

Northern Michigan University (Marquette Co, MI)

CS344-01-26F: iOS / iPhone Programming (Andrew A. Poe) Name: _____

Midterm Examination (Exam 1) Page 1/2

Friday 9 October 2026 2:00 P.M. EDT

Time: 50 minutes.

1. Write the following method:

```
func Count3LetterSubstrings (_ s:String, _ ss:String) -> Int { ... }
```

This function takes strings *s* and *ss* (*ss* is guaranteed to exactly three letters long) returns the number of times *ss* appears in *s* as a substring. For example, "DOG" appears twice in "DOG EAT DOG" and "ABA" appears twice in "ABABA".

```
func Count3LetterSubstrings (_ s:String, _ ss:String) -> Int {  
  
    var count = 0  
    var a = "\0"  
    var b = "\0"  
    for c in s {  
        if "\(a)\(b)\(c)" == ss {  
            count = += 1  
        }  
        a = b  
        b = c  
    }  
    return count  
}
```

2. Write Swift code that uses an sqlite database (already open) with a table called NMUProfessors containing fields named LastName, FirstName, and Discipline. Your Swift code should print (to the screen) the full names (alphabetically) of all Computer Science professors named Scott.

```
sqlite3_prepare_v2(db,  
"select LastName,FirstName from TelephoneBook where Discipline = 'Computer  
Science' and (LastName = 'Scott' or FirstName = 'Scott') order by  
LastName,FirstName", -1,&stmt,nil)  
while sqlite3_step(stmt)==SQLITE_ROW {  
    let ln:String = String (CString:sqlite3_column_text(stmt,0));  
    let fn:String = String (CString:sqlite3_column_text(stmt,1));  
    print ("\(ln) \(fn)")  
}  
sqlite3_reset (stmt)  
sqlite3_finalize (stmt)
```

3. Write the methods in ViewController that display two TextFields on the screen (tf1 and tf2) and one Button (butt) (all of these variables must be declared but they have been placed on the Storyboard). The button ALREADY contains the text "CLICK" (from the Storyboard). The ViewController should manually add an action to the button so that when the button is clicked, tf2 will contain either YES or NO depending on whether the first and last characters match in tf1. ("YELLOW BAKERY" would give a YES for example).

```
class ViewController: UIViewController {
```

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```
@IBOutlet var tf1:UITextField?
@IBOutlet var tf2:UITextField?
@IBOutlet var butt:UIButton?
override func viewDidLoad() {
    super.viewDidLoad()
    butt!.addTarget(self, action: #selector(Click), for:
UIControl.Event.touchUpInside)
}

@objc func Click () {
    var f = "\0"
    var l = "\0"
    for c in tf1!.text {
        if f=="\0" {
            f = c
        }
        l = c
    }
    if (f==l) {
        tf2!.text = "YES"
    } else {
        tf2!.text = "NO"
    }
}
}
```

4. Write a ViewController that does not use the storyboard and creates two labels. The labels should be 50 units high and 150 units wide; they should be placed halfway down the screen vertically, and one label should be on the far left and one should be on the far right. (Use `view.frame.size.width` and `view.frame.size.height` as appropriate.)

```
class ViewController: UIViewController {

    var lab1:UILabel? = nil
    var lab2:UILabel? = nil

    override func viewDidLoad() {
        super.viewDidLoad()
        lab1 = UILabel()
        lab2 = UILabel()
        lab1!.frame = CGRect (x:0,y:view.frame.size.height/2-25,
                               width:150,height:50)
        lab2!.frame = CGRect (x:view.frame.size.width-150,
                               y:view.frame.size.height/2-25,
                               width:150,height:50)
        view!.addSubview (lab1!)
        view!.addSubview (lab2!)
    }
}
```