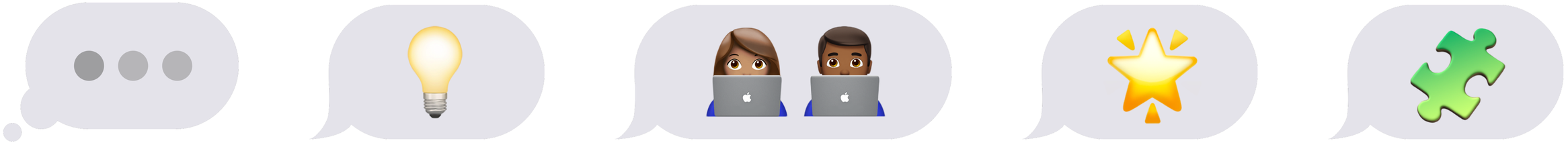
# 移动平台开发

## 实验课三：SwiftUI进阶



2026春夏学期

# SwiftUI中的交互的视图组建

Interacting elements in SwiftUI

```
import SwiftUI

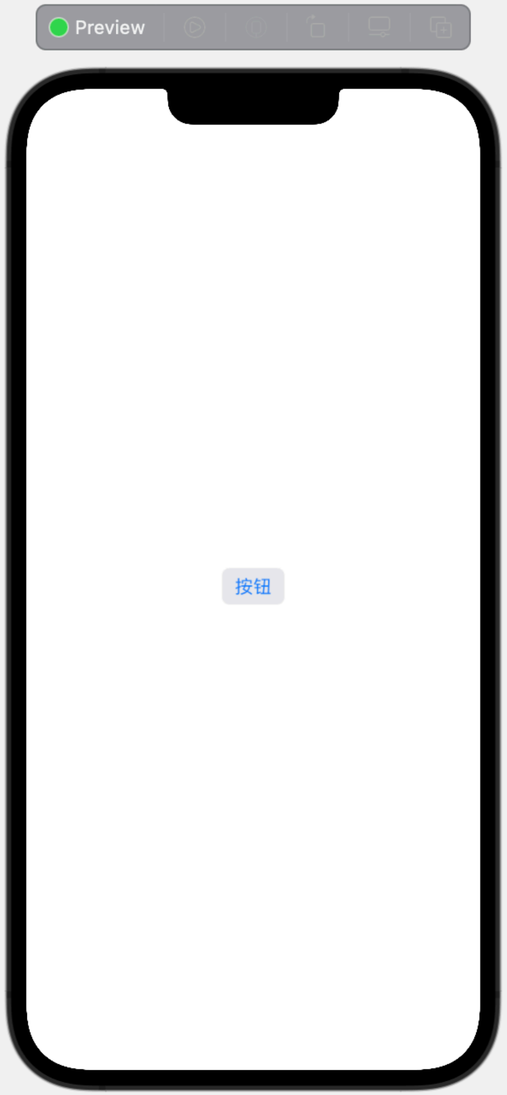
struct ContentView: View {
    var body: some View {
        Button("按钮", action: {})
    }
}
```

# SwiftUI中的交互的视图组建

Interacting elements in SwiftUI

```
import SwiftUI

struct ContentView: View {
    var body: some View {
        Button("按钮", action: {})
            .buttonStyle(.bordered)
    }
}
```



