CISC-4400. MOBILE DEVICE PROGRAMMING FORDHAM UNIVERSITY

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LAB#5

URL APIs, navigation, multiple views, and JSON parsing. Sample code is provided and you must finish the LAB as instructed by the professor.

Email swiftUI, Swift programming code and a screenshot of the simulator display to Michael Kocovic, the TA for this class. His email will be given in the Bb -> Announcements. Thank you.

Add three (3) more JSON URLs navigation links for this lab assignment. You can pick any three that you want. Do the same as the “currency” and “todos” JSON lists.

Xcode playground Swift code:

**import** UIKit

**let** json = """

{

"flight\_number": 65,

"mission\_name": "Telstar 19V",

"launch\_date\_unix": 1532238600,

"launch\_success": true

}

"""

**struct** Launch: Decodable {

**let** flightNumber: Int

**let** missionName: String

**let** launchDateUnix: Date

**let** launchSuccess: Bool

}

**let** jsonData = json.data(using: .utf8)!

**let** decoder = JSONDecoder()

decoder.keyDecodingStrategy = .convertFromSnakeCase

decoder.dateDecodingStrategy = .secondsSince1970

**let** launch = **try** decoder.decode(Launch.**self**, from: jsonData)

print(launch.flightNumber)

print(launch.missionName)

print(launch.launchDateUnix)

print(launch.launchSuccess)

//

// ContentView.swift

// lab#4MobileProject

//

// Created by Nick Kounavelis on 9/28/22.

//

**import** SwiftUI

**struct** ContentView: View {

**var** body: **some** View {

NavigationView {

VStack {

// 1) JSON URL ------------

NavigationLink(destination: CurrencyView()) {

Text("World Currency Abbreviations")

.font(.title3)

.padding(.bottom, 15)

}

// 2) JSON URL ------------

NavigationLink(destination: TodosView()) {

Text("TO DO LIST")

.font(.title3)

.padding(.bottom, 15)

}

} // end vertical Stack

.navigationTitle("JSON SAMPLE URLs")

} // end navigation view

} // end body

} // end struct

**struct** ContentView\_Previews: PreviewProvider {

**static** **var** previews: **some** View {

ContentView()

}

//

// CurrencyView.swift

// lab#4MobileProject

//

// Created by Nick Kounavelis on 9/28/22.

//

**import** SwiftUI

**struct** Currency: Decodable {

**let** id: String

**let** name: String

**let** min\_size: String

}

**struct** CurrencyList: Decodable {

**let** data: [Currency]

}

**struct** CurrencyView: View {

@State **private** **var** currencies = [Currency]()

**var** body: **some** View {

NavigationView {

List(currencies, id: \.id) { c **in**

VStack (alignment: .leading) {

Text(c.id)

.font(.headline)

.foregroundColor(.cyan)

Text(c.name)

.font(.body)

.foregroundColor(.indigo)

Text(c.min\_size)

.font(.body)

.foregroundColor(.red)

}

}

.navigationTitle("World Currency")

.task {

**await** fetchCurrencyData()

}

}

}

**func** fetchCurrencyData() **async** {

// create the URL

**guard** **let** url = URL(string: "https://api.coinbase.com/v2/currencies") **else** {

print("Hey Man, THIS URL DOES NOT WORK!")

**return**

}

// fetch the data

**do** {

**let** (data, \_) = **try** **await** URLSession.shared.data(from: url)

// decode that data

**if** **let** decodedResponse = **try**? JSONDecoder().decode(CurrencyList.**self**, from: data) {

currencies = decodedResponse.data

}

} **catch** {

print("Bad news ... This data is not valid :-(")

}

// ecode the data

}

}

**struct** CurrencyView\_Previews: PreviewProvider {

**static** **var** previews: **some** View {

CurrencyView()

}

}

//

// TodosView.swift

// lab#4MobileProject

//

// Created by Nick Kounavelis on 9/28/22.

