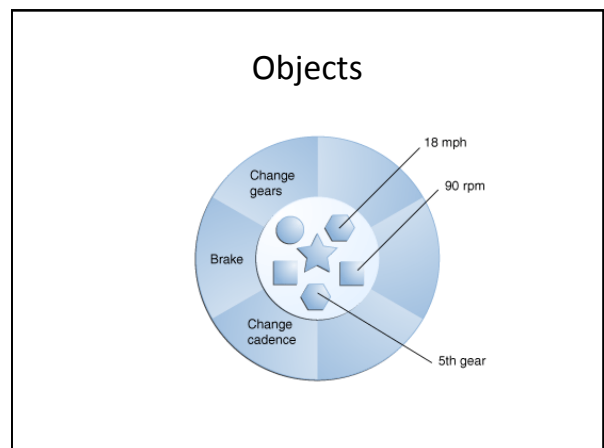
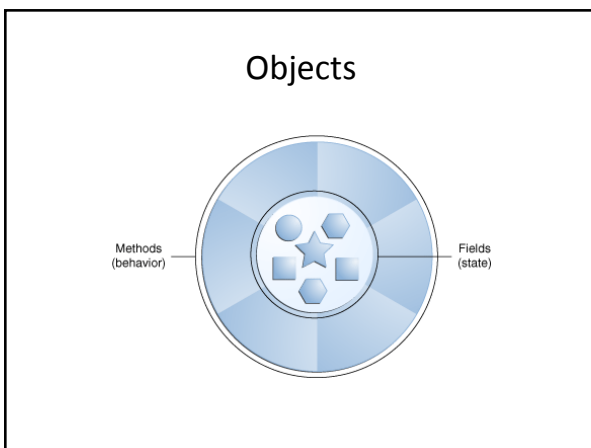




**JavaScript + jQuery**  
**Java**  
Filip Kis  
fkis@kth.se

Object Oriented  
**JAVA**



```
public class Bicycle {  
  
    private int speed = 0;  
    private int gear = 1;  
  
    public void changeGear(int newValue) {  
        gear = newValue;  
    }  
    public void speedUp(int increment) {  
        speed = speed + increment;  
    }  
    public void applyBrakes(int decrement) {  
        speed = speed - decrement;  
    }  
}
```

*Class*

```
Bicycle bike1 = new Bicycle();  
Bicycle bike2 = BikeFactory.makeBike();  
  
bike1.changeGear(2);  
bike1.speedUp(30);  
  
bike2.changeGear(1);  
bike2.speedUp(12);
```

*Class*

```
public class Bicycle {
    // rest of the code

    public int getSpeed() {
        return speed;
    }

    public void matchSpeed(Bicycle b, int gear) {
        speed = b.getSpeed();
        this.gear = gear;
    }
}
```

*Methods*

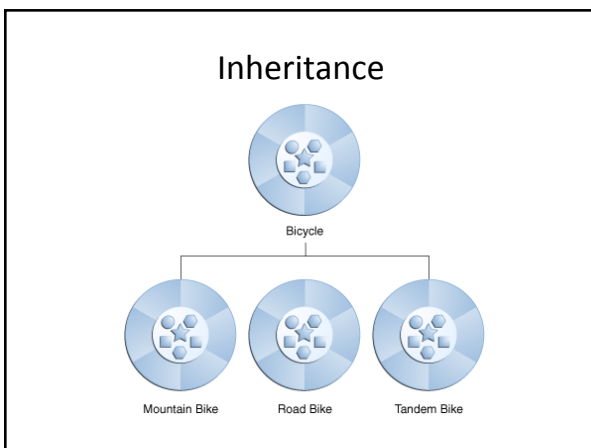
```
Bicycle bike1 = new Bicycle();
Bicycle bike2 = BikeFactory.makeBike();

bike1.changeGear(2);
bike1.speedUp(30);

bike2.changeGear(1);
bike2.speedUp(12);

bike2.matchSpeed(bike1,3);
```

*Methods*



```
public class Bicycle {
    //the rest of the class code
}

public class RoadBicycle extends Bicycle{

    private boolean light;

    public void setLights(boolean lightsOn) {
        light = lightsOn;
    }
}
```

*Inheritance*

```
RoadBicycle road1 = new RoadBicycle();

road1.changeGear(2);
road1.speedUp(30);
road1.setLights(true);
```

