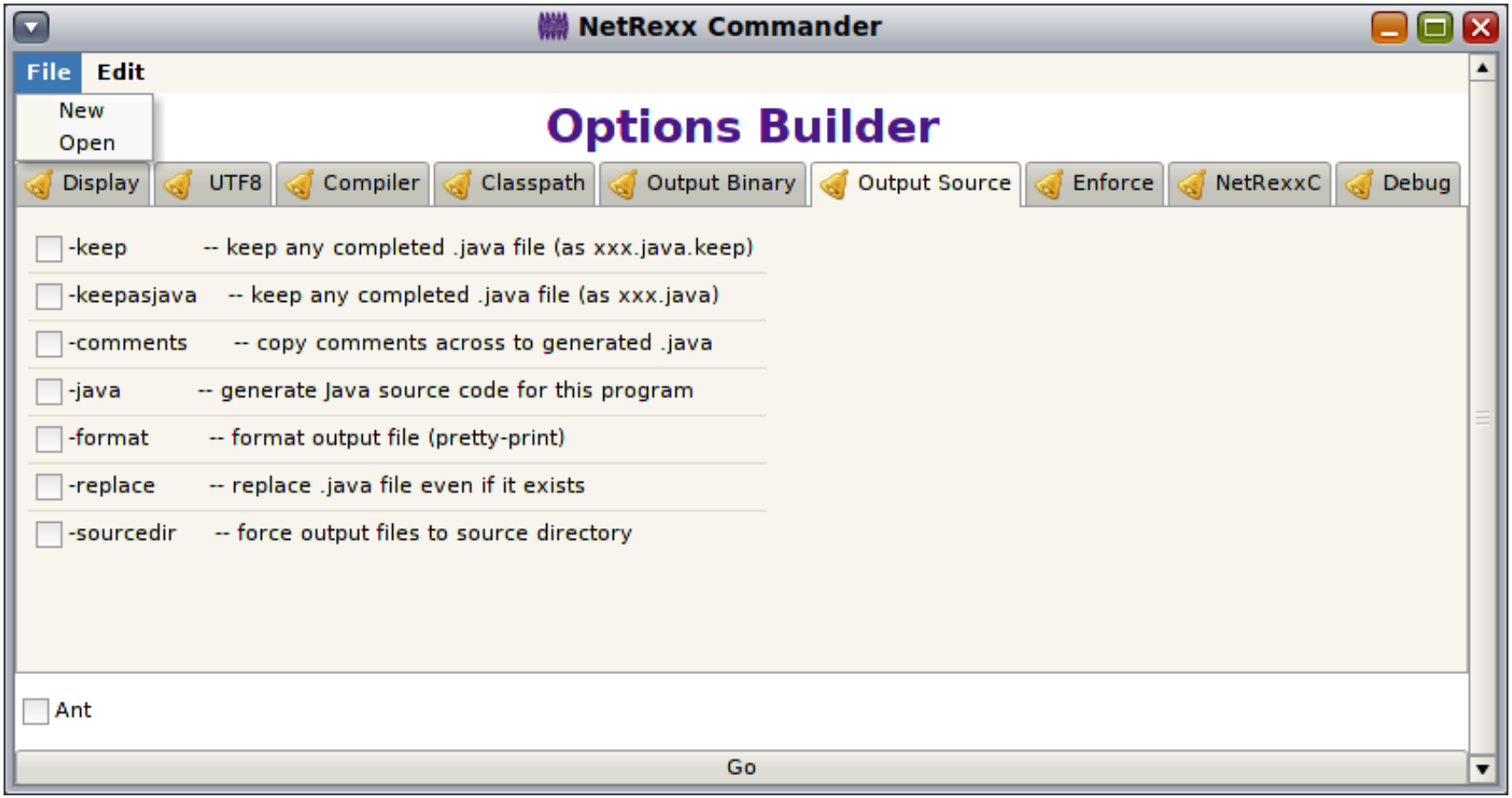
1. Download
   - `https://pivot.apache.org/`
2. Unpack
3. Add to CLASSPATH ...
   - pivot-charts-2.0.5.jar
   - pivot-core-2.0.5.jar
   - pivot-web-2.0.5.jar
   - pivot-web-server-2.0.5.jar
   - pivot-wtk-2.0.5.jar
   - pivot-wtk-terra-2.0.5.jar

What does Apache Pivot do?

It's a platform for building Rich Web Applications that

1. can run as an Applet with a Plugin
   - but browser support is slowly going away
2. be installed over the Internet
   - but javaws is not packaged everywhere
3. can run on the Desktop
   - anywhere Java or OpenJDK is available
4. is Open Source
5. contains a Large Widget Set
6. makes Localization easy
7. includes Charts, Web components and more ...

