

COMM049/11/Semr 1 2015/2016

©
UNIVERSITY OF SURREY
SOLUTIONS

Faculty of Engineering & Physical Sciences

Department of Computer Science

Undergraduate Programmes in Computing

Module COMM049; 15 Credits

HTML5 and CSS3 for Mobile Applications

FHEQ Level 7 (MSc) Examination

Time allowed: Two hours

Semester 1 2015/2016

Answer all three questions

The total marks for each question are indicated by square brackets [].

Where appropriate the mark carried by an individual
part of a question is indicated in square brackets [].

Approved calculators allowed

*© Please note that this exam paper is copyright of the University of Surrey and may not be
reproduced, republished or redistributed without written permission*

1: This question covers general aspects of mobile first design.

- (a) The course provided some key guidelines for designing mobile websites/applications. Discuss the reasons why following these guidelines will help the users.

[10 marks]


Answer:

[2 marks] for each bullet point covered:

- Minimising the number of navigation options on each screen helps users focus on what they need to do and helps to prevent errors such as accidentally tapping through to another task.
- Review carefully the key Mobile use cases like lookup/find, explore/play, check-in/ status, and edit/create to allow you to think through how your site will be used on mobile and adjust its structure appropriately.
- Focusing on content first, navigation second gets people to the information and tasks they want quickly.
- Relevant and well-placed navigation options allow people to dive deeper or pivot to explore other parts of your site.
- Reducing the amount of navigation choices and chrome on key tasks maintains clarity and focus on what people need to accomplish—helpful when they are hurried or in less than ideal situations.

- (b) Describe how you might redesign the screen in Figure 1 to enable it to easily fit onto a single smartphone screen. You may answer by sketching out your solution.

[5 marks]

Get Online Now 





Unlimited access for **24 hours is \$6.95** for all boingo locations. No monthly fees apply.

Billing Information

First Name

Last Name

Credit Card Number

    are accepted

Expiration Date

ZIP Code as it appears on your credit card bill

Receipt

Email Address (optional)

if you'd like us to send you a receipt

By selecting "Get Online" I agree to [terms of use](#).

Get Online [Cancel](#)

Figure 1

QUESTION 2 CONTINUES ON THE NEXT PAGE

Answer:

The simple solution is to place prompts inside the text entry boxes. [1 mark]
for each change:

Get Online Now boingo

Unlimited access for **24 hours** is **\$6.95** for all boingo locations. No monthly fees apply.

Billing Information

First Name

Last Name

Credit Card Number

VISA MasterCard AMEX DISCOVER are accepted

Expiration Date

09 2010

ZIP Code as it appears on your credit card bill

Receipt

Email Address (optional)

if you'd like us to send you a receipt

By selecting "Get Online" I agree to [terms of use](#).

Get Online [Cancel](#)

- (c) HTML5 provides some new input types compared with HTML4. Why are these so important for mobile devices? Give three examples of their use.

[8 marks]

Answer:

The new HTML5 input types can help people accurately answer questions that require a specific format [2 marks]. On a mobile browser like Safari, specifying an input of type url brings up a virtual alphanumeric keyboard with “.”, “/”, and “.com” keys [2 marks]. Specifying an input of type email brings up a virtual alphanumeric keyboard with “.” and “@” keys [2 marks]. And specifying an input of type number brings up a virtual numeric keyboard [2 marks].

- (d) A key difference between a mobile version of a website or application over a desktop based one is that users will primarily be using touch to interact with it, rather than a mouse or keyboard. The course provided a set of 5 key guidelines to support ease of performing actions through touch. Describe these five guidelines.

[10 marks]

Answer:

[2 marks] each for the following:

- Go big with appropriately sized and positioned touch targets.
- Learn the language of touch by familiarizing yourself with common touch gestures and how they are used to navigate and interact with objects and screens.
- Don't be afraid to push toward natural user interfaces (NUIs) that make content (not chrome) the focus of people's actions.
- Transition your on-hover menus to mobile using the most appropriate solution for your site.
- Remember to consider non-touch and hybrid devices when designing your mobile web interactions.

(e)

Total [33 marks]

SEE NEXT PAGE

2: This question covers a range of aspects of developing with the jQuery.

(a) Which of the following statements are true:

- (i) jQuery is a JSON Library;
- (ii) jQuery is a JavaScript library

[2 marks]

Ans (i)

(b) Which well-known syntax is jQuery's method of selecting DOM elements based on?

[2 marks]

Ans: css selectors

(c) What sign does jQuery use as a shortcut for jQuery?

[1 mark]

Ans: \$

(d) What does the selector `$ ("div")` select in jQuery?

- (i) All `div` elements
- (ii) The first `div` element

[2 marks]

Ans: All `div` elements

(e) What is the correct jQuery code to set the background colour of all `p` elements to red?

- (i) `$ ("p").style("background-color","red");`
- (ii) `$ ("p").change("background-color","red");`
- (iii) `$ ("p").css("background-color","red");`
- (iv) `$ ("p").layout("background-color","red");`

[2 marks]

Ans: (iii)

(f) Which jQuery method is used to hide selected elements?

- (i) `display(none)`
- (ii) `visible(false)`
- (iii) `hidden()`
- (iv) `hide()`

[2 marks]

Ans: (iv)

(g) Which jQuery method is used to perform an asynchronous http request?

- (i) `jQuery.ajaxAsync()`
- (ii) `jQuery.ajaxSetup()`
- (iii) `jQuery.get()`
- (iv) `jQuery.ajax()`

[2 marks]

Ans: (iv)

(h) What is the correct css code for making all `div` elements 100pixels high?

