QtQuick Training Course

Module One

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Module One

Objectives

1 Things to know about Qt

- What is it?
- Why use it?
- Who uses it?

2 Getting started with QtQuick

- Declarative UI
- Syntax
- Examples
- Qt Creator IDE
- Comparison between languages
- Hello world

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Objectives

3 Layout and Interaction

Item

Rectangle

Image

Text

Mouse Events

Key Events

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Module One

Topics

1 Things to know about Qt

2 Getting started with QtQuick

3 Layout and Interaction

4 Questions

5 Lab

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Things to know about Qt

What is Qt?

Cross-platform framework

For GUI and non-GUI apps

Used everywhere (Desktop, web and embedded development)

LGPL licensed in 2009

Free for anyone to use it: http://qt.nokia.com/

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Things to know about Qt

Why Qt?

Qt is intuitive

Just one code to all platforms

Three licenses to fit your needs (Commercial, LGLP or GPL)

Huge community support

Provides free tools to start learning

Used by 250.000 developers (commercial and open source)

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Things to know about Qt

Qt Applications

Autodesk software (Maya and 3d Studio)

Google Earth

Skype for Linux

Opera

Full support for Nokia devices

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Getting started with QtQuick

Qt Quick is

QML (language)

QtDeclarative (native module, C++ API)

Qt Creator

```
Rectangle {
    width: 200
    height: 200
    Text {
        x: 66
        y: 93
        text: "Hello World"
    }
}
```

See example: addon/module-001/examples/hello-world.qml

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Tools

Qt 4.7

http://qt.nokia.com/downloads

Qt Creator IDE

- Integrated GUI layout and forms designer
- Project and build management tools
- Integrated, context-sensitive help system
- Visual debugger
- Rapid code navigation tools

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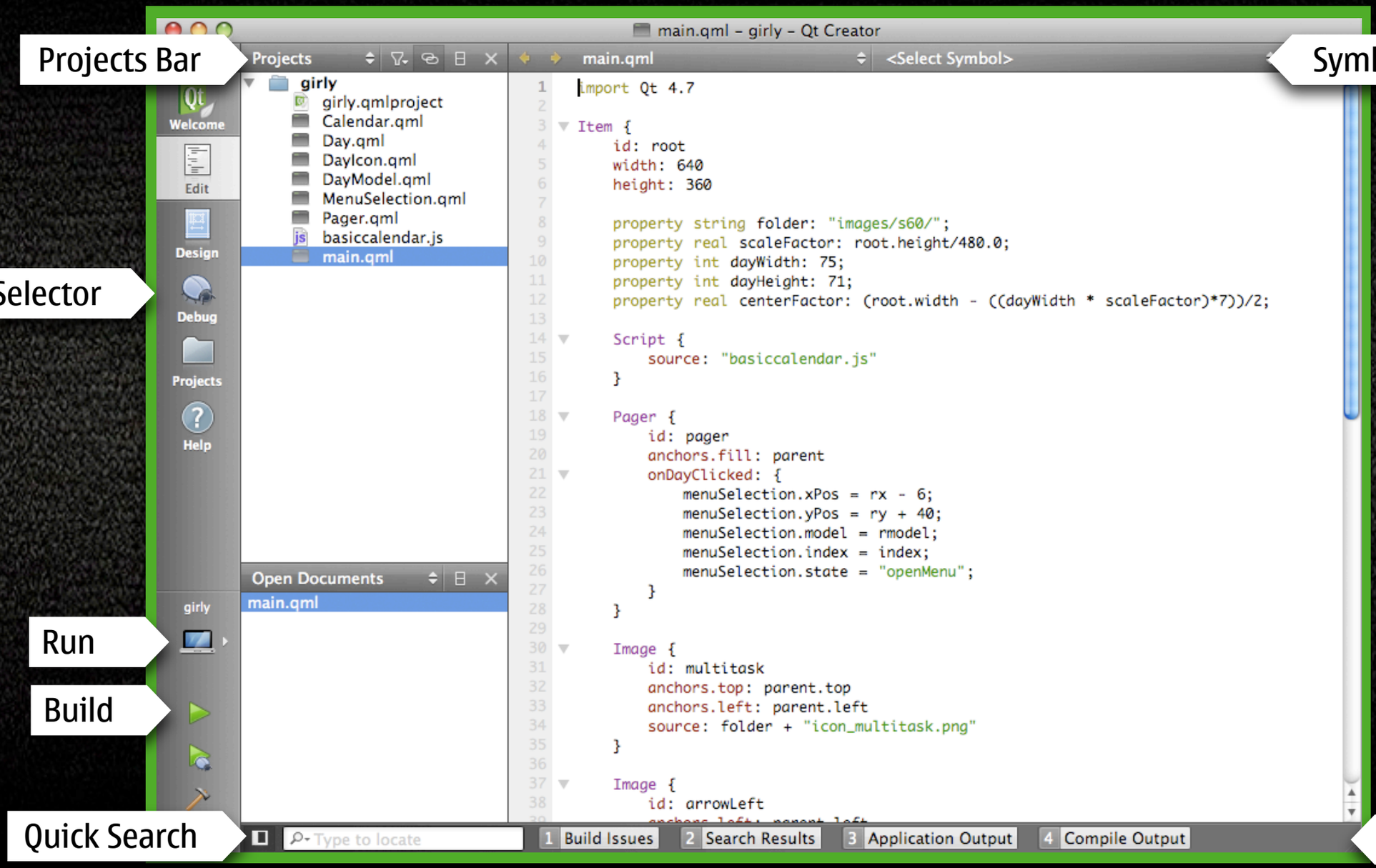
Getting started with QtQuick