# SwiftUI中的交互的视图组建

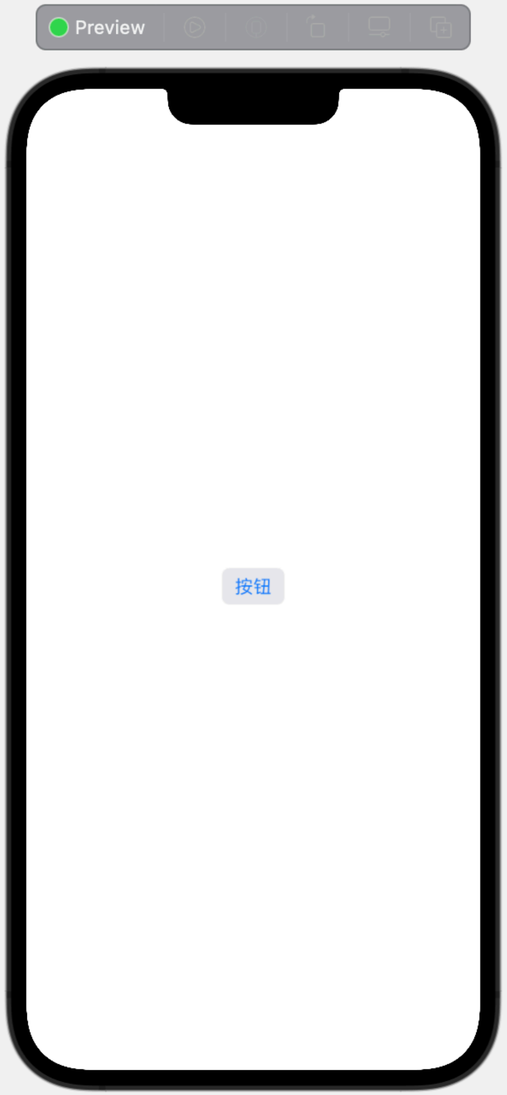
Interacting elements in SwiftUI

```
import SwiftUI

struct ContentView: View {
    var pressed = false

    var body: some View {
        Button("按钮", action: {})
                    .buttonStyle(.bordered)

    }
}
```



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Interacting elements in SwiftUI

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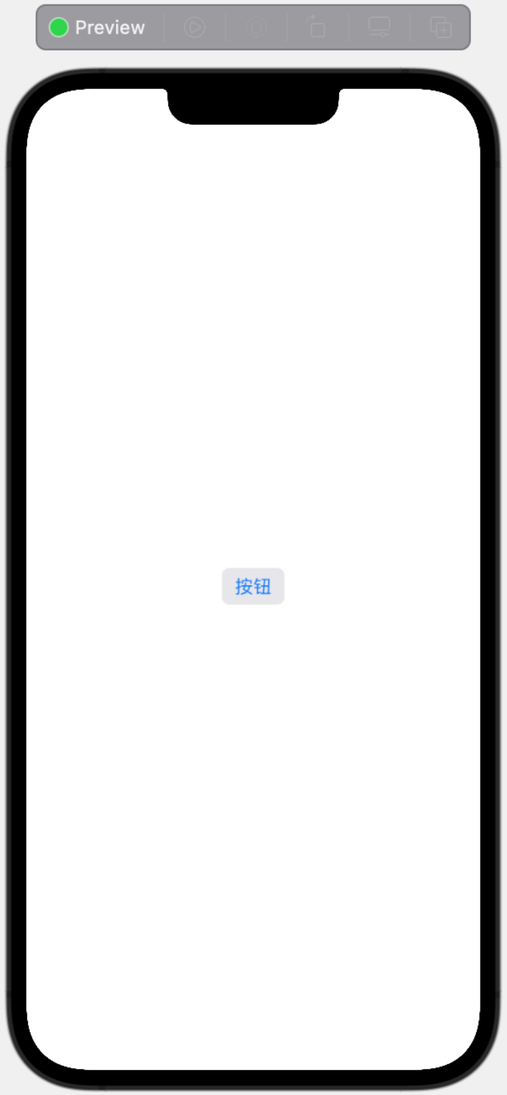
import SwiftUI

