ORACLE®

ORACLE

Responsive Web Design in Application Express using HTML5 and CSS3

Shakeeb Rahman
@shakeeb
Principal Member of Technical Staff
Oracle Application Express #orclapex

Shakeeb Rahman

Software Developer

- Intern at Oracle in 2006
- Joined APEX team in 2009
- Projects I have worked on
  - Oracle Store
  - APEX
  - Oracle Cloud
- First talk at NYOUG

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Session Overview

- The Web Today
- Mobile Applications in the Enterprise
- Two Approaches
- Responsive Web Design Basics
- Responsive Web Design in APEX 4.2
- Demos
- Is Responsive Right for you?

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Evolving Web Applications

10 Years Ago

- Designed for Internet Explorer
- Windows Desktop or Laptop
- Maximum screen resolution of 1024x768
- Table-Based
- <font> Tag
- Presentation + Markup mixed

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Evolving Web Applications

5 Years Ago

- Mobile becomes popular with iPhone
- Firefox is eating IE marketshare
- Mobile revolution taking place

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Evolving Web Applications

Today

- Many Devices
- Many Platforms
- Many Screen sizes
- Many Resolutions
- Many Browsers
- **Many Many Variables**

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Evolving Web Applications

Enterprise gone Mobile

- Mobile is not just for personal use
- Enterprises have embraced mobile
- Agility
- Cost savings
- Improve productivity

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

“71% of organizations are already using or planning to use custom mobile applications”

Symantec
2012 State of Mobility Survey

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Everyone is doing it. How can you?

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Native Apps?

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

BlackB
Dev Alp
Smart Shoot
People
Nokia City Lens
Google
Camera
9:41 AM
Messages
Calendar
Photos
Camera
Videos
Maps
Weather
Passbook
Notes
Reminders
Clock
Stocks
Newsstand
iTunes
App Store
Game Center
Settings
Phone
Mail
Safari
Music
9:41 AM
Calendar
Contacts
Videos
YouTube
Settings
Safari
Mail
Google
MY LIBRARY
THE HUNGER GAMES
SUZANNE COLLINS
GEEK DAD
Kristen Stewart
ROBERT LUDLUMS
BOURNE DOMINION
A DISCOVERY OF WITCHES
LANA DEL REY

~~Native Apps?~~

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Let’s look at the requirements.

 Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Application Requirements

Mobile Application Requirements

- APEX Application
- Support Mobile + Tablet Devices
- Functional across a variety of mobile platforms (iOS, Android, etc)
- Leverage existing APEX skills

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Two Approaches

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Approach 1:
Dedicated Mobile Web Application
(using jQuery Mobile)

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

jQuery Mobile Application

- Looks/Feels like Native Mobile App
- Fast, Performant
- Optimized for Mobile
- Compatible with many mobile devices

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

jQuery Mobile Application

However...

- May require duplicate logic
- Limited functionality
- Lack of tablet support
- Different UI from desktop application

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Approach 2:
Responsive Web Application

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Responsive Web Application

- One Application
- Desktop, Tablet, and Mobile support
- Similar User Interface
- **Single Code Line**

Image Source: http://johnpolacek.github.com/scrolldeck.js/decks/responsive/

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Responsive Web Design (RWD)

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Responsive Web Design (RWD)

an approach to web design in which a designer intends to provide an **optimal viewing experience**—easy reading and navigation with a minimum of resizing, panning, and scrolling—**across a wide range of devices** (from desktop computer monitors to mobile phones). (Wikipedia)

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Same HTML.
Same Application Logic.
Different User Experience.

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

The Boston Globe

Campaign2012

PRESIDENTIAL DEBATE | 9 P.M.

Memorable moments, turning points in past debates

From the first televised event in 1960 between John F. Kennedy and Richard Nixon, to the most recent in 2008 between Barack Obama and John McCain.

- **Romney-Obama debate guide**

ASSOCIATED PRESS FILE

SLIDE 1 OF 5

John Kennedy and Richard Nixon debated at a Chicago television studio on Sept. 26,1960.

Latest news

Turkey fires artillery into Syria

The action came after shelling from Syria hit a Turkish border town, killing at least five people. 2:15 pm

- **Suicide bombings kill dozens in Syria**

Winchester man pleads guilty to killing family

Thomas Mortimer IV pleaded guilty to murdering his wife, two children, and mother-in-law in his family's home in 2010.

Valentine says he was undermined by coaches

In an interview on WEEI, Red Sox manager Bobby Valentine said he believed his coaching staff was not loyal this season. 1:28 pm

Developer plans $60m housing complex near JFK T stop

The proposed apartment complex on Morrissey

Boston Globe ePaper →

Read the ePaper edition

The complete print edition, in its exact layout. Browse the print edition page by page, including stories and ads.

- **Check out the ePaper format**
- Download the app now for **iPhone/iPad** or **Android**

Globe Insiders →

Carrier 3:46 PM 100%

bostonglobe.com/?refresh=true

Search

The Boston Globe

WEATHER | TRAFFIC OCTOBER 3, 2012 LOG IN

61° SHOWERS

The Boston Globe

SECTIONS TODAY'S PAPER 0 MY SAVED

Search

Campaign2012

Latest news

SAUL LOEB/AFP/GETTY IMAGES

PRESIDENTIAL DEBATE | 9 P.M.

Obama, Romney to meet in Denver for first debate

The president and Mitt Romney attended to details before their debate tonight, including walking through the venue and reviewing briefing books. 22 minutes ago

- **Obama-Romney debate guide**

In New Hampshire, Bill Clinton talks up Obamacare

The former president embraced President Obama's health care plan at a rally at the University of New Hampshire. 36 minutes ago

- **Bill Clinton reaches out to Warren supporters**

BRIAN MCGRORY

Mitt Romney hasn't changed a bit

The ultimate shame of the former governor's presidential campaign is that he looks and sounds like the same man at the end as when he began

Turkey fires artillery into Syria

The action came after shelling from Syria hit a Turkish border town, killing at least five people. 2:15 pm

- **Suicide bombings kill dozens in Syria**

Winchester man pleads guilty to killing family

Thomas Mortimer IV pleaded guilty to murdering his wife, two children, and mother-in-law in his family's home in 2010.

Valentine says he was undermined by coaches

In an interview on WEEI, Red Sox manager Bobby Valentine said he believed his coaching staff was not loyal this season. 1:28 pm

Developer plans $60m housing complex near JFK T stop

The proposed apartment complex on Morrissey Boulevard in Dorchester would house 278 units on the nearly 93,000 square-foot property.

- **Images: Proposed complex on Morrissey Boulevard**

MORE HEADLINES

FBI offers reward for alleged Mehanna co-conspirator

Carrier 3:49 PM 100%

bostonglobe.com/?refresh=true

Search

The Boston Globe

BOSTON.COM CARS | JOBS | REAL ESTATE WEDNESDAY, OCTOBER 3, 2012 SUBSCRIBE: DIGITAL | HOME DELIVERY | LOG IN

61° Showers WEATHER | TRAFFIC

The Boston Globe

Search

NEWS METRO ARTS BUSINESS SPORTS OPINION LIFESTYLE MAGAZINE TODAY'S PAPER MY SAVED

Campaign2012

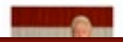
SAUL LOEB/AFP/GETTY IMAGES

PRESIDENTIAL DEBATE | 9 P.M.