User interfaces can be designed with BXML ("Bean XML")
BXML allows quick UI layouts using any text editor



You can still write lots of code ...

```
import java.awt.Color
import java.awt.Font
import org.apache.pivot.collections.Map
import org.apache.pivot.wtk.Application
import org.apache.pivot.wtk.DesktopApplicationContext
import org.apache.pivot.wtk.Display
import org.apache.pivot.wtk.HorizontalAlignment
import org.apache.pivot.wtk.Label
import org.apache.pivot.wtk.VerticalAlignment
import org.apache.pivot.wtk.Window

class HelloJava public implements Application

  properties private
    win=Window null

  method startup(display=Display,properties=Map)
    win=Window()
    lbl=Label()
    lbl.setText("Hello World!")
    lbl.getStyles().put("font",Font("Arial",Font.BOLD,24))
    lbl.getStyles().put("color",Color.RED)
    lbl.getStyles().put("horizontalAlignment",HorizontalAlignment.CENTER)
    lbl.getStyles().put("verticalAlignment",VerticalAlignment.CENTER)
    win.setContent(lbl)
    win.setTitle("Hello World!")
    win.setMaximized(1)
    win.open(display)

  method shutdown(optional=boolean) returns boolean
    if win\==null then do
      win.close()
    end
    return 0
```

Similar Application with UI code in BXML

```
import org.apache.pivot.beans.BXMLSerializer
import org.apache.pivot.collections.Map
import org.apache.pivot.wtk.Application
import org.apache.pivot.wtk.DesktopApplicationContext
import org.apache.pivot.wtk.Display
import org.apache.pivot.wtk.Window
import org.apache.pivot.serialization.SerializationException

class HelloBXML public implements Application

  properties private
    win=Window null

  method startup(display=Display,properties=Map) signals IOException, SerializationException
    bxml=BXMLSerializer()
    win=Window bxml.readObject(HelloBXML.class,"hello.bxml")
    win.open(display)

  method shutdown(optional=boolean) returns boolean
    if win\==null then do
      win.close()
    end
    return 0

  method suspend

  method resume

  method main(args=String[]) static
    DesktopApplicationContext.main(HelloBXML.class,args)
```

The BXML is just an XML file.
Some free XML editors include:
Eclipse, NetBeans, jEdit and XML Copy Editor

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

<Window title="Hello World!" maximized="true"
xmlns:bxml="http://pivot.apache.org/bxml" xmlns="org.apache.pivot.wtk">
<Label text="Hello World!"
styles="{font:'Arial bold 24', color:'#ff0000',
            horizontalAlignment:'center', verticalAlignment:'center'}" />
</Window>
```

To work with an item in your code, give it a BXML ID PushButton is KINGDOM in this example.

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

<Window title="Button Demo" maximized="true"
    xmlns:bxml="http://pivot.apache.org/bxml"
    xmlns="org.apache.pivot.wtk">
    <Border>
        <BoxPane styles="{padding:4, horizontalAlignment:'center',
            verticalAlignment:'center'}">
            <PushButton bxml:id="KINGDOM" buttonData="Click Me!"
                preferredWidth="320" preferredHeight="240"
                styles="{font:{bold:true}, color:'#b40000'}"/>
        </BoxPane>
    </Border>
</Window>
```