struct ContentView: View {
    var pressed = false

    var body: some View {
        Button("按钮", action: {})
                .buttonStyle(.bordered)
    }
}
```

Cannot assign to property: 'self' is immutable

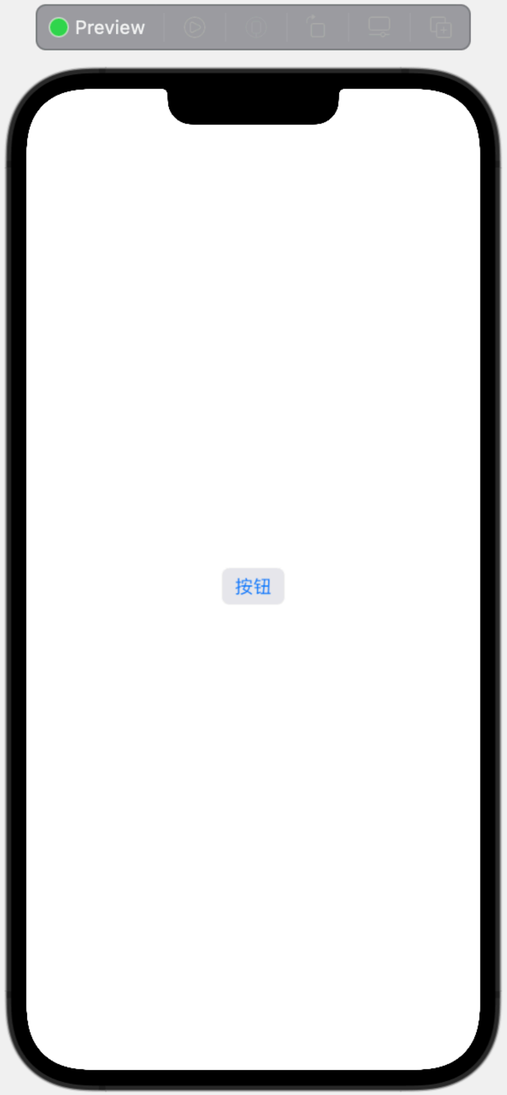


# SwiftUI中的交互的视图组建

Interacting elements in SwiftUI

```
import SwiftUI

struct ContentView: View {
  @State var pressed = false
    var body: some View {
          Button("按钮", action: {
              pressed = true
          })
            .buttonStyle(.bordered)
      }
  }
```

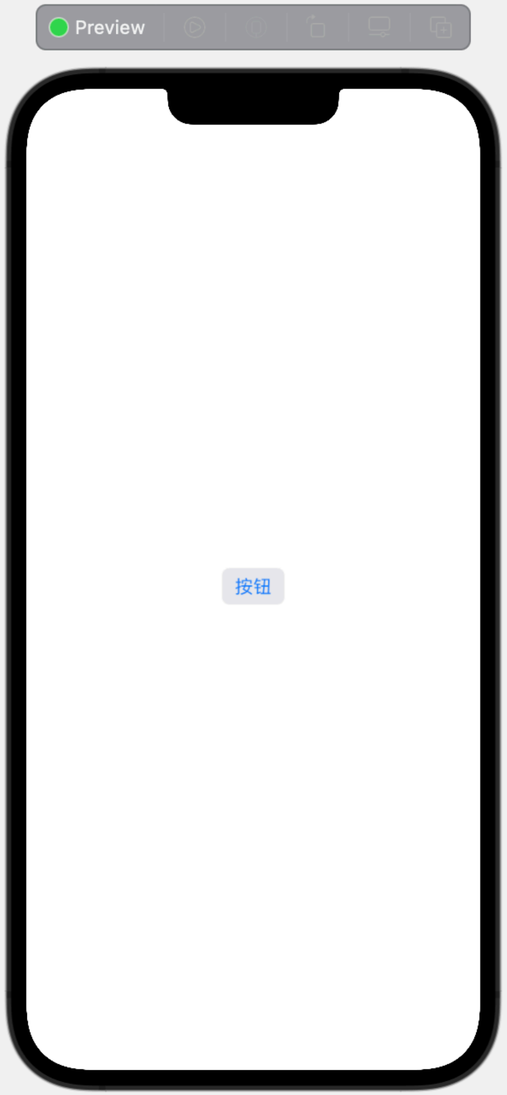


# SwiftUI中的交互的视图组建

Interacting elements in SwiftUI