Obama, Romney to meet in Denver for first debate

The president and Mitt Romney attended to details before their debate tonight, including walking through the venue and reviewing briefing books. 22 minutes ago

- **Obama-Romney debate guide**



In New Hampshire, Bill Clinton talks

Latest news

Turkey fires artillery into Syria

The action came after shelling from Syria hit a Turkish border town, killing at least five people. 2:15 pm

- **Suicide bombings kill dozens in Syria**

Winchester man pleads guilty to killing family

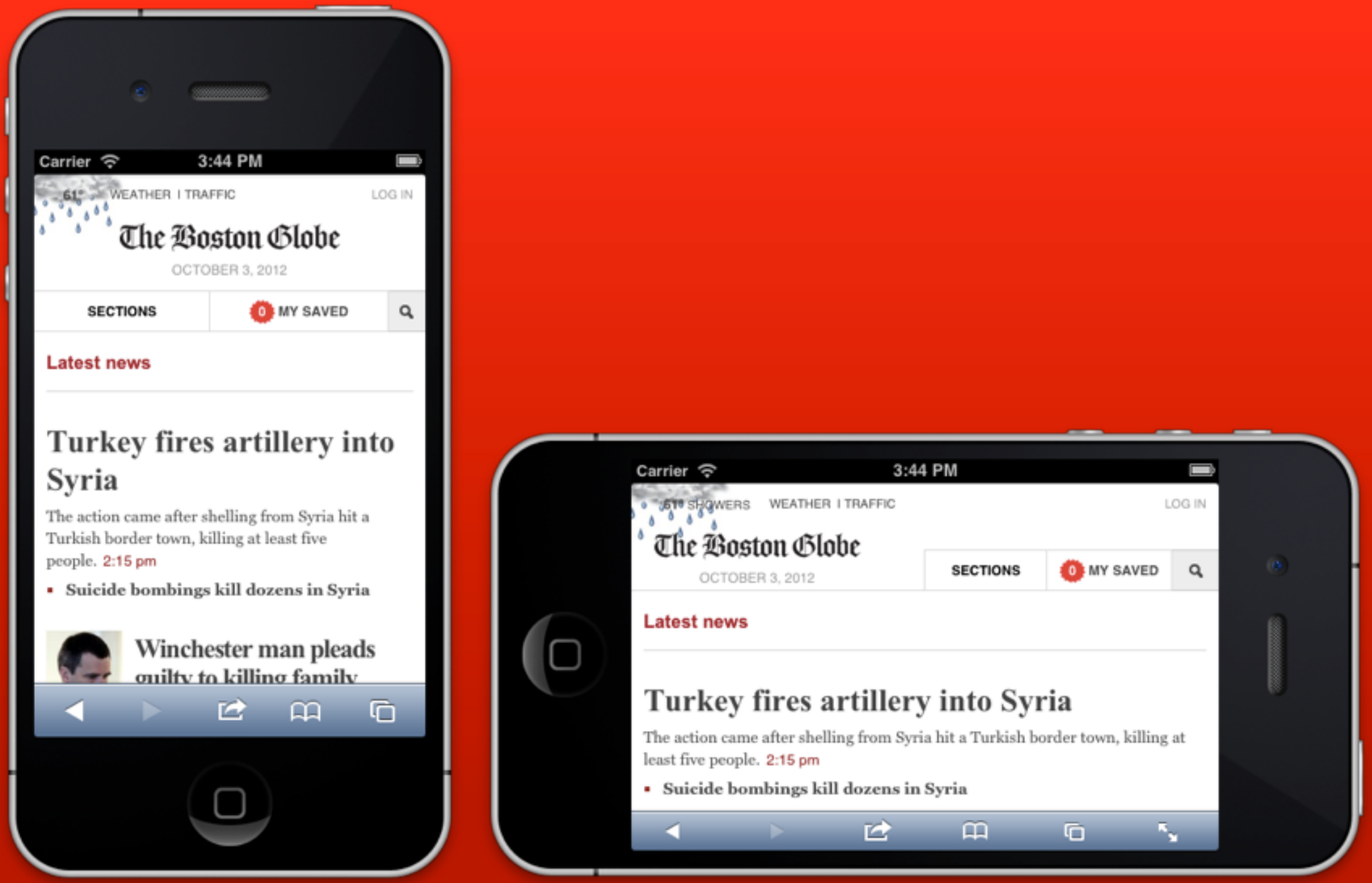
Thomas Mortimer IV pleaded guilty to murdering his wife, two children, and mother-in-law in his family's home in 2010.

Valentine says he was undermined by

Boston Globe ePaper →

Read the ePaper edition

The complete print edition, in its exact layout. Browse the print edition page by page, including stories and ads.


Carrier
3:44 PM
61° WEATHER | TRAFFIC
LOG IN
The Boston Globe
OCTOBER 3, 2012
SECTIONS
0 MY SAVED
Latest news
Turkey fires artillery into Syria
The action came after shelling from Syria hit a Turkish border town, killing at least five people. 2:15 pm
Suicide bombings kill dozens in Syria
Winchester man pleads guilty to killing family
Carrier
3:44 PM
61° SHOWERS
WEATHER | TRAFFIC
LOG IN
The Boston Globe
OCTOBER 3, 2012
SECTIONS
0 MY SAVED
Latest news
Turkey fires artillery into Syria
The action came after shelling from Syria hit a Turkish border town, killing at least five people. 2:15 pm
Suicide bombings kill dozens in Syria

Oracle Cloud

https cloud.oracle.com/mycloud/f?p=service:home:0

Reader

Oracle Cloud

ORACLE CLOUD

Home | Offerings | Resources | Sign In

Larry Ellison tells why Oracle Cloud is the enterprise choice.