Qt Creator




```
import Qt 4.7

Item {
    id: root
    width: 640
    height: 360

    property string folder: "images/s60/";
    property real scaleFactor: root.height/480.0;
    property int dayWidth: 75;
    property int dayHeight: 71;
    property real centerFactor: (root.width - ((dayWidth * scaleFactor)*7))/2;

    Script {
        source: "basiccalendar.js"
    }

    Pager {
        id: pager
        anchors.fill: parent
        onDayClicked: {
            menuSelection.xPos = rx - 6;
            menuSelection.yPos = ry + 40;
            menuSelection.model = rmodel;
            menuSelection.index = index;
            menuSelection.state = "openMenu";
        }
    }

    Image {
        id: multitask
        anchors.top: parent.top
        anchors.left: parent.left
        source: folder + "icon_multitask.png"
    }

    Image {
        id: arrowLeft
```

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Getting started with QtQuick

Comparison between languages

Actionscript: MenuButton.as

```
public class MenuButton extends MovieClip {
        public function MenuButton() {
                this.x = 60;
                this.addEventListener(MouseEvent.MOUSE_DOWN, ClickBt);
        }
        function ClickBt(e:MouseEvent) {
                trace(“clicked”);
        }
}
```

QtQuick: MenuButton.qml

```
Item {
   x:60;
   MouseArea: {
        anchors.fill: parent;
        onClicked: print("clicked");
   }
}
```

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Layout and Interaction

Layout

Item

Rectangle

Image

Text and TextInput

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Layout and Interaction

Item

The base of all visual elements in QtQuick

Item has no visual appearance

It defines all the properties that are common across visual items

Common properties examples: anchors, clip, width, height, opacity, x, y, rotation or scale

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Item code snippet

The basic of all visual elements in QtQuick

```
Item {
    id: label1
    x: 80
    width: 100
    height: 100
}
```

Anchors

```
Item {
    id: label2
    anchors.left: label1.left
    anchors.top: label1.top
    anchors.topMargin: 30;
}
```

Use the Anchor property instead of hardcoding the x and y. On module two, there will be more explanation about anchors

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Layout and Interaction

Layout

Item

Rectangle

Image

Text and TextInput

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Layout and Interaction

Rectangle

A Rectangle is painted using a solid color and an optional border.

```
Item {
    id: label1
    width: 100
    height: 100

    Rectangle {
        anchors.fill: parent
        color: "red"
        border.color: "black"
        border.width: 5
        radius: 10
    }
}
```

You can use the radius property to create rounded borders.

See example: addon/module-001/examples/item-example.qml

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Layout and Interaction

Layout

Item

Rectangle

Image

Text and TextInput

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Image

This element allows you to add bitmap to a scene.

```
Item {
    id: label1
    width: 100
    height: 100

    Image {
        id: button
        source: "pngs/img.png"
    }
}
```

It is a good practice not to hardcode the image width and height. QtQuick will automatically do this job.

To know more about which formats are supported:
http://doc.qt.nokia.com/4.7/qml-image.html

See example: addon/module-001/examples/image-example.qml

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Layout and Interaction

Layout

Item

Rectangle

Image

Text and TextInput

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Text and TextInput

This item allows you to add formatted texts to a scene.

```
Text {
    id: text1
    text: "Hello World!"
    font.family: "Helvetica"
    font.pixelSize: 18
    color: "red"
}
```

```
TextInput {
    id: input
    color: "red"
    text: "Default Text"
    width: 200; height: 24
    focus: true
}
```

To know more about different text properties:
http://doc.qt.nokia.com/4.7/qml-text.html

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Layout and Interaction

Interaction

MouseArea

FocusScope

Flickable

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Layout and Interaction

MouseArea

This item handles mouse events for items that are on the scene.

```
Rectangle {
    width: 100; height: 100
    color: "green"

    MouseArea {
        anchors.fill: parent
        onClicked: { parent.color = 'red' }
    }
}
```