//

**import** SwiftUI

**struct** Todo: Decodable {

**var** userId: Int

**var** id: Int

**var** title: String

**var** completed: Bool

}

**struct** TodosView: View {

@State **private** **var** todos = [Todo]()

**var** body: **some** View {

NavigationView {

List(todos, id: \.id) { t **in**

VStack (alignment: .leading) {

Text(String(t.id))

.font(.headline)

.foregroundColor(.cyan)

Text(t.title)

.font(.body)

.foregroundColor(.indigo)

Text(String(t.completed))

.font(.body)

.foregroundColor(.red)

}

}

.navigationTitle("Todo List")

.task {

**await** fetchTodoData()

}

}

}

**func** fetchTodoData() **async** {

// create the URL

**guard** **let** url = URL(string: "https://jsonplaceholder.typicode.com/todos") **else** {

print("Hey Man, THIS URL DOES NOT WORK!")

**return**

}

// fetch the data

**do** {

**let** (data, \_) = **try** **await** URLSession.shared.data(from: url)

// decode that data

**if** **let** decodedResponse = **try**? JSONDecoder().decode([Todo].**self**, from: data) {

todos = decodedResponse

}

} **catch** {

print("Bad news ... This data is not valid :-(")

}

// ecode the data

}

}

**struct** TodosView\_Previews: PreviewProvider {

**static** **var** previews: **some** View {

TodosView()

