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Course: ITE-5334 IOS App Dev

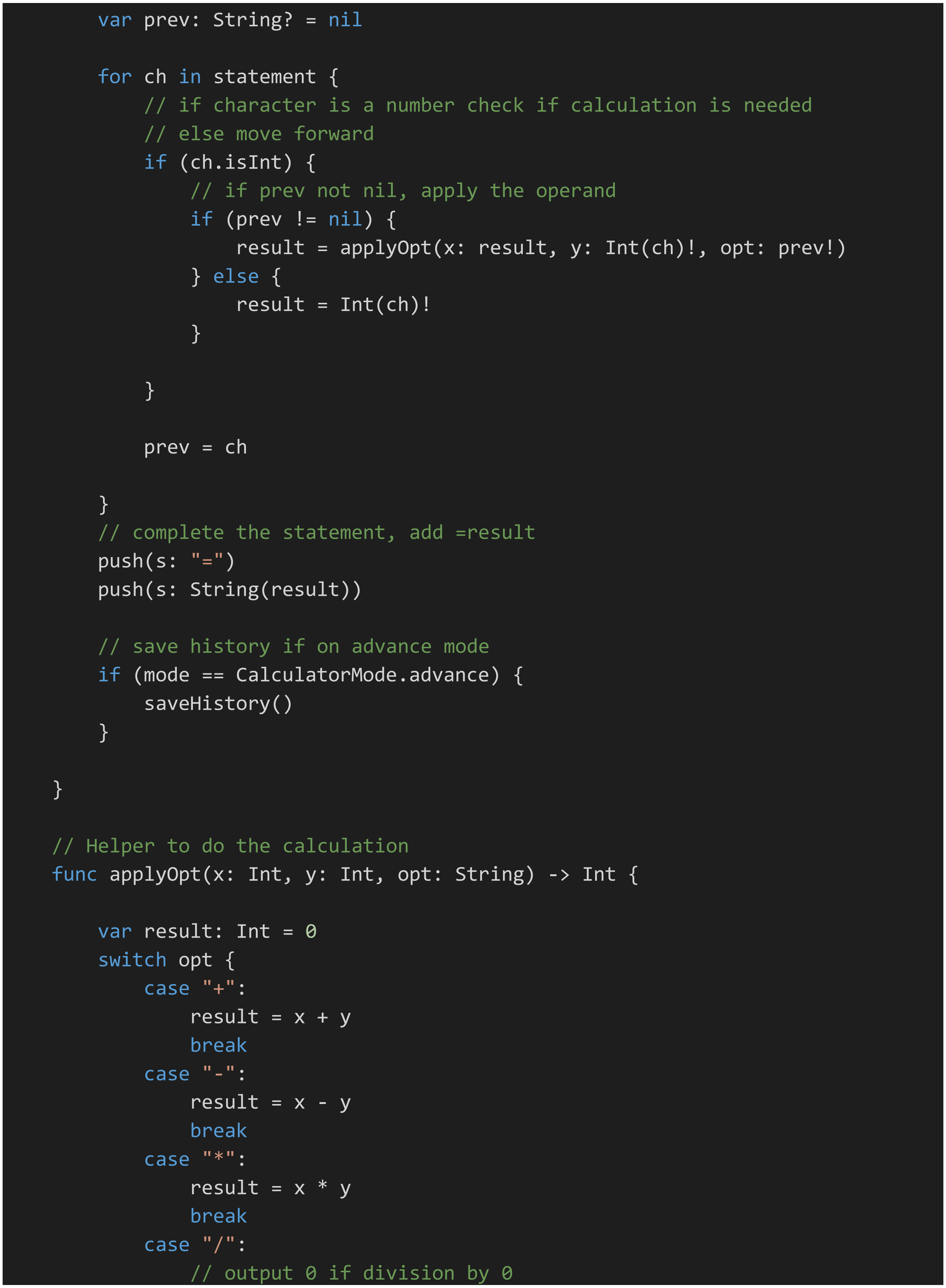
Assignment 1

Video URL:
https://drive.google.com/file/d/1wxhawVMx3xPjWEBhRTys36Imf2qT0LEY/view?usp=sharing

