

 BlackBerry.

DEVCON 2010

Code Puzzlers

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COM14

Date

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Ready for Code Puzzles?

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- Do you think you know your way around BlackBerry code?
- You are challenged by:
 - BlackBerry Certified Application Developers (for Java Applications BCP-811)
 - BlackBerry Developer Group Managers (Group: Berlin, Germany)
 - BlackBerry Alliance Members (Cortado. A Division of Thinprint)
 - BlackBerry Developer Advisory Council



```
Vector list = new Vector(array.length);  
for (int i=0; i<array.length; i++)  
{  
    list.add(array[i]);  
    return list;  
}
```

- a) Does not compile
- b) Throws `ArrayIndexOutOfBoundsException`
- c) Throws other Exception

```
Vector list = new Vector(array.length);  
for (int i=0; i<array.length; i++)  
{  
    list.add(array[i]);  
    return list;  
}
```

Java.util.Vector of Java ME does not implement java.util.List interface.

- a) **Does not compile**
- b) Throws ArrayIndexOutOfBoundsException
- c) Throws other Exception

```
Vector list = new Vector(array.length);  
for (int i=0; i<array.length; i++)  
{  
    list.addElement(array[i]);  
    return list;  
}
```

- Know the limitations of the BlackBerry API!
- Be ware of missing methods in existing classes compared to JSE/JEE: String, StringBuffer, Date, Long, ...

Align this!

```
HorizontalFieldManager mg = new HorizontalFieldManager();  
mg.add(new EditField("", "left", 10, DrawStyle.RIGHT));  
mg.add(new LabelField("center"));  
mg.add(new EditField("", "right", 10, DrawStyle.LEFT));
```

What does the rendered screen look like?

- a) [left|center| right]
- b) [center]
- c) [left|center|right],
"left" and "right" using 10 characters width space
- d) [left]
- e) [right]

Align this!

```
HorizontalFieldManager mg = new HorizontalFieldManager();  
mg.add(new EditField("", "left", 10, DrawStyle.RIGHT));  
mg.add(new LabelField("center"));  
mg.add(new EditField("", "right", 10, DrawStyle.LEFT));
```

EditField#getWidth() returns
maximal value

What does the rendered screen look like?

- a) [left|center| right]
- b) [center]
- c) [left|center|right],
"left" and "right" using 10 characters width space
- d) [left]
- e) [right]

Fun with Eventthread

```
public class EventlockPuzzle extends UiApplication{
    ...
    // called from outside of main event thread
    synchronized(UiApplication.getEventLock()) {
        if (askTheQuestion())
            Dialog.alert("I like DevCon too");
        else
            Dialog.alert("Me either");
    }

    public boolean askTheQuestion() {
        synchronized(UiApplication.getEventLock()) {
            return Dialog.ask(Dialog.D_YES_NO,
                "Like DevCon?") == Dialog.YES;
        }
    }
}
```

- a) For YES it shows "I like DevCon too"
- b) For YES it shows "Me either"
- c) An exception inside "askTheQuestion()"
- d) An exception outside "askTheQuestion()"
- e) A deadlock occurs

Fun with Eventthread

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public class EventlockPuzzle extends UiApplication{
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    public boolean askTheQuestion() {
        synchronized(UiApplication.getEventLock()) {
            return Dialog.ask(Dialog.D_YES_NO,
                "Like DevCon?") == Dialog.YES;
        }
    }
}
```

- a) For YES it shows "I like DevCon too"
- b) For YES it shows "Me either"
- c) An exception inside "askTheQuestion()"
- d) An exception outside "askTheQuestion()"
- e) A deadlock occurs

Dialog.ask is waiting for userinput and needs to run in Event Thread!

- Use:

```
UIApplication.getUIApplication()'s  
    invokeLater (...)  
    invokeAndWait (...)
```

Make sure when can use EventLock and when to get into EventThread!

Possible solution for blocking method with Dialog.ask:

```
public boolean askTheQuestionCorrect()
{
    class MutableBoolean
    { boolean value;}

    final MutableBoolean returnValue = new MutableBoolean();

    UiApplication.getUiApplication().invokeAndWait(
        new Runnable() {
            public void run() {
                returnValue.value = (Dialog.ask(...
            }
        });
}
```

More Fun with Eventthread

```
• public class EventlockPuzzle extends Application{  
  ...  
  // called from outside of main event thread  
  UiApplication.getUiApplication().invokeLater(  
    new Runnable() {  
      public void run() {askTheQuestion();}});
```