}

}

{"data":[{"id":"AED","name":"United Arab Emirates Dirham","min\_size":"0.01000000"},{"id":"AFN","name":"Afghan Afghani","min\_size":"0.01000000"},{"id":"ALL","name":"Albanian Lek","min\_size":"0.01000000"},{"id":"AMD","name":"Armenian Dram","min\_size":"0.01000000"},{"id":"ANG","name":"Netherlands Antillean Gulden","min\_size":"0.01000000"},{"id":"AOA","name":"Angolan Kwanza","min\_size":"0.01000000"},{"id":"ARS","name":"Argentine Peso","min\_size":"0.01000000"},{"id":"AUD","name":"Australian Dollar","min\_size":"0.01000000"},{"id":"AWG","name":"Aruban Florin","min\_size":"0.01000000"},{"id":"AZN","name":"Azerbaijani Manat","min\_size":"0.01000000"},{"id":"BAM","name":"Bosnia and Herzegovina Convertible Mark","min\_size":"0.01000000"},{"id":"BBD","name":"Barbadian Dollar","min\_size":"0.01000000"},{"id":"BDT","name":"Bangladeshi Taka","min\_size":"0.01000000"},{"id":"BGN","name":"Bulgarian Lev","min\_size":"0.01000000"},{"id":"BHD","name":"Bahraini Dinar","min\_size":"0.00100000"},{"id":"BIF","name":"Burundian Franc","min\_size":"1.00000000"},{"id":"BMD","name":"Bermudian Dollar","min\_size":"0.01000000"},{"id":"BND","name":"Brunei Dollar","min\_size":"0.01000000"},{"id":"BOB","name":"Bolivian Boliviano","min\_size":"0.01000000"},{"id":"BRL","name":"Brazilian Real","min\_size":"0.01000000"},{"id":"BSD","name":"Bahamian Dollar","min\_size":"0.01000000"},{"id":"BTN","name":"Bhutanese Ngultrum","min\_size":"0.01000000"},{"id":"BWP","name":"Botswana Pula","min\_size":"0.01000000"},{"id":"BYN","name":"Belarusian Ruble","min\_size":"0.01000000"},{"id":"BYR","name":"Belarusian Ruble","min\_size":"1.00000000"},{"id":"BZD","name":"Belize Dollar","min\_size":"0.01000000"},{"id":"CAD","name":"Canadian Dollar","min\_size":"0.01000000"},{"id":"CDF","name":"Congolese Franc","min\_size":"0.01000000"},{"id":"CHF","name":"Swiss Franc","min\_size":"0.01000000"},{"id":"CLF","name":"Unidad de Fomento","min\_size":"0.00010000"},{"id":"CLP","name":"Chilean Peso","min\_size":"1.00000000"},{"id":"CNH","name":"Chinese Renminbi Yuan Offshore","min\_size":"0.01000000"},{"id":"CNY","name":"Chinese Renminbi Yuan","min\_size":"0.01000000"},{"id":"COP","name":"Colombian Peso","min\_size":"0.01000000"},{"id":"CRC","name":"Costa Rican Colón","min\_size":"0.01000000"},{"id":"CUC","name":"Cuban Convertible Peso","min\_size":"0.01000000"},{"id":"CVE","name":"Cape Verdean Escudo","min\_size":"0.01000000"},{"id":"CZK","name":"Czech Koruna","min\_size":"0.01000000"},{"id":"DJF","name":"Djiboutian Franc","min\_size":"1.00000000"},{"id":"DKK","name":"Danish Krone","min\_size":"0.01000000"},{"id":"DOP","name":"Dominican Peso","min\_size":"0.01000000"},{"id":"DZD","name":"Algerian Dinar","min\_size":"0.01000000"},{"id":"EGP","name":"Egyptian Pound","min\_size":"0.01000000"},{"id":"ETB","name":"Ethiopian Birr","min\_size":"0.01000000"},{"id":"EUR","name":"Euro","min\_size":"0.01000000"},{"id":"FJD","name":"Fijian Dollar","min\_size":"0.01000000"},{"id":"FKP","name":"Falkland Pound","min\_size":"0.01000000"},{"id":"GBP","name":"British Pound","min\_size":"0.01000000"},{"id":"GBX","name":"British Penny","min\_size":"1.00000000"},{"id":"GEL","name":"Georgian Lari","min\_size":"0.01000000"},{"id":"GGP","name":"Guernsey Pound","min\_size":"0.01000000"},{"id":"GHS","name":"Ghanaian Cedi","min\_size":"0.01000000"},{"id":"GIP","name":"Gibraltar Pound","min\_size":"0.01000000"},{"id":"GMD","name":"Gambian Dalasi","min\_size":"0.01000000"},{"id":"GNF","name":"Guinean