*Inheritance*

```
public class BikeFactory {

    public static void fixBicycle(Bicycle b) {
        //code for fixing the bicylce
    }
    //the rest of the class code
}

BikeFactory.fixBicycle(bike1);
BikeFactory.fixBicycle(road1);
```

*Inheritance*

*Constructor*

```
public class RoadBicycle extends Bicycle{

    private boolean light;

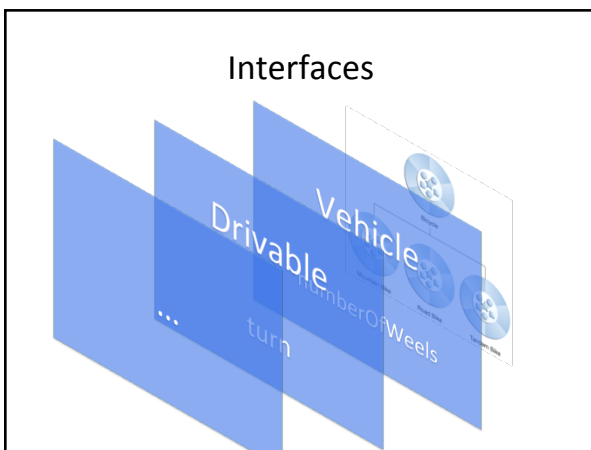
    public RoadBicycle(int initialSpeed) {
        speedUp(initialSpeed);
        light = false;
    }

}
```

*Constructor*

```
RoadBicycle road1 = new RoadBicycle(20);

road1.changeGear(2);
road1.speedUp(30);
road1.setLights(true);
```



*Interface*

```
public interface Vehicle {
    public int numberOfWheels();
}

public class Bicycle implements Vehicle {
    public int numberOfWheels() {
        return 2;
    }
    // rest of the code
}

public class Car implements Vehicle {
    public int numberOfWheels() {
        return 4;
    }
    // rest of the code
}
```

*Interface*

```
public void tellMeNumberOfWheels(Vehicle v) {
    System.println(v.numberOfWheels());
}

tellMeNumberOfWheels(bike1);
tellMeNumberOfWheels(car1);
```

*Package*

```
package se.kth.csc.iprog;

import java.util.*;
import java.lang.Math;
```

Data Types

```
byte a = 12; //-128 to 128
short b = 42; //-32,768 to 32,767
int c = 200; // a lot
long d = 767; // even more
float e = 3.42; // floating point
double f = 7.64; // double percision
boolean g = true; // true/false
char h = 'C'; // unicode character
```

```
String i = "Some string";
```

Control and Loop

```
if ( a == 1 ) {
    // do something
} else {
    // something else
}

for (int i = 0; i < 40; i++) {
    // do something
}
```

while, do-while, switch

Resources

<http://docs.oracle.com/javase/tutorial/>

```
public interface Student {

    public String question();

}
```

How it came to be

Introduced in 1995

Official name **ECMAScript**

No real connection to Java

Mocha, LiveScript, ECMAScript

**JAVASCRIPT**

### What is it

Very powerful **language**

**Weakly typed**

Classless, **prototype** based OO

### What is it used for

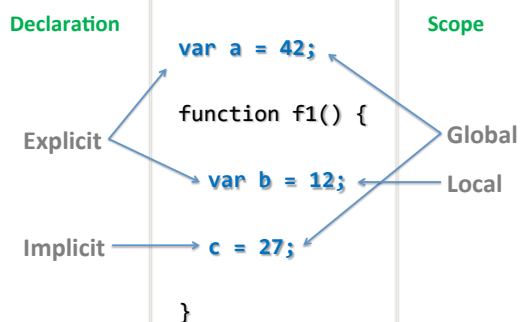
Client-side dynamic content

a.k.a.