Watch Highlights

Transform your business with **Oracle Cloud** Try it

Chat Now | Contact Us

Plan **Effectively**

Streamline your enterprise business processes

- Enterprise Resource Planning
- Planning and Budgeting PREVIEW

Empower **People**

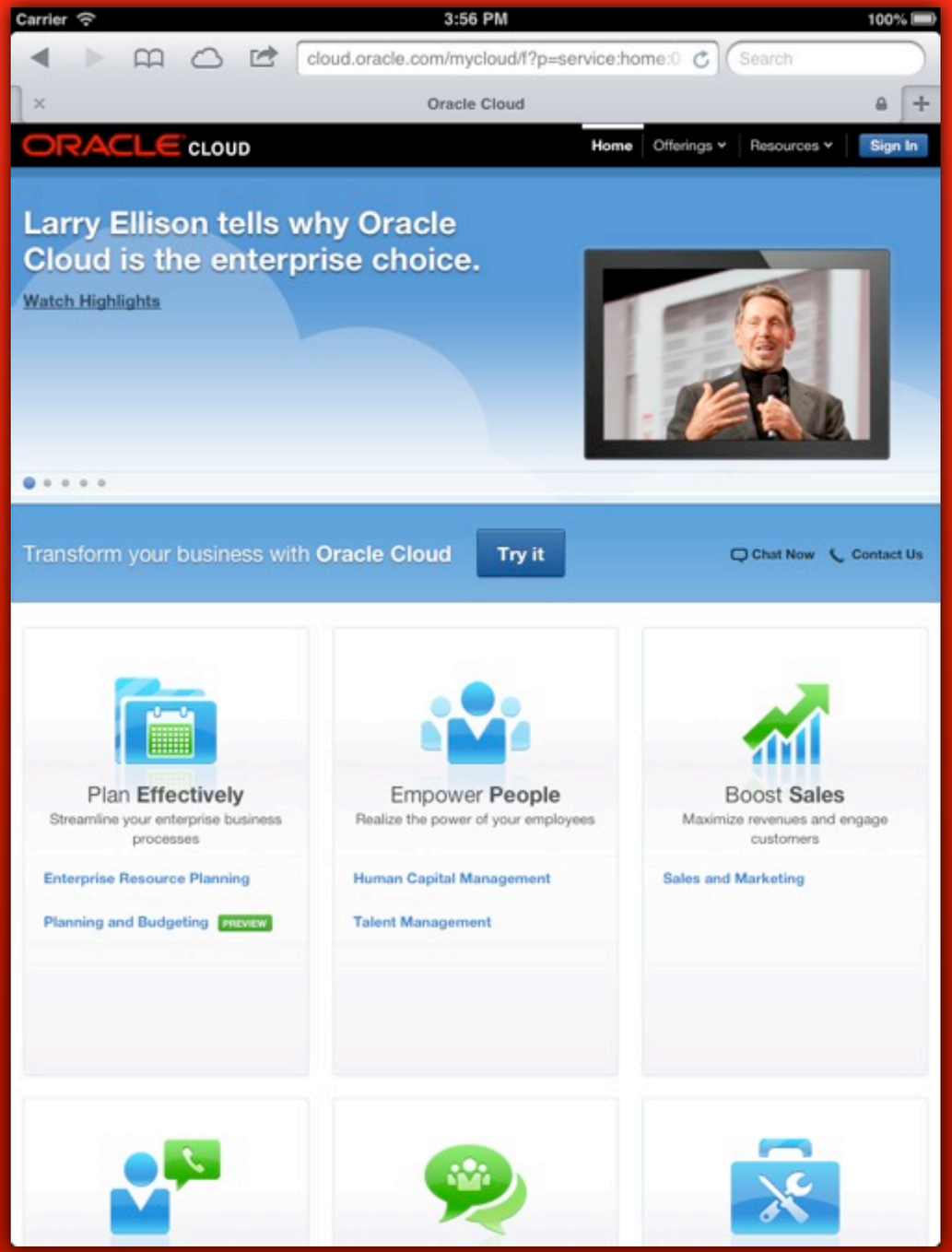
Realize the power of your employees

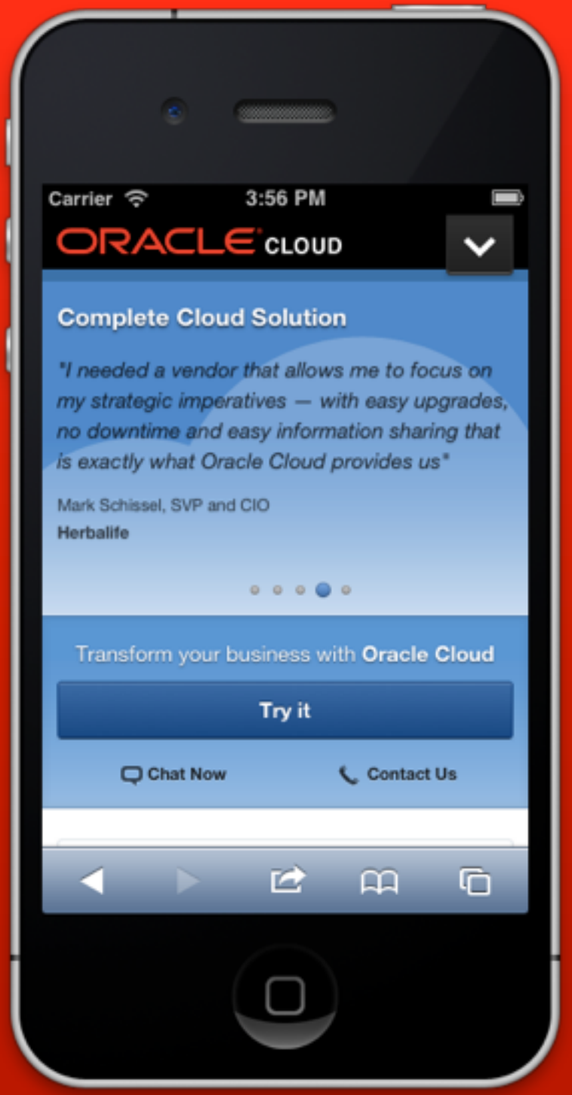
- Human Capital Management
- Talent Management