Franc","min\_size":"1.00000000"},{"id":"GTQ","name":"Guatemalan Quetzal","min\_size":"0.01000000"},{"id":"GYD","name":"Guyanese Dollar","min\_size":"0.01000000"},{"id":"HKD","name":"Hong Kong Dollar","min\_size":"0.01000000"},{"id":"HNL","name":"Honduran Lempira","min\_size":"0.01000000"},{"id":"HRK","name":"Croatian Kuna","min\_size":"0.01000000"},{"id":"HTG","name":"Haitian Gourde","min\_size":"0.01000000"},{"id":"HUF","name":"Hungarian Forint","min\_size":"1.00000000"},{"id":"IDR","name":"Indonesian Rupiah","min\_size":"0.01000000"},{"id":"ILS","name":"Israeli New Sheqel","min\_size":"0.01000000"},{"id":"IMP","name":"Isle of Man Pound","min\_size":"0.01000000"},{"id":"INR","name":"Indian Rupee","min\_size":"0.01000000"},{"id":"IQD","name":"Iraqi Dinar","min\_size":"0.00100000"},{"id":"ISK","name":"Icelandic Króna","min\_size":"1.00000000"},{"id":"JEP","name":"Jersey Pound","min\_size":"0.01000000"},{"id":"JMD","name":"Jamaican Dollar","min\_size":"0.01000000"},{"id":"JOD","name":"Jordanian Dinar","min\_size":"0.00100000"},{"id":"JPY","name":"Japanese Yen","min\_size":"1.00000000"},{"id":"KES","name":"Kenyan Shilling","min\_size":"0.01000000"},{"id":"KGS","name":"Kyrgyzstani Som","min\_size":"0.01000000"},{"id":"KHR","name":"Cambodian Riel","min\_size":"0.01000000"},{"id":"KMF","name":"Comorian Franc","min\_size":"1.00000000"},{"id":"KRW","name":"South Korean Won","min\_size":"1.00000000"},{"id":"KWD","name":"Kuwaiti Dinar","min\_size":"0.00100000"},{"id":"KYD","name":"Cayman Islands Dollar","min\_size":"0.01000000"},{"id":"KZT","name":"Kazakhstani Tenge","min\_size":"0.01000000"},{"id":"LAK","name":"Lao Kip","min\_size":"0.01000000"},{"id":"LBP","name":"Lebanese Pound","min\_size":"0.01000000"},{"id":"LKR","name":"Sri Lankan Rupee","min\_size":"0.01000000"},{"id":"LRD","name":"Liberian Dollar","min\_size":"0.01000000"},{"id":"LSL","name":"Lesotho Loti","min\_size":"0.01000000"},{"id":"LTL","name":"Lithuanian Litas","min\_size":"0.01000000"},{"id":"LYD","name":"Libyan Dinar","min\_size":"0.00100000"},{"id":"MAD","name":"Moroccan Dirham","min\_size":"0.01000000"},{"id":"MDL","name":"Moldovan Leu","min\_size":"0.01000000"},{"id":"MGA","name":"Malagasy Ariary","min\_size":"0.20000000"},{"id":"MKD","name":"Macedonian Denar","min\_size":"0.01000000"},{"id":"MMK","name":"Myanmar Kyat","min\_size":"0.01000000"},{"id":"MNT","name":"Mongolian Tögrög","min\_size":"0.01000000"},{"id":"MOP","name":"Macanese Pataca","min\_size":"0.01000000"},{"id":"MUR","name":"Mauritian Rupee","min\_size":"0.01000000"},{"id":"MVR","name":"Maldivian Rufiyaa","min\_size":"0.01000000"},{"id":"MWK","name":"Malawian Kwacha","min\_size":"0.01000000"},{"id":"MXN","name":"Mexican Peso","min\_size":"0.01000000"},{"id":"MYR","name":"Malaysian Ringgit","min\_size":"0.01000000"},{"id":"MZN","name":"Mozambican Metical","min\_size":"0.01000000"},{"id":"NAD","name":"Namibian Dollar","min\_size":"0.01000000"},{"id":"NGN","name":"Nigerian Naira","min\_size":"0.01000000"},{"id":"NIO","name":"Nicaraguan Córdoba","min\_size":"0.01000000"},{"id":"NOK","name":"Norwegian Krone","min\_size":"0.01000000"},{"id":"NPR","name":"Nepalese Rupee","min\_size":"0.01000000"},{"id":"NZD","name":"New Zealand Dollar","min\_size":"0.01000000"},{"id":"OMR","name":"Omani Rial","min\_size":"0.00100000"},{"id":"PAB","name":"Panamanian Balboa","min\_size":"0.01000000"},{"id":"PEN","name":"Peruvian Sol","min\_size":"0.01000000"},{"id":"PGK","name":"Papua New Guinean Kina","min\_size":"0.01000000"},{"id":"PHP","name":"Philippine