```
import SwiftUI

struct ContentView: View {
    @State var pressed = false
    var body: some View {
        Button("按钮", action: {
            pressed.toggle()
        })
        .buttonStyle(.bordered)
    }
}
```

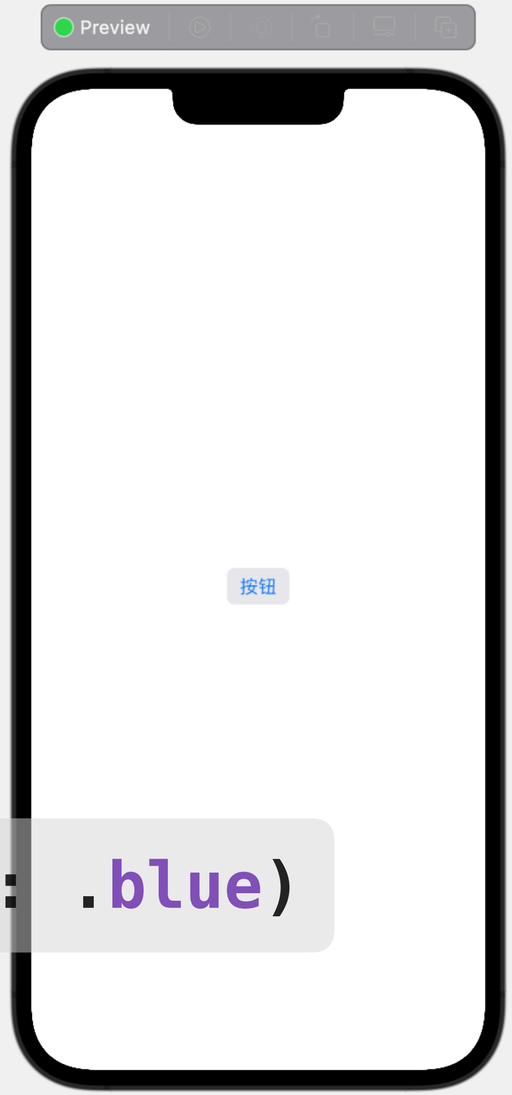


# SwiftUI中的交互的视图组建

Interacting elements in SwiftUI

```
import SwiftUI

struct ContentView: View {
    @State var pressed = false
    var body: some View {
        Button("按钮", action: {
            pressed.toggle()
        })
        .foregroundColor(pressed ? .green : .blue)
        .buttonStyle(.bordered)
    }
}
```

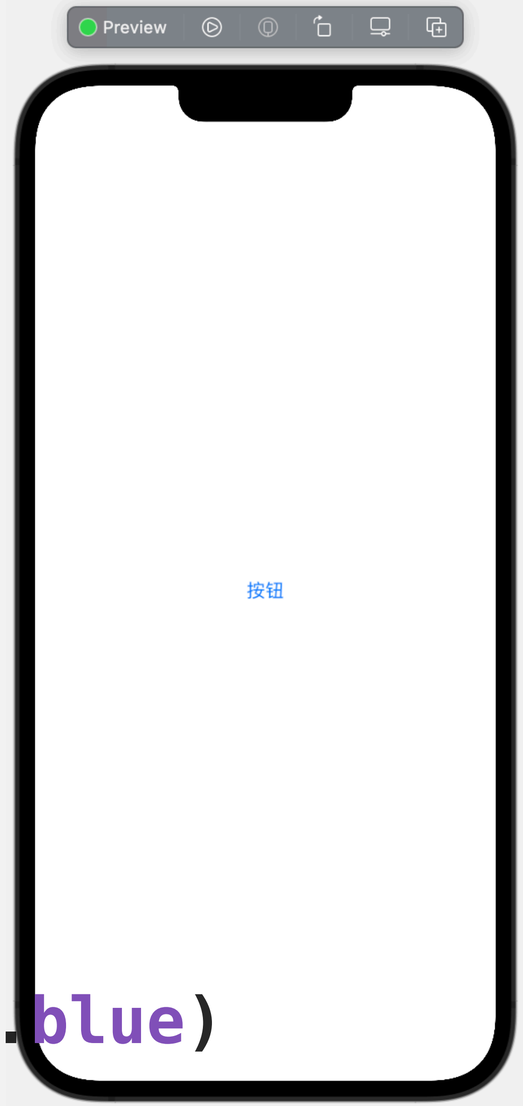


# SwiftUI中的交互的视图组建

Interacting elements in SwiftUI