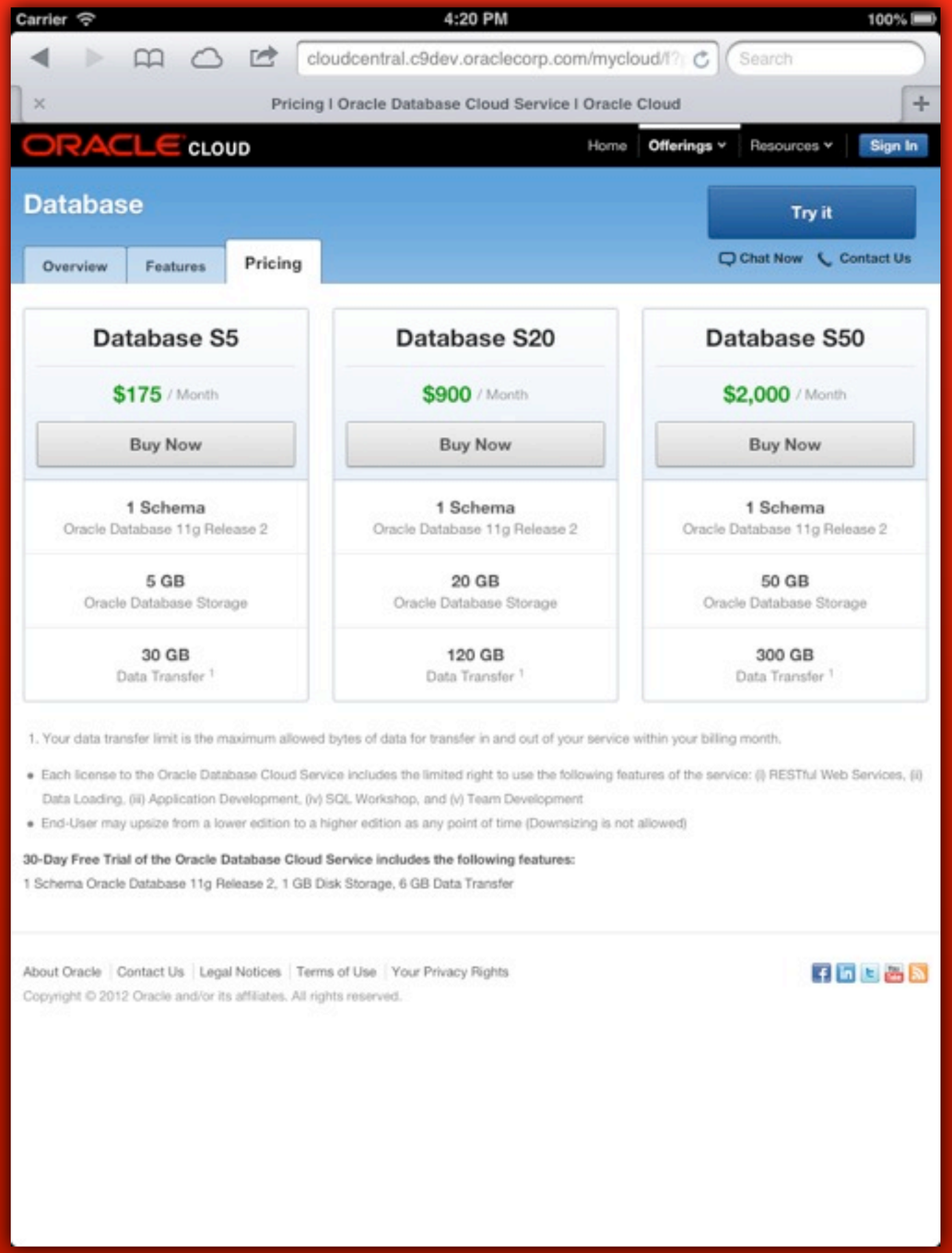
Boost **Sales**

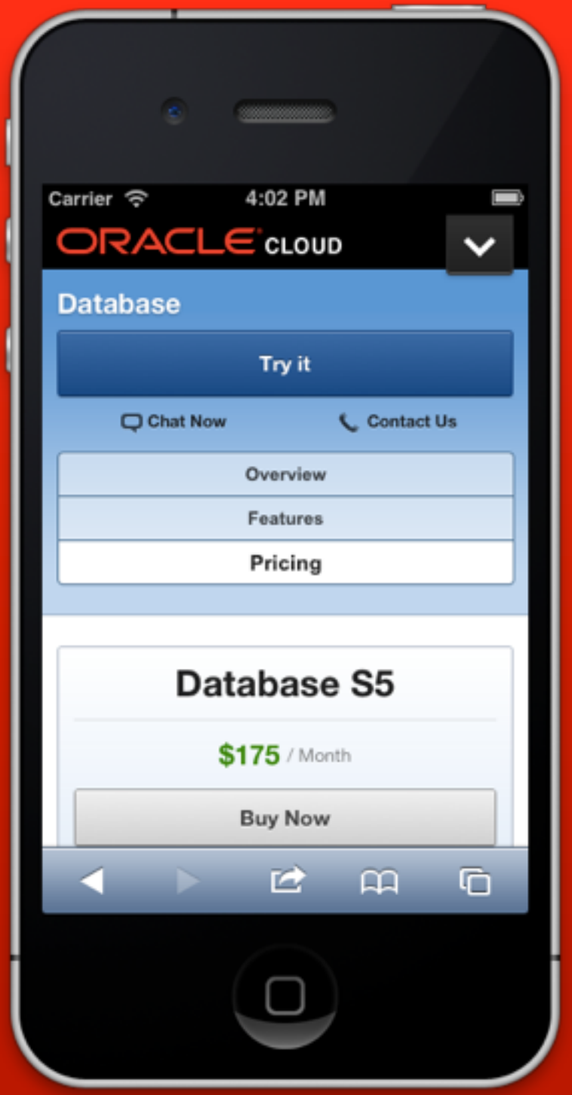
Maximize revenues and engage customers

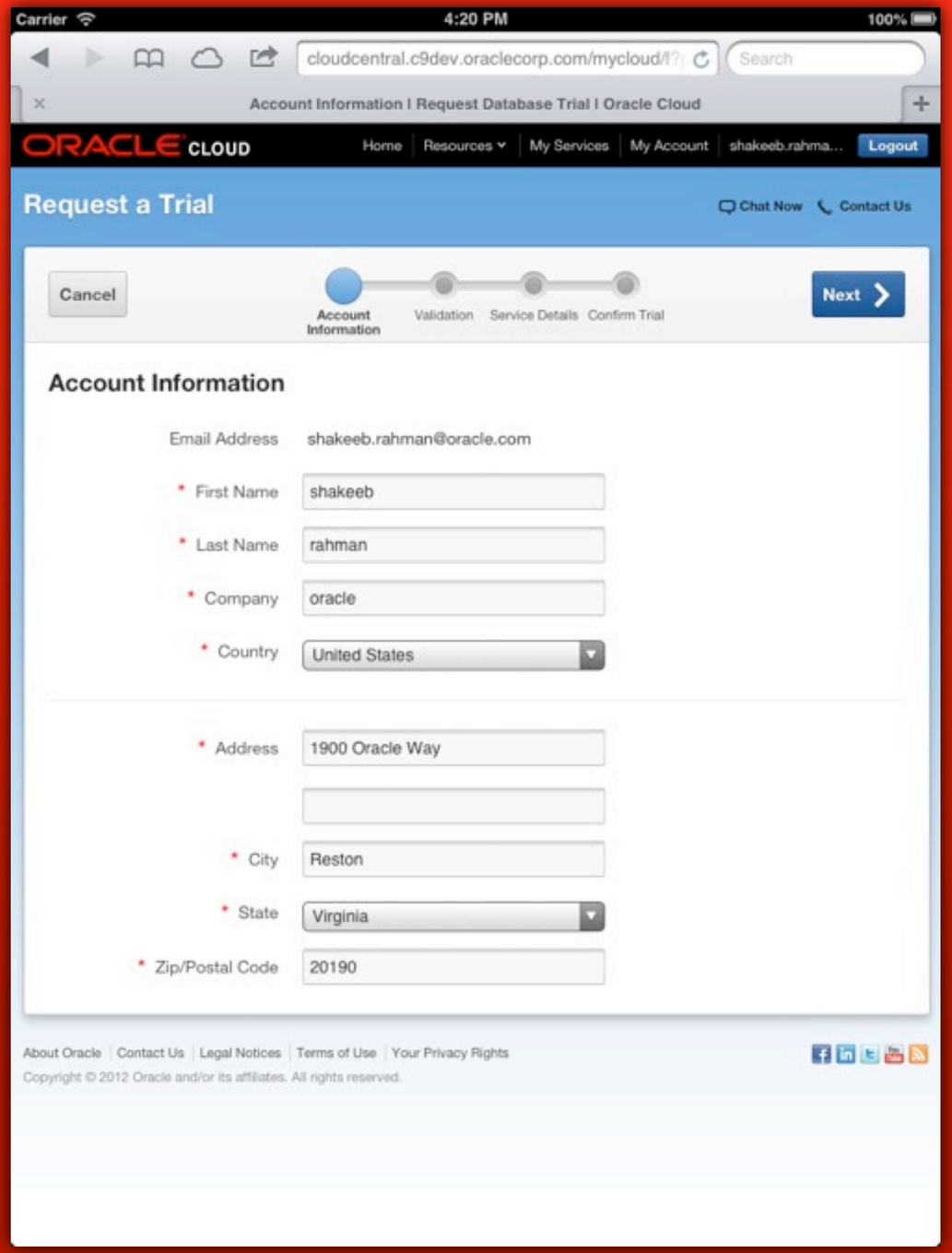
- Sales and Marketing

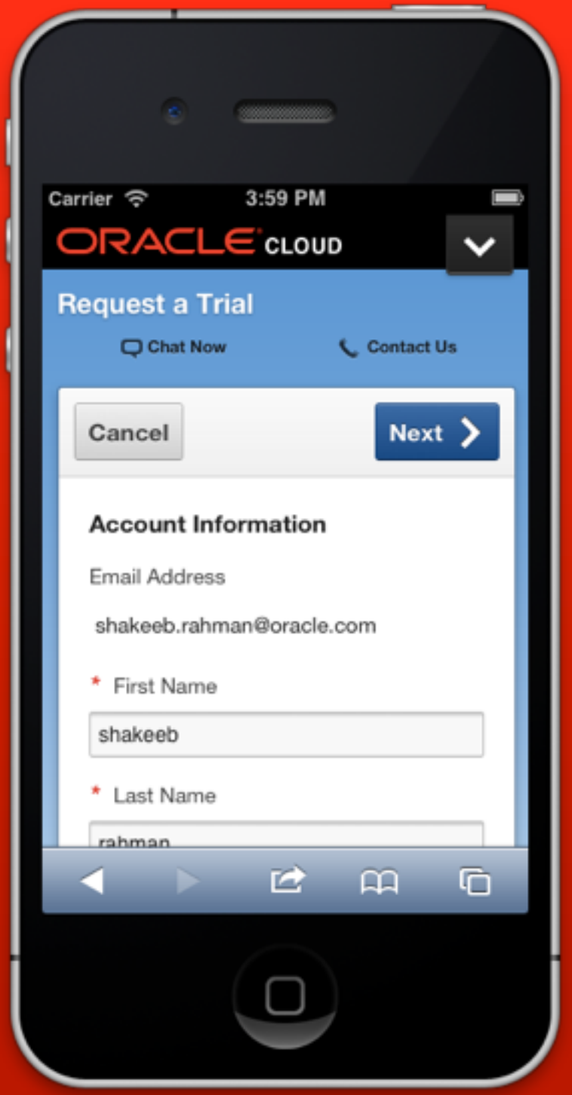

Carrier
3:56 PM
100%
cloud.oracle.com/mycloud/f?p=service:home:0
Search
Oracle Cloud
ORACLE CLOUD
Home
Offerings
Resources
Sign In
Larry Ellison tells why Oracle Cloud is the enterprise choice.
Watch Highlights
Transform your business with Oracle Cloud
Try it
Chat Now
Contact Us
Plan Effectively
Streamline your enterprise business processes
Enterprise Resource Planning
Planning and Budgeting
PREVIEW
Empower People
Realize the power of your employees
Human Capital Management
Talent Management
Boost Sales
Maximize revenues and engage customers
Sales and Marketing


Carrier
3:56 PM
ORACLE CLOUD
Complete Cloud Solution
"I needed a vendor that allows me to focus on my strategic imperatives — with easy upgrades, no downtime and easy information sharing that is exactly what Oracle Cloud provides us"
Mark Schissel, SVP and CIO
Herbalife
Transform your business with Oracle Cloud
Try it
Chat Now
Contact Us


Carrier
4:20 PM
100%
cloudcentral.c9dev.oraclecorp.com/mycloud/f?
Search
Pricing | Oracle Database Cloud Service | Oracle Cloud
ORACLE CLOUD
Home
Offerings
Resources
Sign In
Database
Try it
Chat Now
Contact Us
Overview
Features
Pricing
Database S5
$175 / Month
Buy Now
1 Schema
Oracle Database 11g Release 2
5 GB
Oracle Database Storage
30 GB
Data Transfer 1
Database S20
$900 / Month
Buy Now
1 Schema
Oracle Database 11g Release 2
20 GB
Oracle Database Storage
120 GB
Data Transfer 1
Database S50
$2,000 / Month
Buy Now
1 Schema
Oracle Database 11g Release 2
50 GB
Oracle Database Storage
300 GB
Data Transfer 1
1. Your data transfer limit is the maximum allowed bytes of data for transfer in and out of your service within your billing month.
Each license to the Oracle Database Cloud Service includes the limited right to use the following features of the service: (i) RESTful Web Services, (ii) Data Loading, (iii) Application Development, (iv) SQL Workshop, and (v) Team Development
End-User may upsize from a lower edition to a higher edition as any point of time (Downsizing is not allowed)
30-Day Free Trial of the Oracle Database Cloud Service includes the following features:
1 Schema Oracle Database 11g Release 2, 1 GB Disk Storage, 6 GB Data Transfer
About Oracle
Contact Us
Legal Notices
Terms of Use
Your Privacy Rights
Copyright © 2012 Oracle and/or its affiliates. All rights reserved.