**interaction**

**Not** only for HTML

### Variables



### Data types

```
var myInt = 7;
var myBool = true;
var myArray = new Array();
var myString = "ABC";
```

```
var myFunction =
var myObject =
```

*A bit later*

### Control and Looping

```
var a = 0;
for (var k = 1; k < 5; k ++ ) {
  a = a + k;
}
```

```
if ( a == 42 ) {
  b = "The ultimate answer";
} else {
  b = "Something else";
}
```

### = VS. ==

```
var a = 0;
for (var k = 1; k < 5; k ++ ) {
  a = a + k;
}
```

```
if ( a = 42 ) {
  b = "The ultimate answer";
} else {
  b = "Something else";
}
```

## Functions

```
function add(a,b) {  
    return a + b;  
}  
  
c = add(3,7);
```

## Objects

```
var person = new Object();  
  
person.name = "John";  
person.surname = "Smith";  
person.age = 50;
```

## Object constructor

```
function Person(name, surname, age) {  
    this.name = name;  
    this.surname = surname;  
    this.age = age;  
}  
  
var jack = new Person("Jack","Sparrow",112);
```

## Object methods

```
var fullName = function () {  
    return this.name + " " + this.surname;  
}  
  
function Person(name, surname, age) {  
    this.name = name;  
    this.surname = surname;  
    this.age = age;  
    this.getFullName = fullName;  
}  
  
var jack = new Person("Jack","Sparrow",112);  
  
jack.getFullName();
```

## Object methods (alt.)

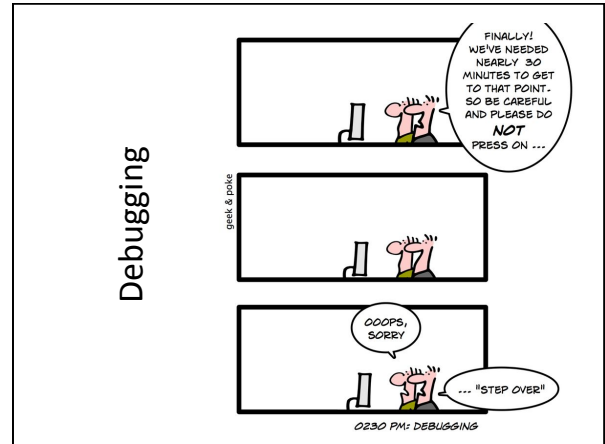
```
function Person(name, surname, age) {  
    this.name = name;  
    this.surname = surname;  
    this.age = age;  
    this.getFullName = function() {  
        return this.name + " " + this.surname;  
    }  
}  
  
var jack = new Person("Jack","Sparrow",112);  
  
jack.getFullName();
```

## Arrays

```
var a = new Array(); // empty array  
var b = new Array("dog", 3, 8.4);  
var c = new Array(10); // array of size 10  
var d = [2, 5, 'a', 'b'];  
  
c[15] = "hello";  
d.push("hello");  
  
var e = new Array();  
e["key"] = "value";  
e["numKey"] = 123;
```

### In HTML

```
<script type="text/javascript">  
  //here comes the code  
</script>  
  
<script src="path_to_external_file.js"  
  type="text/javascript"></script>
```



Debugging

### Resources

<http://www.w3schools.com/js/default.asp>

For debugging check out:

<http://code.google.com/chrome/devtools/docs/overview.html>



### Remember

Always use **var** when declaring variables

Use **==** when comparing objects

Improve your quality of life

**JQUERY**

### What is it

Lightweight JavaScript **library**

**Cross-platform (browser)**

Makes HTML **interaction easy**

### What is it used for

**Manipulating** HTML

**Animation**

**AJAX**

...

### A simple example

```
<div id="myDiv">My Div</div>
<a href="#" onclick="toggleVisibility('myDiv');">Click
here to toggle visibility of My Div</a>

function toggleVisibility(id) {
  var e = document.getElementById(id);
  if(e.style.display == 'block' || e.style.display == "")
    e.style.display = 'none';
  else
    e.style.display = 'block';
}
```

### A simple example

```
<div id="myDiv">My Div</div>
<a href="#" onclick="toggleVisibility('myDiv');">Click
here to toggle visibility of My Div</a>

function toggleVisibility(id) {
  $('#myDiv').toggle();
}
```

### The **\$()** function

```
var el = $("<div/>");

$(window).width();

$("div").hide();
```

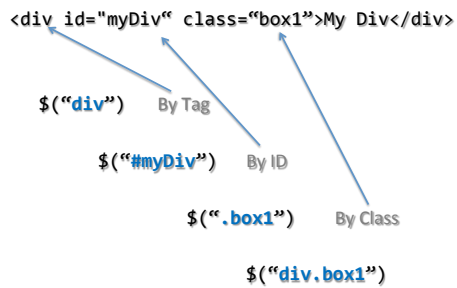
### The Philosophy

```
GET    ACT
  |    |
  |    |
$("div").hide();

$("div").show()
  .addClass("main")
  .html("Hello jQuery");
```