- (i) `$ ("div").height = "100"`
- (ii) `$ ("div").style(height=100)`
- (iii) `$ ("div").height(100)`

(iv) `$("div").yPos(100)` [2 marks]
 Ans: (iii)

QUESTION 2 CONTINUES ON THE NEXT PAGE

- (i) Consider the static HTML of Figure 1. Suppose that you now import the JavaScript of Figure 2 into the same HTML document.
- (i) Describe from the user's perspective the dynamic behaviour that is now associated with the document (i.e. what the user will see). [5 marks]
- (ii) Explain from a technical perspective how the code in Figure 2 creates the behaviour described in part (i) above. [10 marks]
- (iii) Modify the JavaScript code so that the click function only applies to the paragraph of class "bear" [3 marks]

```
<body>
  <h1 id="myTitle">Some jQuery examples</h1>
  <p id="myParentDiv">The fun starts here:</p>
  <p>And ends here!</p>
</body>
```

Figure 1

```
<script src="jquery-1.8.2.min.js"></script>
<script>
  $(function(){
    $('#myTitle')
      .bind('mouseover', function(event){
        $("<p class='bear'>I have a bear!</p>
        <p>I don't</p>")
          .click(function(){
            alert("I'm a bear!");
          }).end().appendTo("#myParentDiv");
      })
  })
</script>
```

Figure 2

Ans: (i) When the use mouses over the myTitle element, two new paragraphs will

appear beneath the "myParentDiv". When subsequently clicking on either paragraph, the alert will appear. [5 marks]

(ii) `$(function())` ensures the JavaScript is loaded as soon as the document is ready.

\$(myTitle) addresses the myTitle element. We then bind a function to the mouseover event on myTitle. This function creates the two new paragraphs and appends them to myParentDiv. We then bind the function that raises the alert to a click event to the new elements. [10 marks]

(iii) We need to filter the new elements as follows (change in bold):

COM2025/10/LSA 2014/2015 - Page 10 -

```
<script src="jquery-1.8.2.min.js"></script>
<script>
    $(function(){
        $('#myTitle')
            .bind('mouseover', function(event){
                $("<p class='bear'>I have a bear!</p>
                <p>I don't</p>")
                .filter(".bear").click(function(){
                alert("I'm a bear!");
            }) })
    </script>

    }).end().appendTo("#myParentDiv");
[3 marks]
```

Total [33 marks]

SEE NEXT PAGE

3: This question covers a range of aspects of the Angular.js framework. Please write your answer choices in the answer book in those cases where multiple choices are provided. Explain your answers.

- (a) Which of the following is true about ng-model directive?
- i. ng-model directive binds the values of AngularJS application data to HTML input controls.
 - i. ng-model directive creates a model variable which can be used with the html page and within the container control having ng-app directive.
 - ii. Both of the above.
 - iii. None of the above.

Answer:

The correct answer is (iii) - ng-model directive binds the values of AngularJS application data to HTML input controls. It creates a model variable which can be used with the html page and within the container control(for example, div) having ng-app directive.

[4 marks]

- (b) What is Model in MVC?
- i. Model represents server side data.
 - ii. Model represents data stored in database.
 - iii. Model is the lowest level of the pattern responsible for maintaining data.
 - iv. None of the above.

Answer:

The correct answer is (iii) as the model is an abstraction from both the server side data and the database representations.

[3 marks]

- (c) Which of the following is true about **orderBy** filter?
- i. **orderBy** filter orders the array based on provided criteria.
 - ii. **orderBy** filter is used to filter the array to a subset of it based on provided criteria.
 - iii. Both of the above.
 - iv. None of the above.

[3 marks]

Answer:

The correct answer is (i) - orderBy filter orders the array based on provided criteria. It is simply added to AngularJS expression to order the result.

- (d) **\$rootScope** is the parent of all of the scope variables.
- i. True
 - ii. False

[2 marks]

Answer:

\$rootScope is indeed the parent of all the scope variables.

- (e) Which of the following is true about AngularJS service?
- i. Services are JavaScript functions.
 - ii. Services are responsible to do specific tasks only.
 - iii. Inbuilt services are always prefixed with \$ symbol.

iv. All of the above.

[4 marks]

Answer:

Services are JavaScript functions and are responsible to do specific tasks only. Each service is responsible for a specific task for example, \$http is used to make ajax call to get the server data. \$route is used to define the routing information and so on. Inbuilt services are always prefixed with \$ symbol.

- (f) On which of the following types of component can we create a custom directive?
- Element directives
 - Attribute
 - CSS
 - All of the above.

[4 marks]

Answer:

(iv) - AngularJS provides support to create custom directives for following type of elements:

- **Element directives** - Directive activates when a matching element is encountered.
- **Attribute** - Directive activates when a matching attribute is encountered.
- **CSS** - Directive activates when a matching css style is encountered.
- **Comment** - Directive activates when a matching comment is encountered.

- (g) ng-model binds the values of AngularJS application data to HTML input controls.
- True
 - False

[2 marks]

Answer:

(i) ng-model binds the values of AngularJS application data to HTML input controls.

- (h) What is the effect of including the novalidate directive within a form declaration?

[3 marks]

Answer:

We can use novalidate with a form declaration to disable any browser specific validation.

- (i) What is the purpose of the \$invalid flag?

[3 marks]

Answer:

The \$invalid flag is used to indicate the form has invalid data.

- (j) What is a factory method used for?

[3 marks]

Answer:

A factory method is used to define a factory which can later be used to create services as and when required.

(k) Can Templates just be a single file?

[3 marks]

Answer:

Templates can be a single file (like index.html) or multiple views in one page using "partials".

Total [34 marks]

END OF PAPER

INTERNAL EXAMINER: Prof. Paul Krause

EXTERNAL EXAMINER: Prof. Mahesan Niranjana