Carrier
4:02 PM
ORACLE CLOUD
Database
Try it
Chat Now
Contact Us
Overview
Features
Pricing
Database S5
$175 / Month
Buy Now


Carrier
4:20 PM
100%
cloudcentral.c9dev.oraclecorp.com/mycloud/f?
Search
Account Information I Request Database Trial I Oracle Cloud
ORACLE CLOUD
Home
Resources
My Services
My Account
shakeeb.rahma...
Logout
Request a Trial
Chat Now
Contact Us
Cancel
Account Information
Validation
Service Details
Confirm Trial
Next
Account Information
Email Address
shakeeb.rahman@oracle.com
* First Name
shakeeb
* Last Name
rahman
* Company
oracle
* Country
United States
* Address
1900 Oracle Way
* City
Reston
* State
Virginia
* Zip/Postal Code
20190
About Oracle
Contact Us
Legal Notices
Terms of Use
Your Privacy Rights
Copyright © 2012 Oracle and/or its affiliates. All rights reserved.


Carrier
3:59 PM
ORACLE CLOUD
Request a Trial
Chat Now
Contact Us
Cancel
Next
Account Information
Email Address
shakeeb.rahman@oracle.com
* First Name
shakeeb
* Last Name
rahman

Sample Database Application

apex.oracle.com/pls/apex/f?p=48573:1:27275438305215:::::

ORCL Finances News Forums Buy DL Dev Events Misc BMW ToDo mediaQuery Bookmarklet

Sample Database Application

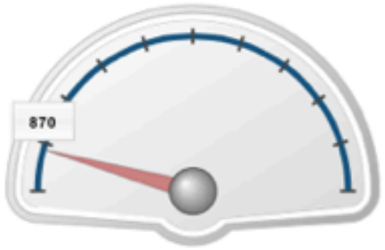
Sample Database Application

guest Mobile Administration Help Logout

Home | Customers | Products | Orders | Reports

Search customers, orders and product data

Sales for this Month



Top Customers

Bradley, Eugene - 2 Order(s)	$2,760.00
Logan, Edward - 2 Order(s)	$2,420.00
Dulles, John - 1 Order(s)	$2,380.00
Hartsfield, William - 2 Order(s)	$2,370.00
LaGuardia, Fiorello - 1 Order(s)	$1,090.00

Top Products

Jacket - 18 x $1.50	$2,700.00
Bag - 16 x $1.25	$2,000.00
Trousers - 21 x $80	$1,680.00
Ladies Shoes - 12 x $1.20	$1,440.00
Business Shirt - 23 x $50	$1,150.00

Top Orders by Date

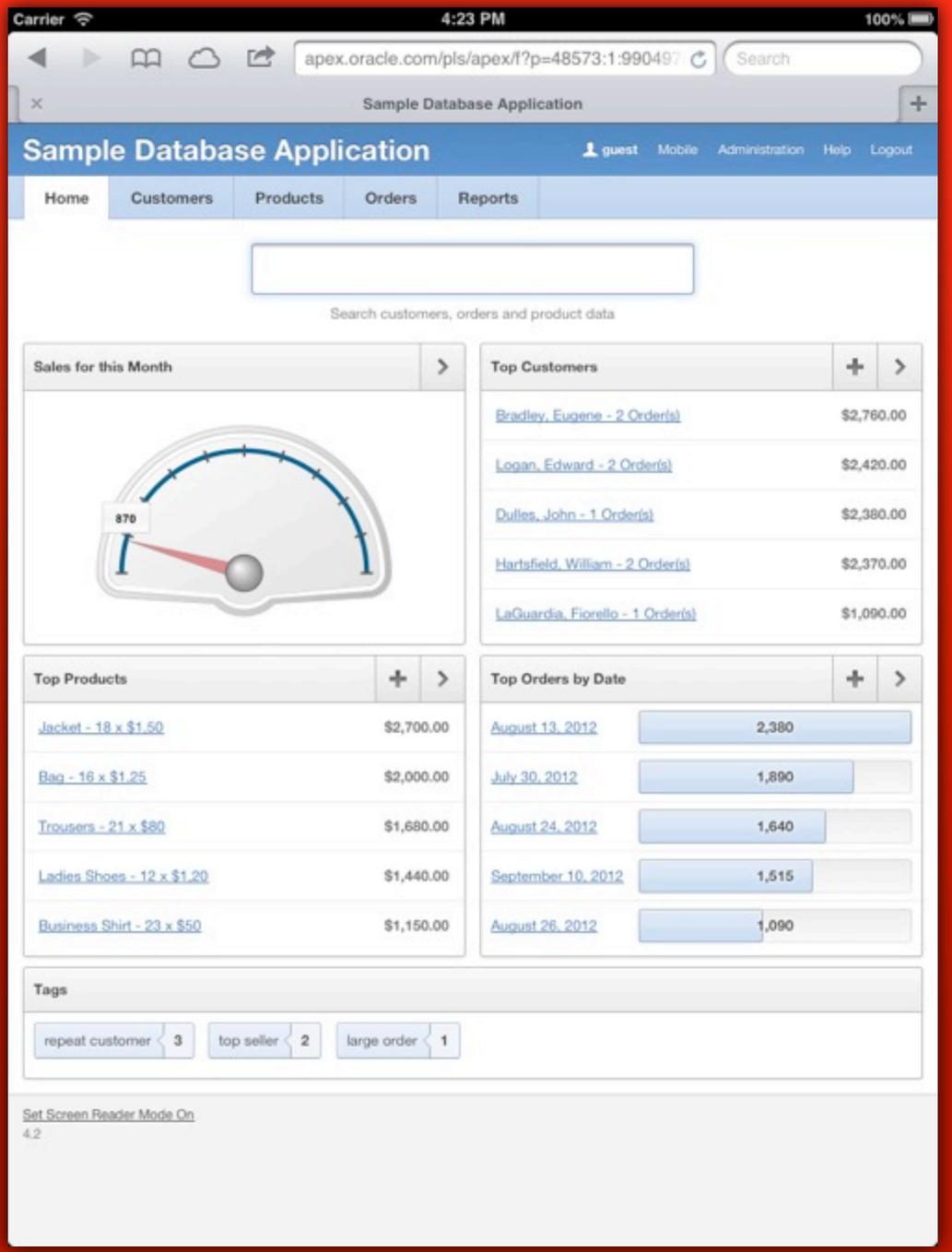
August 13, 2012	2,380
July 30, 2012	1,890
August 24, 2012	1,640
September 10, 2012	1,515
August 26, 2012	1,090

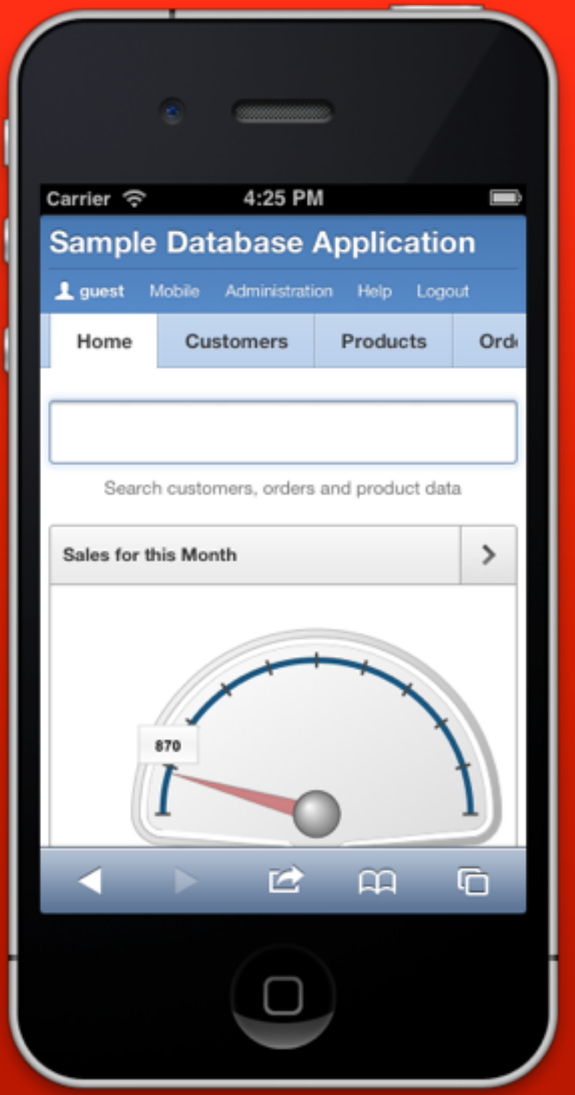
Tags

repeat customer 3 | top seller 2 | large order 1

Home Application 48573 Edit Page 1 Create Session Caching View Debug Debug Show Edit Links Show Grid

