

UNIVERSITI TUNKU ABDUL RAHMAN

ACADEMIC YEAR 2020/2021

MAY 2020 TRIMESTER

FINAL ASSESSMENT

UECS2363 SOFTWARE CONSTRUCTION AND CONFIGURATION

THURSDAY, 1 OCTOBER 2020

TIME : 8.30 AM – 12.00 PM (3.5 HOURS)

BACHELOR OF SCIENCE (HONOURS) SOFTWARE ENGINEERING

Instructions to Candidates:

REMINDER: You are reminded to read and adhere to the Final Assessment Instructions to Candidates that has been made available through the UTAR Portal before the commencement of Final Assessment (FA). The detailed instructions for this FA are as follows:

General

1. This Final Assessment (FA) is an individual, time restricted assessment which consists of FOUR (4) questions. Each question carries 25 marks.
2. You are required to answer **ALL** questions, and submit the **ANSWER SCRIPT** by **12.00 PM, 1 OCTOBER 2020**.
3. During the period of **3.5 hours** of this FA, the examiner(s) can be reached at
 - (a). Microsoft Teams with Code: b9v18c6, or
 - (b). Email: ylloo@utar.edu.myYou may use the above e-platform(s) to check with the examiner(s) if you need any clarification on this FA question paper.
4. You may refer to any books, lecture notes, published materials, online resources etc. when answering the questions. Proper referencing is necessary to avoid plagiarism. The preferred referencing style is American Psychological Association (APA). Candidates are reminded that **Copy-and-Paste, Consultation, Discussion and Sharing of Answers** with others are **STRICTLY PROHIBITED** in this FA.

Answer Script File

5. The answer script **MUST** be a **Microsoft Word file** [Compulsory for text-based submission to enable Turnitin Plagiarism Check] or opt for PDF, in A4 size format. **Note: Please keep the file size NOT exceeding 30MB per file.**
6. Please check your Index Number generated by the Division of Examinations, Awards, and Scholarships (DEAS). You **MUST** name your answer script file using the following file name for submission:
UECS2363_FA_[Programme Abbreviation]_[Your Index Number]

UECS2363 SOFTWARE CONSTRUCTION AND CONFIGURATION

For example, if your Index Number is A99999CBIBF, then your answer script should be named as:

UECS2363_FA_IB_A99999CBIBF.doc

Answer Script File Submission

7. Your answer script file has to be submitted to the following platform(s) before the due time/date.
 - (a). Submit your answer script at WBLE
 - (b). Send your answer script to UECS2363.LKCFES@utar.edu.my

Note: For the subject / title of your email, use the file name of your answer script, i.e.,
UECS2363_FA_[Your Index Number]
8. Please make sure you submit the correct, complete and final version of your answer script and the same copy of answer script file is to be submitted to the above platform(s).

Contents of Answer Script

9. The **first page** of your submission is the **Final Assessment Cover Page**. You **MUST** use the template given and fill in the following information
 - Your Programme (Abbreviation)
 - Your Index Number
 - Your Name
 - Your Student ID
10. The **second page** of your submission is the **Final Assessment Declaration Statement**. You **MUST** use the template given, and digitally sign on the form to indicate the authenticity of your submitted work is without plagiarism.
11. Each question should be answered starting on a new page. It is recommended that the answer to each question is limited to **2 pages** or **500 words**, whichever is lower. [Format / word Limit / Page Limit]
12. For answer scripts that have text-based answers only, all texts **MUST** be typed and recommended using Times New Roman characters with font size **12**, with single spacing and justified alignment, except for the drawings and equations/calculations.
13. For answer scripts that require / contain drawings, equations and calculations with short text descriptions, you can hand-draw your answers on a blank paper, and then use the scanner apps in your smartphone (Scanner Document, CamScanner, Adobe Scanner etc.) to take scanned copy, or you can type if necessary and include the scanned copy taken in the Word document, as part of your submitted answers.
14. Please include a page number on **each and every page** of your answer script. Ensure that each page of answer scripts is in sequence prior to online submission.

UECS2363 SOFTWARE CONSTRUCTION AND CONFIGURATION**WARNING OF PLAGIARISM**

15. Answer scripts shall be uploaded to Turnitin to check for the originality of submitted answers. In the case of suspected plagiarism, the evidence will be submitted to the Examination Disciplinary Committee of the University. Disciplinary action shall be taken against any candidate who is found to have plagiarized in the answer submitted. Hence, candidates are reminded to abide by all University Rules and Regulations and any instructions/guidelines relating to examinations/assessments.

UECS2363 SOFTWARE CONSTRUCTION AND CONFIGURATION

Answer **ALL FOUR (4)** questions.

Q1. (a) According to your own practice, explain TWO (2) advantages of using distributed version control system as compared to centralized version control system or vice versa. (10 marks)

(b) Consider your team members to be in different locality and it is not possible to gather and work for a project development at the same time. Demonstrate a DevOps software development practice and tools that you plan to adopt with justification. (You may draw table/Gantt chart/infinity loop of DevOps as illustration skeleton) (15 marks)

[Total : 25 marks]

Q2. (a) According to the best practice that you learned, while a developer performs code refactoring on a software/system, the procedure should be accompanied with executions of automated tests. Propose a framework of how the developer should apply both code refactoring and automated tests. In the framework, justify why specific automated test(s) is/are used for different implications of code refactoring. (15 marks)

(b) Write an automated test code that opens a calculator (as illustrated in Figure 1), press “4 + 8” and then check whether screen shows 12 or not. (10 marks)

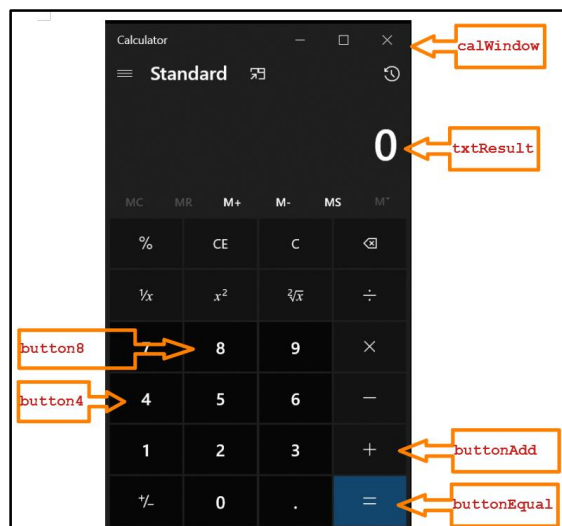


Figure 1. Calculator application.

[Total : 25 marks]

UECS2363 SOFTWARE CONSTRUCTION AND CONFIGURATION

- Q3. (a) Explain in which THREE (3) situations should a DevOps adopt container and in which THREE (3) situations should a virtual machine be adopted in cloud software configuration and construction. Justify your answers with a comparison of advantage and disadvantage between both tools. (10 marks)
- (b) Followings are examples of tools used to improve the quality of software construction and configuration. Explain each tools and how it helps to improve the quality of software construction and configuration.
- (i) Travis CI (5 marks)
 - (ii) Vagrant (5 marks)
 - (iii) Git / Github (5 marks)
- [Total : 25 marks]
- Q4. (a) Explain FIVE (5) key features of “Dark Launching” deployment of a software/system. (10 marks)
- (b) Elaborate THREE (3) examples of software that should adopt “Dark Launching” deployment rather than the other type of deployment methods with justifications. (15 marks)
- [Total : 25 marks]
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