```
public void askTheQuestion() {  
  if (Dialog.ask(Dialog.D_YES_NO,  
    "Like DevCon?") == Dialog.OK)  
    Dialog.alert("I like DevCon too");  
  else  
    Dialog.alert("Me either");  
}
```

- a) For YES it shows "I like DevCon too"
- b) For YES it shows "Me either"
- c) An exception inside "askTheQuestion()"
- c) An exception outside "askTheQuestion()"
- d) A deadlock occurs

More Fun with Eventthread

```
public class EventlockPuzzle extends Application{
    ...
    // called from outside of main event thread
    UiApplication.getUiApplication().invokeLater(
        new Runnable() {
            public void run() {askTheQuestion();});
}

public void askTheQuestion() {
    if (Dialog.ask(Dialog.D_YES_NO,
        "Like DevCon?") == Dialog.OK)
        Dialog.alert("I like DevCon too");
    else
        Dialog.alert("Me either");
}
```

ClassCastException!



- a) For YES it shows "I like DevCon too"
- b) For YES it shows "Me either"
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- c) An exception outside "askTheQuestion()"
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- Did you know about?
`Ui.getUiEngine()`
- Combined with
`Application.getApplication().invokeLater()`
UI Operation can be done in Non-UI application
i.e. background listeners

Buttoning up...

```
ButtonField b1 = new
    ButtonField("left",ButtonField.CONSUME_CLICK|FIELD_LEFT) ;

ButtonField b2 = new
    ButtonField("right",ButtonField.CONSUME_CLICK|FIELD_RIGHT) ;

HorizontalFieldManager man = new
    HorizontalFieldManager(USE_ALL_WIDTH|NO_HORIZONTAL_SCROLL) ;

man.add(b1) ;

man.add(b2) ;
```

What does the rendered screen look like?

- a) [left right]
- b) [left right]
- c) [left]
- d) [right]

Buttoning up...

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ButtonField b1 = new
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HorizontalFieldManager man = new
    HorizontalFieldManager(USE_ALL_WIDTH|NO_HORIZONTAL_SCROLL) ;

man.add(b1) ;

man.add(b2) ;
```

What does the rendered screen look like?

- a) [left right]
- b) [left right]
- c) [left]
- d) [right]

Storm at the horizon!

```
// b1,b2 as before with new
  FieldChangeListener that shows: Dialog.Alert(getLabel())

MyManager extends HorizontalFieldManager {
  ...
  protected void sublayout(int w, int h)    {
    super.sublayout(w, h);
    Field b2 = getField(1);
    setPositionChild(b2,
                    Display.getWidth()-b2.getWidth(),
                    0);
  }...
}
```

**If I click on my Storm II the left and the the right Button,
what do the alert boxes show?**

- (a) „left“, „right“
- (b) „left“, „left“
- (c) „left“, IllegalArgumentException (no box)
- (d) „left“, nothing (no box)
- (e) IllegalArgumentException (no boxes at all)

Storm at the horizon!

```
// b1,b2 as before with new
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MyManager extends HorizontalFieldManager {
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  protected void sublayout(int w, int h) {
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- (d) „left“, nothing (no box)
- (e) IllegalArgumentException (no boxes at all)

2nd field not focusable on
Touch device

Solution 1!

```
HorizontalFieldManager hm = new HorizontalFieldManager();  
VerticalFieldManager vleft = new VerticalFieldManager();  
VerticalFieldManager vright = new  
    VerticalFieldManager(VerticalFieldManager.USE_ALL_WIDTH);  
vleft.add(b1);  
vright.add(b2);  
hm.add(vleft);  
hm.add(vright);
```

Solution 1!

```
HorizontalFieldManager hm = new HorizontalFieldManager();  
VerticalFieldManager vleft = new VerticalFieldManager();  
VerticalFieldManager vright = new  
    VerticalFieldManager(VerticalFieldManager.USE_ALL_WIDTH);  
vleft.add(b1);  
vright.add(b2);  
hm.add(vleft);  
hm.add(vright);
```

Does not work for EditField

Solution 2!