```
import SwiftUI
struct ContentView: View {

    @State var pressed = false
    var body: some View {
        Button(action: {
            pressed.toggle()
        },label: {
            Text("按钮")
        })
        .foregroundColor(pressed ? .green : .blue)
    }
}
```

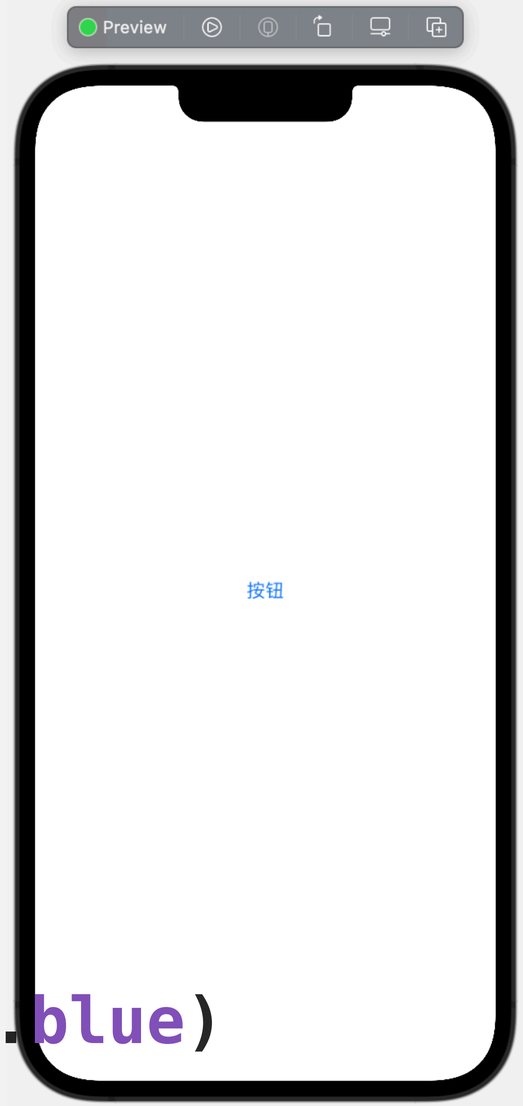


# SwiftUI中的交互的视图组建

Interacting elements in SwiftUI

```
import SwiftUI
struct ContentView: View {

    @State var pressed = false
    var body: some View {
        Button(action: {
            pressed.toggle()
        },label: {
            HStack{ Text(...) Image(...) }
        })
        .foregroundColor(pressed ? .green : .blue)
    }
}
```



# SwiftUI中的交互的视图组建

## Interacting elements in SwiftUI