Peso","min\_size":"0.01000000"},{"id":"PKR","name":"Pakistani Rupee","min\_size":"0.01000000"},{"id":"PLN","name":"Polish Złoty","min\_size":"0.01000000"},{"id":"PYG","name":"Paraguayan Guaraní","min\_size":"1.00000000"},{"id":"QAR","name":"Qatari Riyal","min\_size":"0.01000000"},{"id":"RON","name":"Romanian Leu","min\_size":"0.01000000"},{"id":"RSD","name":"Serbian Dinar","min\_size":"0.01000000"},{"id":"RUB","name":"Russian Ruble","min\_size":"0.01000000"},{"id":"RWF","name":"Rwandan Franc","min\_size":"1.00000000"},{"id":"SAR","name":"Saudi Riyal","min\_size":"0.01000000"},{"id":"SBD","name":"Solomon Islands Dollar","min\_size":"0.01000000"},{"id":"SCR","name":"Seychellois Rupee","min\_size":"0.01000000"},{"id":"SEK","name":"Swedish Krona","min\_size":"0.01000000"},{"id":"SGD","name":"Singapore Dollar","min\_size":"0.01000000"},{"id":"SHP","name":"Saint Helenian Pound","min\_size":"0.01000000"},{"id":"SLL","name":"Sierra Leonean Leone","min\_size":"0.01000000"},{"id":"SRD","name":"Surinamese Dollar","min\_size":"0.01000000"},{"id":"SSP","name":"South Sudanese Pound","min\_size":"0.01000000"},{"id":"STD","name":"São Tomé and Príncipe Dobra","min\_size":"0.01000000"},{"id":"SVC","name":"Salvadoran Colón","min\_size":"0.01000000"},{"id":"SZL","name":"Swazi Lilangeni","min\_size":"0.01000000"},{"id":"THB","name":"Thai Baht","min\_size":"0.01000000"},{"id":"TJS","name":"Tajikistani Somoni","min\_size":"0.01000000"},{"id":"TMT","name":"Turkmenistani Manat","min\_size":"0.01000000"},{"id":"TND","name":"Tunisian Dinar","min\_size":"0.00100000"},{"id":"TOP","name":"Tongan Paʻanga","min\_size":"0.01000000"},{"id":"TRY","name":"Turkish Lira","min\_size":"0.01000000"},{"id":"TTD","name":"Trinidad and Tobago Dollar","min\_size":"0.01000000"},{"id":"TWD","name":"New Taiwan Dollar","min\_size":"0.01000000"},{"id":"TZS","name":"Tanzanian Shilling","min\_size":"0.01000000"},{"id":"UAH","name":"Ukrainian Hryvnia","min\_size":"0.01000000"},{"id":"UGX","name":"Ugandan Shilling","min\_size":"1.00000000"},{"id":"USD","name":"US Dollar","min\_size":"0.01000000"},{"id":"UYU","name":"Uruguayan Peso","min\_size":"0.01000000"},{"id":"UZS","name":"Uzbekistan Som","min\_size":"0.01000000"},{"id":"VEF","name":"Venezuelan Bolívar","min\_size":"0.01000000"},{"id":"VES","name":"Venezuelan Bolívar Soberano","min\_size":"0.01000000"},{"id":"VND","name":"Vietnamese Đồng","min\_size":"1.00000000"},{"id":"VUV","name":"Vanuatu Vatu","min\_size":"1.00000000"},{"id":"WST","name":"Samoan Tala","min\_size":"0.01000000"},{"id":"XAF","name":"Central African Cfa Franc","min\_size":"1.00000000"},{"id":"XAG","name":"Silver (Troy Ounce)","min\_size":"1.00000000"},{"id":"XAU","name":"Gold (Troy Ounce)","min\_size":"1.00000000"},{"id":"XCD","name":"East Caribbean Dollar","min\_size":"0.01000000"},{"id":"XDR","name":"Special Drawing Rights","min\_size":"1.00000000"},{"id":"XOF","name":"West African Cfa Franc","min\_size":"1.00000000"},{"id":"XPD","name":"Palladium","min\_size":"1.00000000"},{"id":"XPF","name":"Cfp Franc","min\_size":"1.00000000"},{"id":"XPT","name":"Platinum","min\_size":"1.00000000"},{"id":"XTS","name":"Codes specifically reserved for testing purposes","min\_size":"1.00000000"},{"id":"YER","name":"Yemeni Rial","min\_size":"0.01000000"},{"id":"ZAR","name":"South African Rand","min\_size":"0.01000000"},{"id":"ZMW","name":"Zambian Kwacha","min\_size":"0.01000000"},{"id":"ZWD","name":"Zimbabwean Dollar","min\_size":"0.01000000"},{"id":"ZWL","name":"Zimbabwean Dollar","min\_size":"0.01000000"}]}