```
class TwoButtonFieldManager extends Manager {
    ...
    protected void sublayout(int w, int h){

        Field b1 = getField(0);
        Field b2 = getField(1);

        layoutChild(b1,w,h);
        layoutChild(b2,w,h);

        int w2 = b2.getWidth() + b2.getMarginLeft() +
                b2.getMarginRight();

        setPositionChild(b1, 0, 0);
        setPositionChild(b2, Display.getWidth()-w2, 0);
        setExtent(Display.getWidth(), b1.getHeight());

    }
}
```

Solution 2!

```
class TwoButtonFieldManager extends Manager {
    ...
    protected void sublayout(int w, int h){

        Field b1 = getField(0);
        Field b2 = getField(1);

        layoutChild(b1,w,h);
        layoutChild(b2,w,h);

        int w2 = b2.getWidth() + b2.getMarginLeft() +
                b2.getMarginRight();

        setPositionChild(b1, 0, 0);
        setPositionChild(b2, Display.getWidth()-w2, 0);
        setExtent(Display.getWidth(), b1.getHeight());
    }
}
```

Persistent Illusions....

```
class Person implements Persistable {
    private final Vector THE_STATES = new Vector( )
        {{addElement("dead"); addElement("alive");}};
    private String NAME = "JonDoe";
    private int STATE = 0;

    Person(String name) {
        NAME = name; STATE++;
    }

    public String toString() {
        return NAME + " is " + THE_STATES.elementAt(STATE);
    }
}
```

When persisting new Person("Elvis")... it will:

- (a) When unpersisting from 2nd app, toString() returns "Elvis is alive"
- (b) When unpersisting from 2nd app, toString() returns "Elvis is dead"
- (c) When unpersisting from 2nd app, toString() returns "JonDoe is alive"
- (d) ArrayIndexOutOfBoundsException is thrown
- (e) When unpersisting throws InstantiationException
- (f) NonPersistableObjectException is thrown

Persistent Illusions....

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class Person implements Persistable {
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    }

    public String toString() {
        return NAME + " is " + THE_STATES.elementAt(STATE);
    }
}
```

Subclass of Vector,
which is not explicit persistable!



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- (f) NonPersistableObjectException is thrown

- Any object which is marked '*Persistable*' can be stored (but every member must be *Persistable* as well!)
- Most API data types are *Persistable*
- Sub-classes do *not* inherit implementation of *Persistable*!

Persistent Illusions continued....

```
class Person implements Persistable {
    private final String[] THE_STATES = {"dead", "alive"};
    private static String NAME = "JonDoe";
    private int STATE = 0;

    Person(String name) {
        NAME = name; STATE++;
    }

    public String toString() {
        return NAME + " is " + THE_STATES.elementAt(STATE);
    }
}
```

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Persistent Illusions continued....

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    private final String[] THE_STATES = {"dead", "alive"};
    private static String NAME = "JonDoe";
    private int STATE = 0;

    Person(String name) {
        NAME = name; STATE++;
    }

    public String toString() {
        return NAME + " is " + THE_STATES.elementAt(STATE);
    }
}
```

Statics will not be persisted!

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Persistent Illusions continued....

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- Only instance variables will be persisted!
- Be aware of your static values!
i.e. keep an eye on singletons!

No place is like 127.0.0.1

```
// given a server socket for port 1234
ServerSocketConnection scn = (ServerSocketConnection)
    Connector.open("socket://:1234");
SocketConnection sc = (SocketConnection) scn.acceptAndOpen();
...
```

```
// and a 2nd application:
SocketConnection ccn =(SocketConnection)
    Connector.open("socket://localhost:1234");
ccn.openOutputStream().write("DevCon".getBytes());
```

What will be read from inputstream in server socket app?

- (a) Nothing, server socket was never opened
- (b) Nothing, client socket did never contacted server socket app
- (c) "DevCon"
- (d) "noCveD" because of network byte order
- (e) IllegalArgumentException in Connector.open()

No place is like 127.0.0.1

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No place is like 127.0.0.1

- Loopback interface not supported!
(127.0.0.1 / localhost)
- Be aware that connections can start at BES/BIS instead of the BlackBerry itself
(know about “deviceside” parameters in Connector call)

For More Information

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- For Java Puzzles read:
Java Puzzlers: Traps, Pitfalls, and Corner Cases
Joshua Bloch, Neal Gafter
ISBN-13: 978-0321336781
- Donate by buying an app from us:
<http://www.jodamob.de>
- Visit our Group:
<http://berlinblackberrydevelopers.blogspot.com>
- Visit our employer:
<http://www.cortado.com>

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Thank You

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