Display a menu


Carrier
4:23 PM
100%
apex.oracle.com/pls/apex/f?p=48573:1:990497
Search
Sample Database Application
Sample Database Application
guest
Mobile
Administration
Help
Logout
Home
Customers
Products
Orders
Reports
Search customers, orders and product data
Sales for this Month
870
Top Customers
Bradley, Eugene - 2 Order(s) $2,760.00
Logan, Edward - 2 Order(s) $2,420.00
Dulles, John - 1 Order(s) $2,380.00
Hartsfield, William - 2 Order(s) $2,370.00
LaGuardia, Fiorello - 1 Order(s) $1,090.00
Top Products
Jacket - 18 x $1.50 $2,700.00
Bag - 16 x $1.25 $2,000.00
Trousers - 21 x $80 $1,680.00
Ladies Shoes - 12 x $1.20 $1,440.00
Business Shirt - 23 x $50 $1,150.00
Top Orders by Date
August 13, 2012 2,380
July 30, 2012 1,890
August 24, 2012 1,640
September 10, 2012 1,515
August 26, 2012 1,090
Tags
repeat customer 3
top seller 2
large order 1
Set Screen Reader Mode On
4.2


Carrier
4:25 PM
Sample Database Application
guest
Mobile
Administration
Help
Logout
Home
Customers
Products
Ord
Search customers, orders and product data
Sales for this Month
870

How does it work?

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

CSS3 Media Queries

- allowing you to define styles based on conditions such as screen size or resolution
- most commonly used media queries rely on browser width to determine layout / device type

```
@media screen and (min-width: 320px) and (max-width: 479px) {...}
```

- define multiple CSS media queries to target “cut off points” and appropriately adjust UI for given screen size

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Common CSS3 Media Queries

- Mobile Portrait
  - `@media screen and (min-width: 320px) and (max-width: 479px)`
- Mobile Landscape
  - `@media only screen and (min-width: 480px) and (max-width: 767px)`
- Mobile Portrait / Landscape
  - `@media only screen and (max-width: 767px)`
- Tablet Portrait
  - `@media only screen and (min-width: 768px) and (max-width: 959px)`
- Tablet Landscape
  - `@media only screen and (min-width: 960px) and (max-width: 1024px)`

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

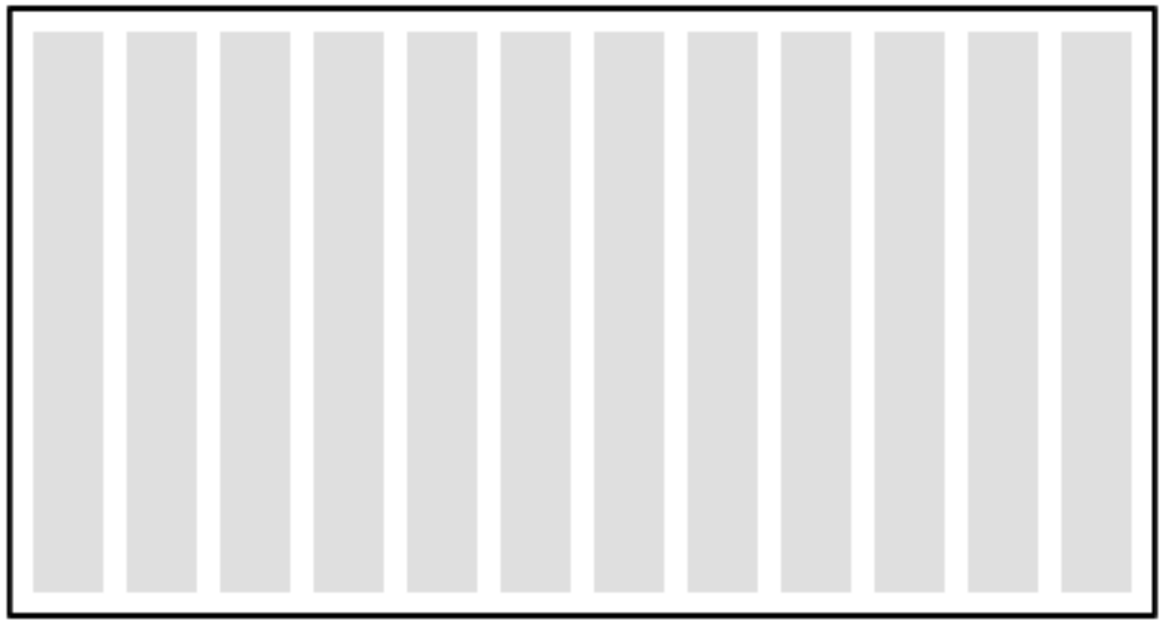
Grid-Based Layout

- Provides a HTML structure to organize our page components onto a grid
- Using a grid makes it easier to align and lay out page components
- CSS3 media queries can then easily shift or reposition these components

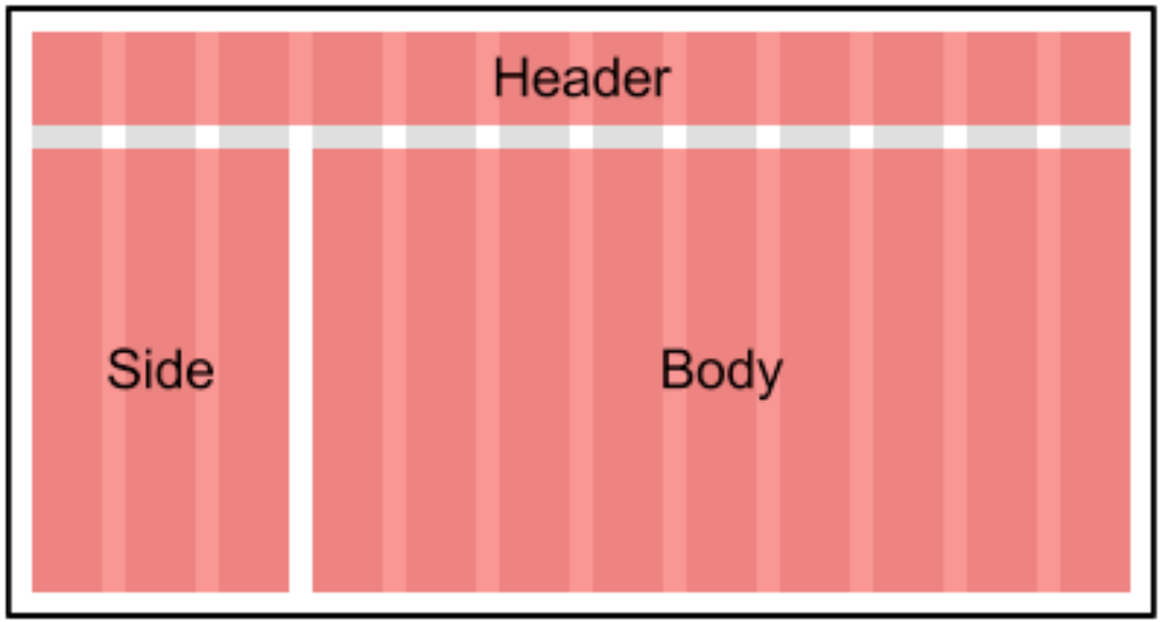
Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Grid-Based Layout