Github URL: https://github.com/tinebeo/ite5334-ios-app-dev

Calculator:

```
//
//  Calculator.swift
//  calculator
//
//  Created by Christine Ebeo on 2021-09-21.
//

import Foundation
import UIKit

// NOTE: Validations on character input were removed
//      Viewcontroller controls what user can click on
class Calculator {

    var statement = [String]()
    var history = [String]()
    // standard (default) or advance
    var mode = CalculatorMode.standard

    // Adds items to statement to use for calculation later
    func push(s: String) {
        statement.append(s)
    }

    // Perform calculation
    func calc() {

        var result = 0
```



```
    var prev: String? = nil

    for ch in statement {
        // if character is a number check if calculation is needed
        // else move forward
        if (ch.isInt) {
            // if prev not nil, apply the operand
            if (prev != nil) {
                result = applyOpt(x: result, y: Int(ch)!, opt: prev!)
            } else {
                result = Int(ch)!
            }

        }

        prev = ch

    }
    // complete the statement, add =result
    push(s: "=")
    push(s: String(result))

    // save history if on advance mode
    if (mode == CalculatorMode.advance) {
        saveHistory()
    }

}

// Helper to do the calculation
func applyOpt(x: Int, y: Int, opt: String) -> Int {

    var result: Int = 0
    switch opt {
        case "+":
            result = x + y
            break
        case "-":
            result = x - y
            break
        case "*":
            result = x * y
            break
        case "/":
            // output 0 if division by 0
```

```
                if (y == 0) {
                    result = 0
                } else {
                    result = x / y
                }
                break
            default:
                break
                // nothing to do
        }

        return result
    }

    // Clean/reset the statement list
    func clearStatement() {
        statement = [String]()
    }

    func getStatement() -> String {
        return statement.joined(separator: "")
    }

    // Get calculation history
    func getHistory() -> String {
        return history.joined(separator: "\n")
    }

    func saveHistory() {
        // add current statement to history

        history.append(statement.joined(separator: ""))
    }

    func clearHistory() {
        history = [String]()
    }

}

// source : https://stackoverflow.com/questions/38159397/how-to-check-if-a-
string-is-an-int-in-swift
extension String {
    var isInt: Bool {
        return Int(self) != nil
    }
}

enum CalculatorMode {
    case standard
    case advance
}
```

ViewController:

```
//
//  ViewController.swift
//  calculator
//
//  Created by Christine Ebeo on 2021-09-21.
//

import UIKit

class ViewController: UIViewController {

    @IBOutlet weak var lblOutput: UILabel!
    @IBOutlet weak var historyOutput: UITextView!
    var calculator: Calculator = Calculator()

    // use these for enabling/disabling buttons
    // cant find a way to update buttons using only one variable
    @IBOutlet weak var btn1: UIButton!
    @IBOutlet weak var btn2: UIButton!
    @IBOutlet weak var btn3: UIButton!
    @IBOutlet weak var btn4: UIButton!
    @IBOutlet weak var btn5: UIButton!
    @IBOutlet weak var btn6: UIButton!
    @IBOutlet weak var btn7: UIButton!
    @IBOutlet weak var btn8: UIButton!
    @IBOutlet weak var btn9: UIButton!
    @IBOutlet weak var btn0: UIButton!
    @IBOutlet weak var btnPlus: UIButton!
    @IBOutlet weak var btnMinus: UIButton!
    @IBOutlet weak var btnMultiply: UIButton!
    @IBOutlet weak var btnDivide: UIButton!
    @IBOutlet weak var btnEquals: UIButton!
    lazy var numButtons = [btn1, btn2, btn3, btn4, btn5, btn6, btn7, btn8, btn9,
btn0, btnPlus, btnMultiply, btnDivide, btnEquals]
    lazy var optButtons = [btnPlus, btnMinus, btnMultiply, btnDivide, btnEquals]

    override func viewDidLoad() {
        super.viewDidLoad()
        // Do any additional setup after loading the view.
    }

    @IBAction func btnClick(_ sender: UIButton) {

        switch sender.titleLabel!.text! {
            case "C":
                // clear the equation box
                lblOutput.text! = ""
                // activate the numbers and inactivate the operator buttons
                toogleButtons(numIsEnabled: true, optIsEnabled: false)
                // reset the calculator statement list
                calculator.clearStatement()
                break
            case "=":
                // calculate
                calculator.calc()
                // show the resulting statement
                lblOutput.text! = calculator.getStatement()

                // if on advanced, save history
                if (calculator.mode == CalculatorMode.advance) {
                    historyOutput.text = calculator.getHistory()
                }

                // activate the numbers and inactivate the operator buttons
                toogleButtons(numIsEnabled: true, optIsEnabled: false)
                // reset the calculator statement list
                calculator.clearStatement()
                break
            default:
                // numbers or operators were pressed
                // add the current pressed button to the statement list
                calculator.push(s: sender.titleLabel!.text!)
                // activate/inactivate buttons depending on what was pressed
                toogleButtons(numIsEnabled: !btn1.isEnabled, optIsEnabled: !btnPl
us.isEnabled)
                lblOutput.text! = calculator.getStatement()
        }
    }
    
    @IBAction func historySettingBtnClick(_ sender: UIButton) {
        
        if (calculator.mode == CalculatorMode.standard) {
            sender.setTitle("Standard - No History", for: .normal)
            
            // when switched back to advance, clear the history output
            calculator.clearHistory()
            historyOutput.text = ""
            calculator.mode = CalculatorMode.advance
        } else {
            sender.setTitle("Advance - With History", for: .normal)
            calculator.mode = CalculatorMode.standard
        }
        
        // hide/unhide the history area
        historyOutput.isHidden = !historyOutput.isHidden
        
    }
    
    // enable disables buttons
    func toogleButtons(numIsEnabled: Bool, optIsEnabled: Bool) {
        for button in numButtons {
            button!.isEnabled = numIsEnabled
            // updates the button colors
            updateBtnColor(button: button!, color: UIColor.systemOrange)
            
        }
        
        for button in optButtons {
            button!.isEnabled = optIsEnabled
            updateBtnColor(button: button!, color: UIColor.systemIndigo)
        }
    }
    
    // gray/ungray the buttons
    func updateBtnColor(button : UIButton, color: UIColor) {
        if (!button.isEnabled) {
            button.backgroundColor = UIColor.darkGray
        } else {
            button.backgroundColor = color
        }
    }
}
```