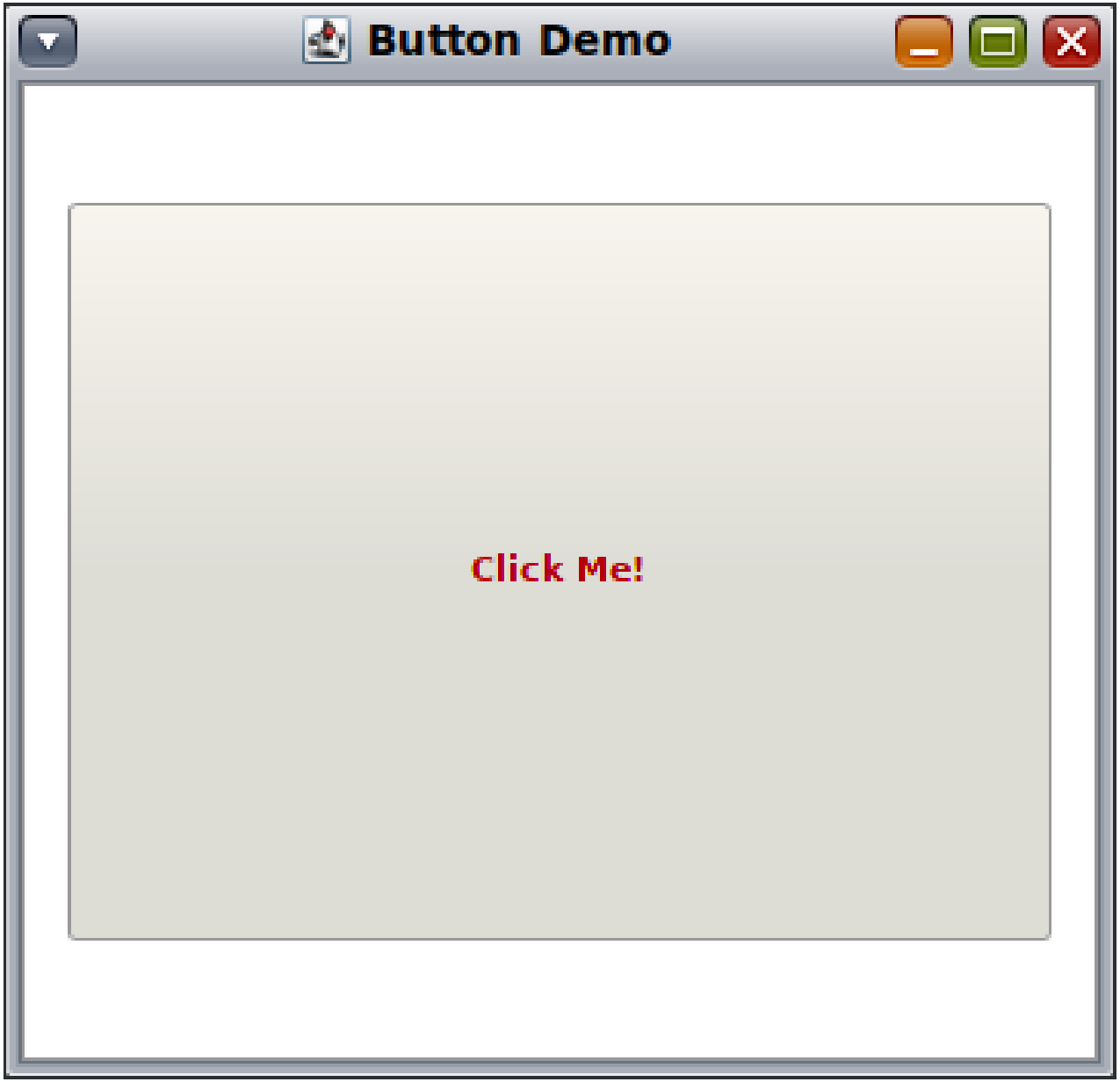
From our code

1. Use BXMLSerializer()
   - bxml=BXMLSerializer()
2. Load our BXML file
   - this.win=Window bxml.readObject(Example.class,"button.bxml")
3. We BIND to it
   - bxml.bind(this,Example.class)
4. Get it's NAMESPACE
   - nsmap=bxml.getNamespace()
5. Fetch by ID
   - this.btn=PushButton nsmap.get("KINGDOM")
6. It may need a LISTENER, so get ours
   - lst=this.btn.getButtonPressListeners()
7. If it does, create the method
   - method buttonPressed(wtkbtn=org.apache.pivot.wtk.Button)
8. Attach our method
   - lst.add(this)