Page with a 12-column Grid Layout

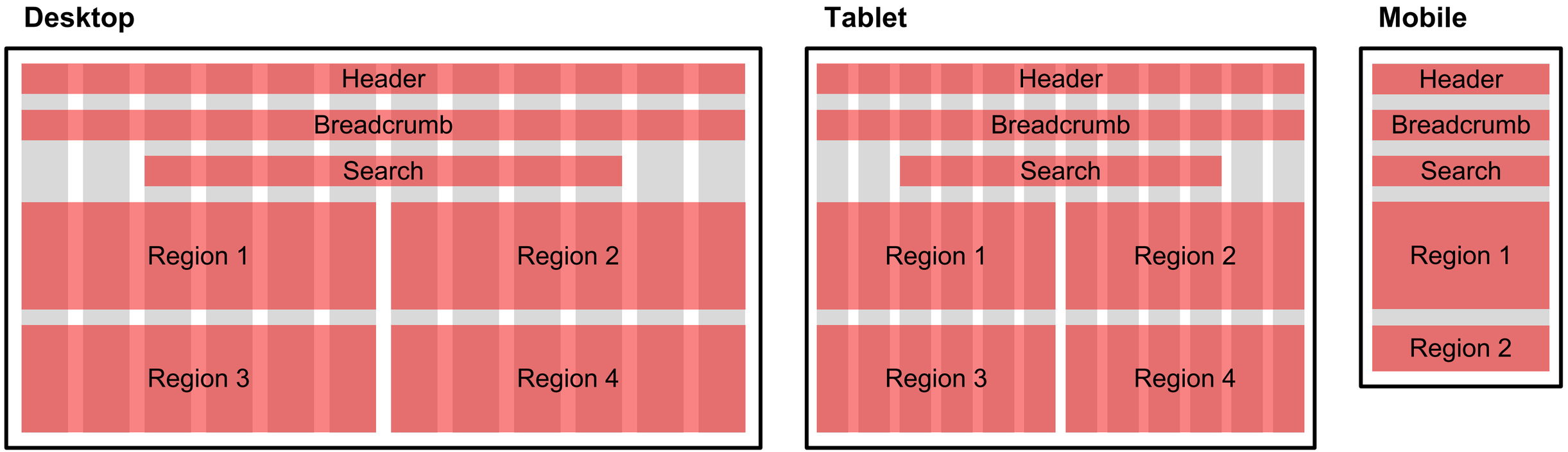


Page Components Positioned on Grid



Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Grid-Based Layout



Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Example Grid Layout HTML Markup

```
1  <div class="apex_grid container">
2    <div class="apex_row">
3      <div class="apex_cols apex_span_6 alpha">
4        Left Col
5      </div>
6      <div class="apex_cols apex_span_6 omega">
7        Right Col
8      </div>
9    </div>
10 </div>
```


Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Sounds technical.
Do I have to do this manually?

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

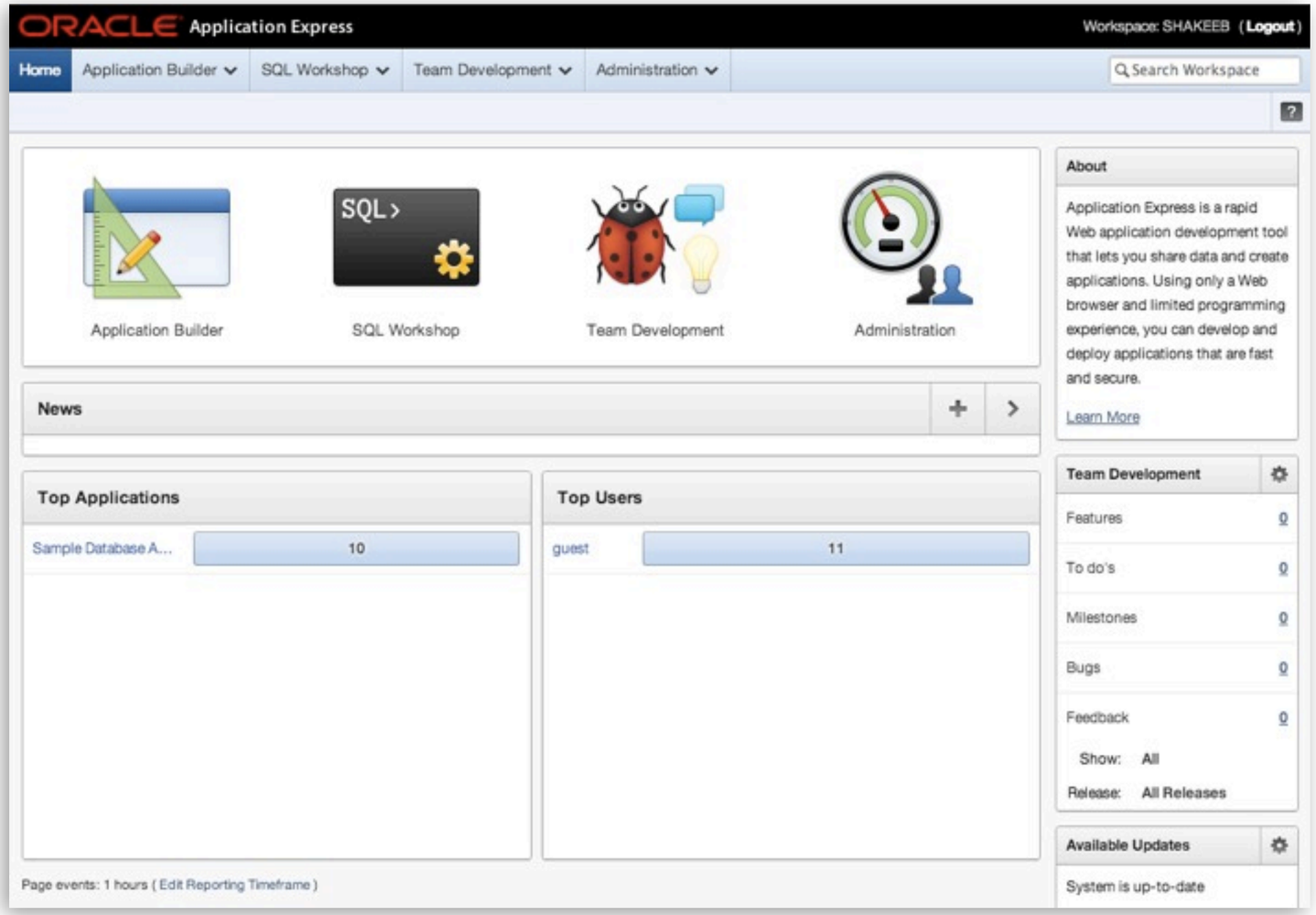
NO!

APEX 4.2 handles all of this for you.

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

APEX 4.2

- Every release tries to give developers more control over HTML emitted from APEX
- APEX 4.2 has two features that especially enable responsive design



Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Grid Layout

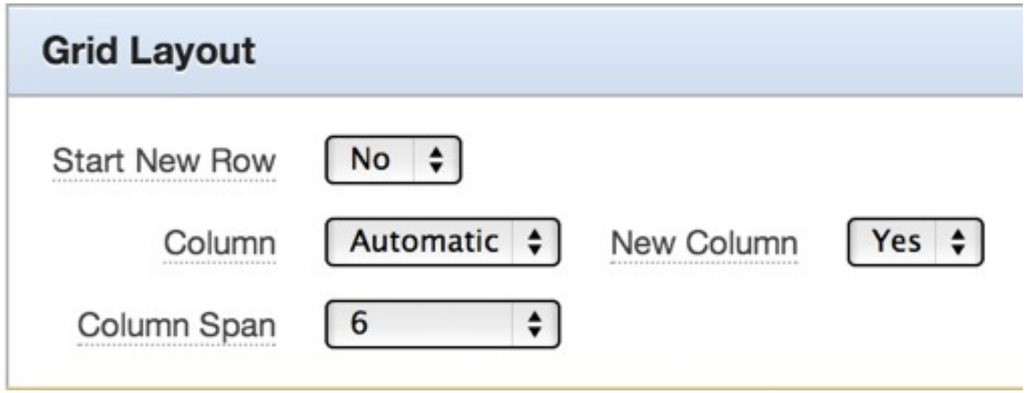
Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Grid Layout

- Declarative way to lay out regions and items on a page
- Possible to do complex layouts without manual css overrides
- Compatible with popular grid frameworks such as twitter bootstrap, 960 gs, etc.

