

MTD367

End-of-Course Assessment - July Semester 2024

iOS Application Development

INSTRUCTIONS TO STUDENTS:

1. This End-of-Course Assessment paper comprises **7** pages (including the cover page).
2. You are to include the following particulars in your submission: Course Code, Title of the ECA, SUSS PI No., Your Name, and Submission Date.
3. Late submission will be subjected to the marks deduction scheme. Please refer to the Student Handbook for details.

IMPORTANT NOTE

ECA Submission Deadline: Tuesday, 08 October 2024 12:00 pm

ECA Submission Guidelines

Please follow the submission instructions stated below:

Please Read This Information before You Start Working on your ECA

This ECA carries 70% of the course marks and is a compulsory component. It is to be done individually and not collaboratively with other students.

Submission

You are to submit the ECA assignment in exactly the same manner as your tutor-marked assignments (TMA), i.e. using Canvas. Submission in any other manner like hardcopy or any other means will not be accepted.

Electronic transmission is not immediate. It is possible that the network traffic may be particularly heavy on the cut-off date and connections to the system cannot be guaranteed. Hence, you are advised to submit your assignment the day before the cut-off date in order to make sure that the submission is accepted and in good time.

Once you have submitted your ECA assignment, the status is displayed on the computer screen. You will only receive a successful assignment submission message if you had applied for the e-mail notification option.

ECA Marks Deduction Scheme

Please note the following:

- a) Submission Cut-off Time – Unless otherwise advised, the cut-off time for ECA submission will be at **12:00 noon** on the day of the deadline. All submission timings will be based on the time recorded by Canvas.*
- b) Start Time for Deduction – Students are given a grace period of 12 hours. Hence calculation of late submissions of ECAs will begin at **00:00 hrs** the following day (this applies even if it is a holiday or weekend) after the deadline.*
- c) How the Scheme Works – From 00:00 hrs the following day after the deadline, **10 marks** will be deducted for each **24-hour block**. Submissions that are subject to more than 50 marks deduction will be assigned **zero mark**. For examples on how the scheme works, please refer to Section 5.2 Para 1.7.3 of the Student Handbook.*

Any extra files, missing appendices or corrections received after the cut-off date will also not be considered in the grading of your ECA assignment.

Plagiarism and Collusion

Plagiarism and collusion are forms of cheating and are not acceptable in any form of a student's work, including this ECA assignment. You can avoid plagiarism by giving appropriate references when you use some other people's ideas, words or pictures (including diagrams). Refer to the American Psychological Association (APA) Manual if you need reminding about quoting and referencing. You can avoid collusion by ensuring that your submission is based on your own individual effort.

The electronic submission of your ECA assignment will be screened through a plagiarism detecting software. For more information about plagiarism and cheating, you should refer to the Student Handbook. SUSS takes a tough stance against plagiarism and collusion. Serious cases will normally result in the student being

referred to SUSS's Student Disciplinary Group. For other cases, significant marking penalties or expulsion from the course will be imposed.

(Full marks: 100)

Question 1

Debug the following badly written swift code and explain the usage of the code in the subsequent questions 1a and 1b.

```
import UIKit
func LDist(_ s1: string, _ s2: Int )
{
    let (lenS1, lenS2) = (s1.count, s2.count)
    let dp = Array(repeating: Array(repeating: 0, count: lenS2 + 1),
count: lenS1 + 1)

    for i in 0...lenS1 {
        for j in 0...lenS2 {
            if i == 0 {
                dp[i][j] = j
            } else if j == 0 {
                dp[i][j] = i
            } else {
                dp[i][j] = min(
                    dp[i - 1][j] + 1, // Del
                    dp[i][j - 1] + 1, // Ins
                    dp[i - 1][j - 1] + (s1[s1.index(s1.startIndex,
offsetBy: i - 1)] == s2[s2.index(s2.startIndex, offsetBy: j - 1)] ? 0 :
1) // ?????
                )
            }
        }
    }
    --> dp[lenS1][lenS2]
}

// Example usage:
let input1 = "Kitchen"
let input2 = "Chicken"
let output = LDist(input1, input2)
print('\(input1)' -> '\(input2)' = \("\(output).")
// 'Kitchen' -> 'Chicken' = 4
```

Question 1a

Examine the above code shown in Question 1 and fix the errors in your Xcode. Provide the correct and functional code, and explain the corrections.