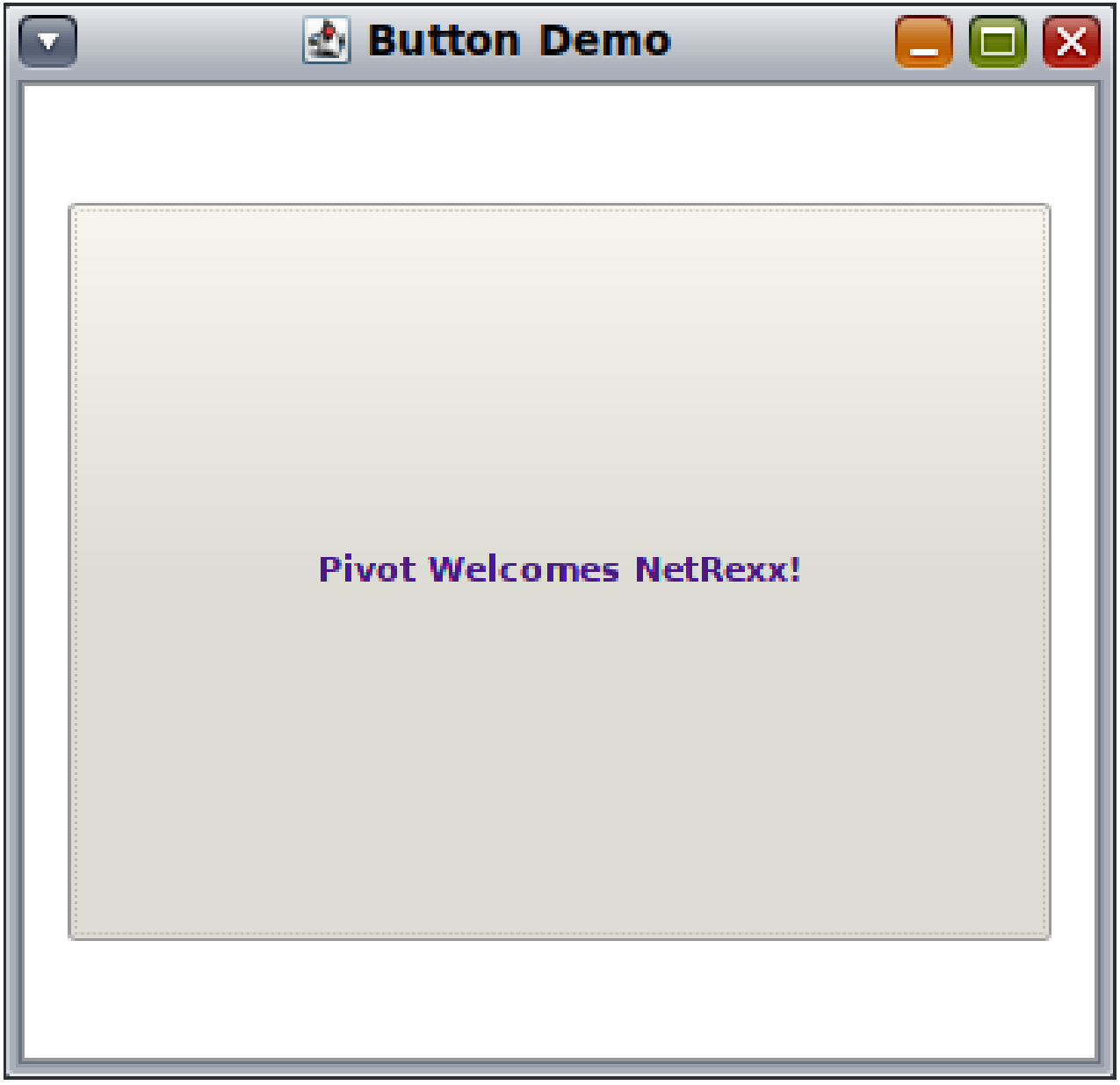
Our Example

```
import org.apache.pivot.beans.Bindable
import org.apache.pivot.beans.BXMLSerializer
import org.apache.pivot.collections.Map
import org.apache.pivot.serialization.SerializationException
import org.apache.pivot.wtk.Application
import org.apache.pivot.wtk.ButtonPressListener
import org.apache.pivot.wtk.DesktopApplicationContext
import org.apache.pivot.wtk.Display
import org.apache.pivot.wtk.PushButton
import org.apache.pivot.wtk.Window

class Example public implements Application,ButtonPressListener

  properties private
    win=Window null
    btn=PushButton

  method startup(display=Display,properties=Map) signals IOException,SerializationException
    bxml=BXMLSerializer()
    this.win=Window bxml.readObject(Example.class,"button.bxml")
    bxml.bind(this,Example.class)
    nsmap=bxml.getNamespace()
    this.btn=PushButton nsmap.get("KINGDOM")
    lst=this.btn.getButtonPressListeners()
    lst.add(this)
    win.open(display)

  method shutdown(optional=boolean) returns boolean
    if win\==null then do
      win.close()
    end
    return 0

  method suspend

  method resume

  method buttonPressed(wtkbtn=org.apache.pivot.wtk.Button)
    wtkbtn.setButtonData("Pivot Welcomes NetRexx!")
    wtkbtn.getStyles().put("color", '#4a1884')

  method main(args=String[]) static
    DesktopApplicationContext.main(Example.class,args)
```

Run



Click



Thank you for your time.

1. For a larger example, see KitchenSink.nrx at:
   - `https://github.com/agrellum/NetRexx-Samples`
2. Many, many more features ...
   - Data Binding
   - Scripting