



CICT PART III SECTION 5

MOBILE APPLICATION DEVELOPMENT

WEDNESDAY: 27 November 2019.

Time Allowed: 3 hours.

Answer ALL questions. Marks allocated to each question are shown at the end of the question.

QUESTION ONE

- (a) Distinguish between on “onPause ( )” and “onStop ( )” state of activities in mobile application development. (2 marks)
- (b) Write a JavaScript snippet code that could be used to display the message “Good morning” or “Good afternoon” depending on the time of the day. (3 marks)
- (c) Reputation service in automated cloud based assessment provides behavioural intelligence about mobile application which determines which mobile application violates enterprise policies for security and privacy.

**Required:**

Discuss three key elements that should be the focus of reputation service. (6 marks)

- (d) Explain the purpose of each of the following folders in mobile application development using Android:
- (i) assets. (2 marks)
- (ii) src. (2 marks)
- (e) Coffee grading depends on a factor of moisture and taste as shown in the grading scheme below:

Factor	Grade
1	A
2	B
3	C
4	D

**Required:**

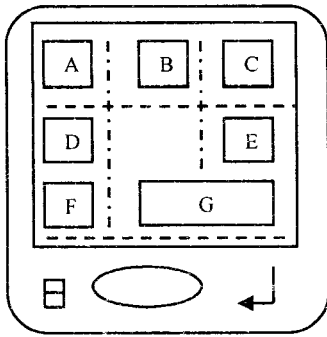
Develop an Android function called “grading” to be used in the context menu to generate an appropriate grade given a certain factor. (5 marks)

(Total: 20 marks)

QUESTION TWO

- (a) Describe the term “app sandbox” as used in mobile application development. (2 marks)
- (b) Describe two design patterns used in iOS. (4 marks)
- (c) Declare a method in objective-C to calculate the distance covered by a vehicle given that distance is computed as speed multiplied by the time taken. (2 marks)

- (d) The diagram below represents a storyboard.



**Required:**

Write an XML code to display the buttons as shown in the storyboard. Include the table layout. (6 marks)

- (e) Write a JavaScript function to test if the content of a textbox, "txtname" is empty on the click of a button, "btnsubmit".

**Note:** The objects are stored by a form called frmdetails using document object model (DOM). If the textbox is empty the message "Please enter values", should be displayed on a dialog box.

(6 marks)

**(Total: 20 marks)**

**QUESTION THREE**

- (a) Demonstrate how you would develop a USSD application. (4 marks)
- (b) State three inbuilt applications in a mobile phone. (3 marks)
- (c) Argue the case for and against the use of open source software in mobile phones. (4 marks)
- (d) Suggest three reasons why Swift programming language is nowadays widely used in iOS programming. (3 marks)
- (e) Explain each of the following gestures as used in a mobile phone:
- (i) fling. (2 marks)
- (ii) pinch. (2 marks)
- (f) Propose two methods of reducing power consumption in a mobile phone. (2 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

- (a) A program is required to calculate the required pressure on a given tyre. The pressure depends, on the car weight and the tyre width and is calculated using the formula below:

$$\text{Pressure} = \frac{K * \text{weight}}{C * \text{width}^2}$$

Where:

K is a constant returned by an existing function Var K() depending on the Car weight while C is a constant returned by an existing function var C ( ) which depends on tyre width.

Weight is returned by a function Calcweight ( ), while width is returned by a function Calcwidth ( ).

**Required:**

A Swift function called Calcpressure to calculate and return the required tyre pressure of a given vehicle given the above conditions. The function should run on an iphone. (5 marks)

- (b) Describe the term "onboarding" as used in mobile applications. (2 marks)
- (c) (i) Explain how a mobile device automatically changes the application's orientation. (2 marks)
- (ii) Argue the case for and against the automatic orientation changes in a mobile phone. (2 marks)
- (d) Defend three uses of infinite scrolls in mobile applications. (3 marks)

- (e) Explain three ways an organisation could enforce security of its mobile devices. (3 marks)
- (f) Outline three advantages of test automation in mobile apps. (3 marks)
- (Total: 20 marks)**

**QUESTION FIVE**

- (a) (i) Describe the “equivalence partitioning test design technique” as used in mobile applications. (2 marks)
- (ii) Highlight an advantage and a disadvantage of equivalence partitioning. (2 marks)
- (b) Explain three mechanisms provided by iOS to support multithreading. (6 marks)
- (c) Differentiate between a “delegate” and a “notification” as used in mobile applications. (2 marks)
- (d) ABC Institution of Engineers recently decided to embark on an initiative that will allow students to do registration and pay school fees through a mobile application. The application should manage class attendance register and generate result slips.

ABC Institution of Engineers has approached you for guidance on the above task.

**Required:**

Discuss four points that you would consider when advising ABC Institution of Engineers on the best mobile development platform solution for the above issue. (8 marks)

**(Total: 20 marks)**

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