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Layout and Interaction

MouseArea

Drag an item in a determined space to create a scrollbar.

```
Rectangle {
    id: slider;
    width: 320; height: 40;
    color: "green"
    Rectangle {
        id: handle; width: 40; height: 40
        color: "red"
        MouseArea {
            anchors.fill: parent
            drag.target: parent; drag.axis: "XAxis"
            drag.minimumX: 0
            drag.maximumX: slider.width - handle.width
        }
    }
}
```

See example: addon/module-001/examples/scrollbar-mousearea.qml

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Layout and Interaction

MouseArea

All Signals

onCanceled
onClicked
onDoubleClicked
onEntered
onExited
onPositionChanged
onPressAndHold
onPressed
onReleased

To know more about MouseArea signals:
http://doc.qt.nokia.com/4.7/qml-mousearea.html

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Layout and Interaction

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Key focus

You can generate a key event when a key is pressed.

```
Rectangle {
    color: "lightsteelblue"; width: 240; height: 25
    Text { id: myText }
    Item {
        id: keyHandler
        focus: true
        Keys.onPressed: {
          if (event.key == Qt.Key_A)
              myText.text = 'Key A was pressed'
          else if (event.key == Qt.Key_B)
              myText.text = 'Key B was pressed'
          else if (event.key == Qt.Key_C)
              myText.text = 'Key C was pressed'
        }
    }
}
```

See example: addon/module-001/examples/focusscope-event.qml

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Layout and Interaction

Key navigation

It is common in key-based UIs to use arrow keys to navigate between focused items

```
Grid {
    columns: 2
    width: 100; height: 100
    Rectangle {
        id: item1
        focus: true
        width: 50; height: 50
        color: focus ? "red" : "lightgray"
        KeyNavigation.right: item2
    }
    Rectangle {
        id: item2
        width: 50; height: 50
        color: focus ? "red" : "lightgray"
        KeyNavigation.left: item1
    }
}
```

To know more about keyboard focus:
http://doc.qt.nokia.com/4.7/qdeclarativefocus.html

See example: addon/module-001/examples/key-navigation.qml

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Layout and Interaction

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Flickable

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Layout and Interaction

Flickable

All elements placed in a Flickable item can be dragged and flicked.

```
Flickable {
    width: 200; height: 200
    contentWidth: image.width
    contentHeight: image.height

    Image { id: image; source: "bigImage.png" }
}
```

For fine-tuning your needs:
http://doc.qt.nokia.com/4.7/qml-flickable.html

See example: addon/module-001/examples/flickable-area.qml

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Questions

What is Qt and QtQuick?

How is a QtQuick component file structured?

What is the basic visual element in QtQuick?

How can you position an item relatively to another?

How can you handle mouse events in QtQuick?

Name some QtQuick elements that inherits from Item.

How many components can you declare in a QtQuick file?

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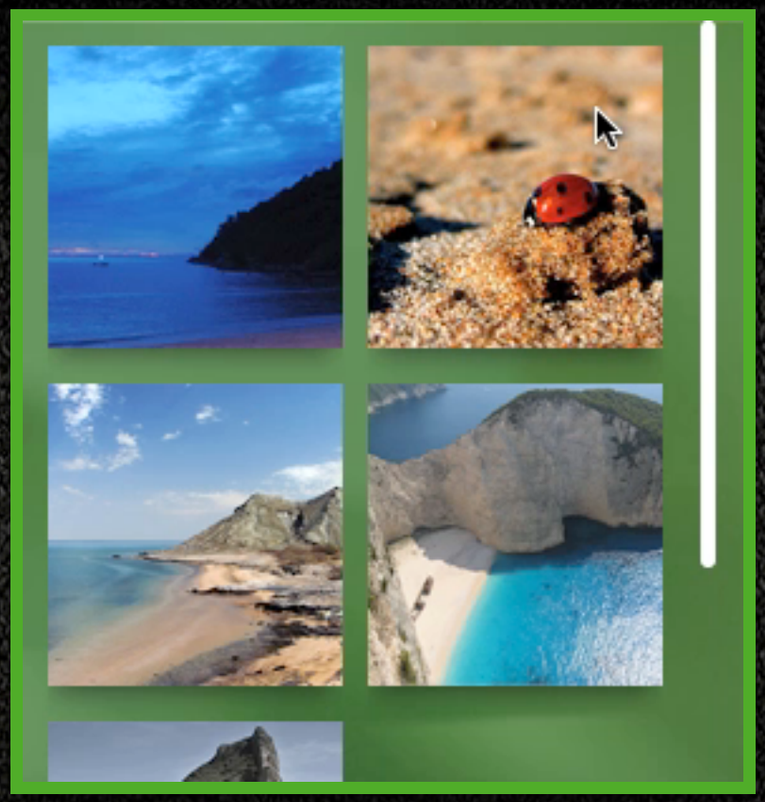
Lab

Align items inside a Flickable area. Use anchors to do the job



See video: addon/module-001/videos/lab-video-example.mov

Optional: Create a scrollbar for it

See lab: addon/module-001/labs/Lab0ne.qmlproject

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