Northern Michigan University (Marquette Co, MI)

CS344-01-24F: iOS / iPhone Programming (Andrew A. Poe) Name: _____
Practice Midterm Examination (Exam 1) Page 1/2 Monday 7 October 2024 1:00 P.M. EDT

Time: 50 minutes.

1. Write the method func BackwardVowels (_ s:String) {...}. This function prints the vowels (a,e,i,o,u, upper and lowercase) in reverse order of how they appear in s, without printing anything else in s. For example, if s were "I like ice cream.", the method would print "aeeieiI".

```
func BackwardVowels (_ s:String) {

    for c in s.reversed() {
        if (c=="A"||c=="E"||c=="I"||c=="O"||c=="U"||
            c=="a"||c=="e"||c=="i"||c=="o"||c=="u") {
            print (c,terminator:"")
        }
    }
    print ()

}
```

2. Write a method func MatrixSum (_ M:[[Int]], _ N:[[Int]])->[[Int]] that returns the sum of the matrices M and N. M and N are guaranteed to be valid matrices, all rows of each have the same length, and M and N are guaranteed to have the same dimensions as each other. You do not have to check for this. For example,

M	N	Returned Matrix
1 2 3	2 4 6	3 6 9
4 5 6	9 10 0	13 15 6

```
func MatrixSum (_ M:[[Int]], _ N:[[Int]])->[[Int]] {

    var S:[[Int]] = []

    for i in M.indices {
        var r:[Int] = []
        for j in M[0].indices {
            r.append (M[i][j]+N[i][j])
        }
        S.append (r)
    }
    return S
}
```

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, the text from tf1 is reversed and placed into tf2.

```
@IBOutlet var tf1:UITextField?
@IBOutlet var tf2:UITextField?
@IBOutlet var butt:UIButton?

override func viewDidLoad() {
    super.viewDidLoad()
    // Do any additional setup after loading the view.
    butt!.addTarget (self,action:#selector(click),
                     for:UIControl.Event.touchUpInside)
}

@objc func click () {
    tf2!.text = String(tf1!.text!.reversed())
}
```

4. An iPhone 14 has a screen resolution of 2532 × 1170 (1170 pixels across, 2532 pixels down.) Write a ViewController that does not use the storyboard and creates 10 labels, each one centered horiztontally on the screen, taking up half the width. The labels should appear vertically on the screen in a column, evenly spaced and taking up the full screen. The text of the labels should simply be the numbers 1 through 10.

```
override func viewDidLoad() {
    super.viewDidLoad()
    // Do any additional setup after loading the view.
    let h = CGFloat(view.frame.size.height)
    let w = CGFloat(view.frame.size.width)
    for i in 0..<10 {
        var lab:UILabel? = UILabel()
        lab!.text = "\(i+1)"
        lab!.frame = CGRect (x:w/4,
                     y:(h/10-50)/2+CGFloat(i)*h/10,
                     width:w/2,height:50)
        view.addSubview (lab!)
    }
}
```