### Selectors



### HTML manipulation

```
$("#div").html("I've changed the text");  
$("#div").css("background-color", "red");  
$("#ul").prepend("<li>Hello</li>");
```

### Events

```
$(document).ready(function(){  
    // your code  
});
```

### Events

```
$("#myButton").click(function(){  
    alert("Button clicked!");  
});  
$("#myButton").click();
```

### Events

```
var buttonClick = function() {  
    alert("Button clicked!");  
}  
$("#myButton").click(buttonClick);
```

### Effects

```
$("#div").toggle(100);  
$("#div").slideToggle(1000);
```

## Resources

jQuery web-site: <http://jquery.com>

jQuery API: <http://api.jquery.com>

jQuery tutorial: <http://www.w3schools.com/jquery/default.asp>



Java for mobile – kind of

**ANDROID**

## How it came to be

Founded in **2003**

Bought by **Google** in 2005

Launched the first phone in 2007

## What is it

Open Source OS based on **linux**

Application written in **Java**

Most used smartphone platform

## What do we need


**Android SDK** – needed and useful tools


**Eclipse IDE** – development environment

**API** – set of libraries for specific version

## What's an Android Project?

**AndroidManifest.xml** – app description

 **src/** – your classes (remember java) go here

 **res/** – app resource, like **layout** descriptions, string constants, etc.

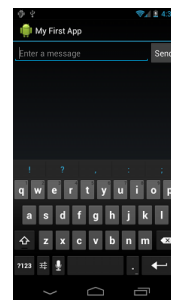
## main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="horizontal">
    <EditText android:id="@+id/edit_message"
        android:layout_width="1"
        android:layout_height="0dp"
        android:layout_height="wrap_content"
        android:hint="@string/edit_message" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/button_send" />
</LinearLayout>
```

## strings.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <string name="app_name">My First App</string>
    <string name="edit_message">Enter a message</string>
    <string name="button_send">Send</string>
</resources>
```

## This is how it looks



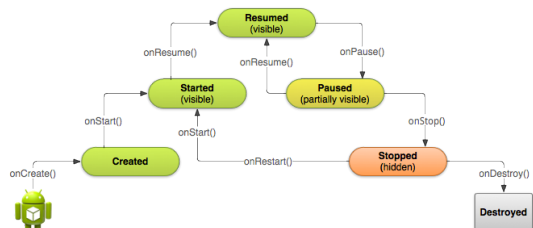
## MainActivity.java

```
package com.example.myfirstapp;

import android.app.Activity;
import android.os.Bundle;

public class MainActivity extends Activity
{
    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
    }
}
```

## Activity lifecycle



### main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="horizontal">
    <EditText android:id="@+id/edit_message"
        android:layout_weight="1"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:hint="@string/edit_message" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/button_send"
        android:onClick="sendMessage" />
</LinearLayout>
```

### MainActivity.java

```
public final static String EXTRA_MESSAGE = "com.example.myfirstapp.MESSAGE";

public void onCreate(Bundle savedInstanceState)
{
    super.onCreate(savedInstanceState);
    setContentView(R.layout.main);
}

/** Called when the user clicks the Send button */
public void sendMessage(View view) {
    Intent intent = new Intent(this, DisplayMessageActivity.class);
    EditText editText = (EditText) findViewById(R.id.edit_message);
    String message = editText.getText().toString();
    intent.putExtra(EXTRA_MESSAGE, message);
    startActivity(intent);
}
```

### DisplayMessageActivity.java

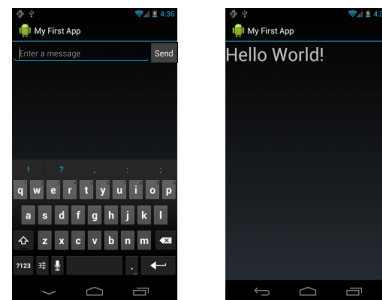
```
@Override
public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);

    // Get the message from the intent
    Intent intent = getIntent();
    String message = intent.getStringExtra(MainActivity.EXTRA_MESSAGE);

    // Create the text view
    TextView textView = new TextView(this);
    textView.setTextSize(40);
    textView.setText(message);

    // Set the text view as the activity layout
    setContentView(textView);
}
```

### This is how it looks



### Remember

Register for groups in Bilda  
 Lab 1 deliverable by **2<sup>nd</sup> Feb**