(10 marks)

Question 1b

Analyse the function of the above code and explain how it can work. Provide an example that gives an output = 4 when one of the two inputs is “MTD367 Swift”.

(10 marks)

Question 2

You are an IOS APP developer working on an outdoor game APP. Design and create a game to encourage office workers to go outdoors to do walking and running activity in Singapore. This APP allows users to start an exploration from their current location, and travel to some random labels on the map to gain treasure points. Treasure points can be used to exchange for different gifts from the gift store.

Question 2a

Describe the workflow of the APP showing how the features are designed and analyse how the functions are achieved by using UIViews/UIControls and MapKit.

(15 marks)

Question 2b

The application should include the following features:

Randomly generate some treasure locations within a near range (e.g. 10 min walk range) for user to explore.

(10 marks)

User can pick treasure locations to travel to with different challenge time levels before he/she starts.

(5 marks)

After exploration, start a status view to display the current velocity, distance, time used, and time remaining during the activity.

(10 marks)

Alerts will be given if the user has stopped for too long, a time limit has reached, or he/she has arrived at the region of the treasure location.

(10 marks)

Points are obtained when the destination is reached, and they can be accumulated. After logging into the account, user can exchange his/her points shown in the store page for gifts (ranging from \$5 SGD vouchers, \$10 SGD vouchers, \$20 SGD vouchers, movie tickets, bluetooth earbuds to sunglasses) by filling in his/her phone number and email to arrange for digital delivery.

(10 marks)

Allow user to share photos and post text in his/her personal page to share his/her challenge.

(10 marks)

Using your own creativity, add a new functional feature to this APP. (Rationale on why and how this new feature is created should be made clearly in the report.)

(10 marks)

Required components are to be implemented in the IOS APP project:

- Apply UI design with various UIViews and UIControls
- Evaluate and implement Gesture recognizers
- Experiment with MAPKit
- Functions developed with Sound and Image

(Marks are deducted if required components are not implemented.)

You are to examine the libraries and developmental frameworks in Xcode. By demonstrating an understanding of the core programming syntax used, design an application by experimenting with the SDK and frameworks that are available in Xcode.

You are required to paste related swift code/functions into the report corresponding to the features **in a table form** and also **provide your zipped code project** in your submission. In addition, provide a **screen recording** of the usage of the features in the application. You may use buttons to control and mimic walking/running process and that is acceptable for feature testing. Submit screen recording MTD367_ECA_QuestionNo._YourFullName.mp4 and project codes in one zip file.

Appendix:

SUBMISSION INSTRUCTIONS:

- Students are to submit their work via Canvas.
- All required files in the ECA to be zipped in a single compressed file and uploaded onto Canvas.
- Any other necessary documents are to be included into the zipped folder as well.
 - Maximum file size 150MB
- Name your compressed file strictly to this format:
CourseID_AssignmentID_StudentUserID_FullName. Student User ID refers to the front part of your SUSS email. Please refer to Canvas student guide if you are unsure of how to name your compressed file.
- File Title for the ECA submission:
MTD367_ECA_QuestionNo._YourFullName
- Format: MP4 format (.mp4) Minimum resolution of 1080 by 720 (720P)
- Personal Reflection format
 - Title for the personal reflection report: MTD367_ECA_Report_YourFullName
 - Format: Microsoft word document (.doc/docx)
- Any other documents Format: PDF format (pdf)
- Submission deadline
 - All students are to adhere to the submission deadline as stipulated in Canvas. Otherwise, mark deduction for late submission penalty applies

----- END OF ECA PAPER -----