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Grid Layout



Field	Value	Description
Start New Row	Yes	Position the region in a new row.
	No	Position the region on the same row as the previous region. This is useful when positioning a region to aside another region.
Column	Automatic	Position the region in a specific grid column. Selecting **Automatic** will automatically use the next available grid column to display the region.
	1-12	Position the region at this specific grid column.
New Column	Yes	Position this region in the next column in the same row.
	No	Position this region in the same column as the previous region.
Column Span	Automatic	Determines how many grid columns should be used by the region. Selecting **Automatic** will balance the available grid columns within all regions in the same grid row.
	1-12	Use this specific number of grid columns for this region.

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Theme 25

(Responsive, Modernizr Enabled, SCSS-Based, HTML5 + CSS3 Utilizing Theme for APEX 4.2)

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Theme 25

- **Fully Responsive**
  - **Support for Desktop, Tablet and Mobile Screen Sizes**
  - Uses flexible grid layout that can be used on screen sizes from the largest monitors to mobile devices
  - (4.2.1) Interactive Reports are displayed appropriately for smaller screens
  - Form labels shift above when using mobile devices
  - Uses Respond.js to enable media queries for older Internet Explorer versions

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Theme 25

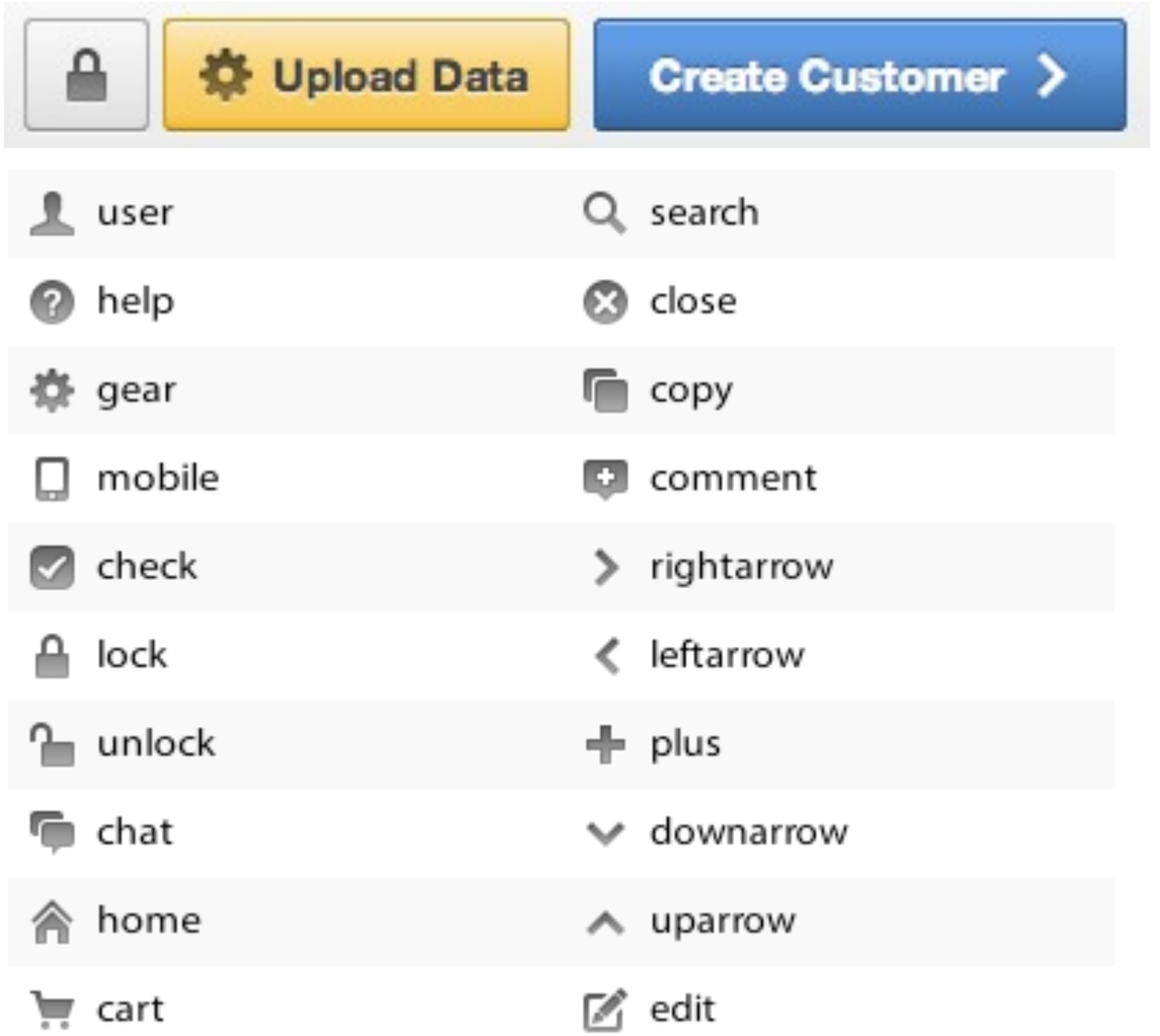
- **Modernizr Enabled**
  - Popular feature detection library is loaded by default so developers can take advantage of HTML5 and CSS3 features while providing fallbacks for older browsers
  - On page load, several classes are added to the HTML tag to show which features are supported by the browser

```
▼<html class=" js no-flexbox flexbox-legacy canvas canvastext no-webgl
no-touch geolocation postmessage websqldatabase no-indexeddb hashchange
history draganddrop websockets rgba hsla multiplebgs backgroundsize
borderimage borderradius boxshadow textshadow opacity cssanimations
csscolumns cssgradients cssreflections csstransforms csstransforms3d
csstransitions fontface generatedcontent video audio localstorage
sessionstorage webworkers applicationcache svg inlinesvg smil
svgclippaths" lang="en">
```


Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Theme 25

- **Icon Buttons**
  - Developers can easily create buttons with icons without creating custom templates
  - Simply choose an icon-compatible button template and specify an icon class



Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Theme 25

- **High Resolution Display Support**
  - **Support for “Retina Display” devices**
  - Graphics utilized by the theme are automatically upscaled for devices that utilize ultra high resolution displays to render web content

Standard Display

High Resolution Display

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Theme 25

- **Responsive Utility Classes**
  - Easily hide / show content depending on device type

Class	Phones 767px and below	Tablets 979px to 768px	Desktops Default
`.visible-phone`	Visible	Hidden	Hidden
`.visible-tablet`	Hidden	Visible	Hidden
`.visible-desktop`	Hidden	Hidden	Visible
`.hidden-phone`	Hidden	Visible	Visible
`.hidden-tablet`	Visible	Hidden	Visible
`.hidden-desktop`	Visible	Visible	Hidden

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Demo

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

When to Develop Responsive Applications

- Responsive design allows you to develop a single application suitable for a variety of devices
- It does so by re-positioning page components to become more optimal for mobile devices by reducing zooming and panning
- **However, there are some challenges to consider.**

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

When to Develop Responsive Applications

- **Developing a responsive application can be time consuming and may require a deep understanding of grid layout, html and css.**
- Page size remains the same. You are loading the full HTML, CSS, and JS resources, even on mobile devices with limited broadband.
- Responsive Web Design is just the tip of the iceberg.

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Is Responsive Right for you?

- **Responsive**
  - Developing a single application, one source for application logic, one set of pages
  - Similar UI
  - Full functionality of the application
- **jQuery Mobile**
  - Framework especially designed for mobile devices
  - Lightweight and faster loading
  - Native look and feel
  - Use wizards to create page components (more comfortable for APEX developers)
  - Easily integrated in PhoneGap to develop Hybrid-Native applications

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

I DON'T ALWAYS
DEVELOP FOR MOBILE
BUT WHEN I DO,
I DO IT RESPONSIVELY

Q & A

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

@shakeeb

blog: **apex.shak.us**

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Hardware and Software

ORACLE

Engineered to Work Together

ORACLE®