```
import SwiftUI
struct ContentView: View {

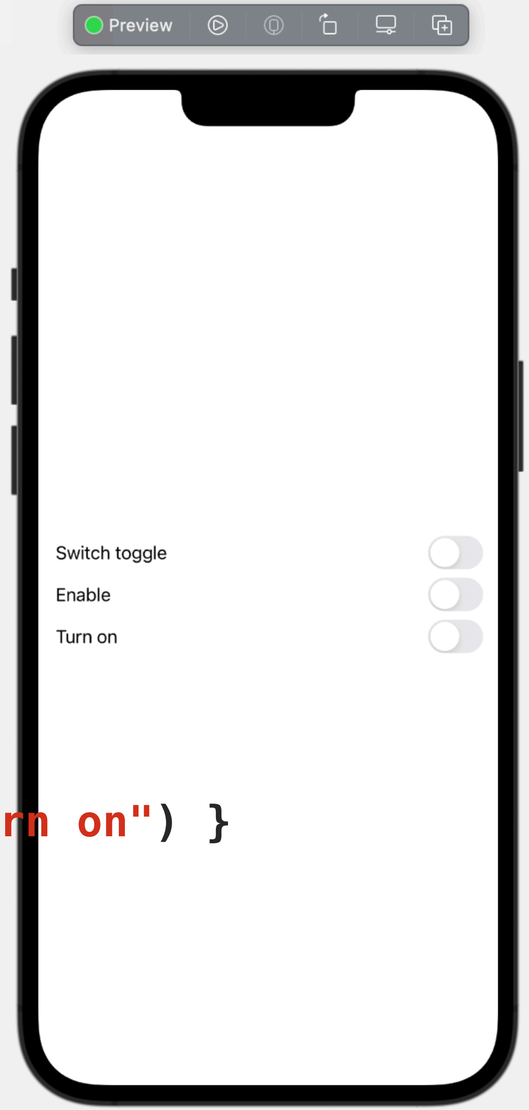
    @State private var flag1 = false
    @State private var flag2 = false
    @State private var flag3 = false

    var body: some View {
        VStack {
            Toggle("Switch toggle", isOn: $flag1)

            Toggle(isOn: $flag2, label: { Text("Enable") })

            Toggle(isOn: $flag3){ Text(flag3 ? "Turn off" : "Turn on") }
        }
        .padding()
    }

}
```

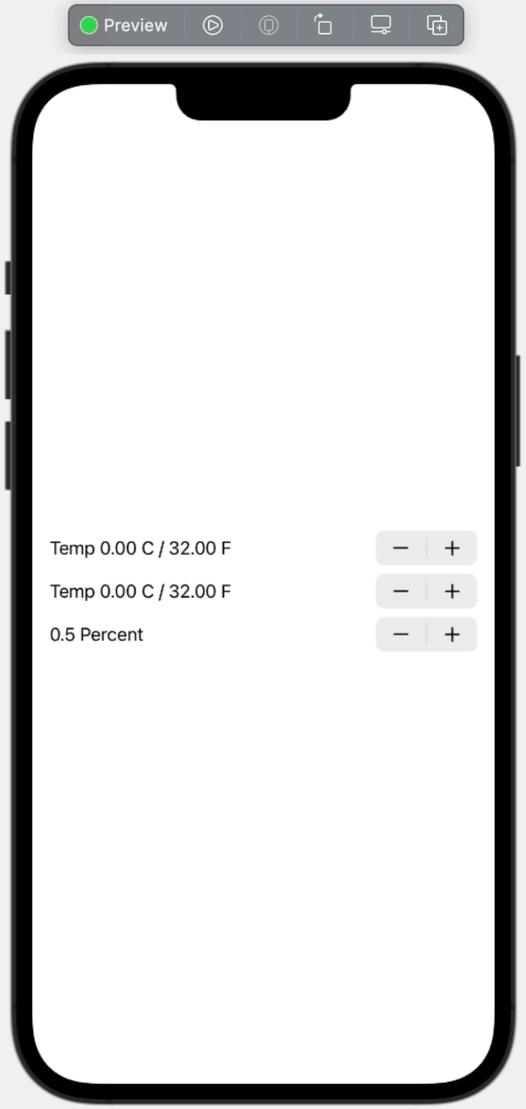


# SwiftUI中的交互的视图组建

## Interacting elements in SwiftUI

```
@State private var c: Double = 0
@State private var f: Double = 32
@State var value: Double = 0.5

var body: some View {
    VStack {
        Stepper {
            Text("Temp \(formatVal(c)) C / \(formatVal(f)) F")
        } onIncrement: {
            self.c += 1
            self.f = self.c * (9/5) + 32
        } onDecrement: {
            self.c -= 1
            self.f = self.c * (9/5) + 32
        }
    }
}
```



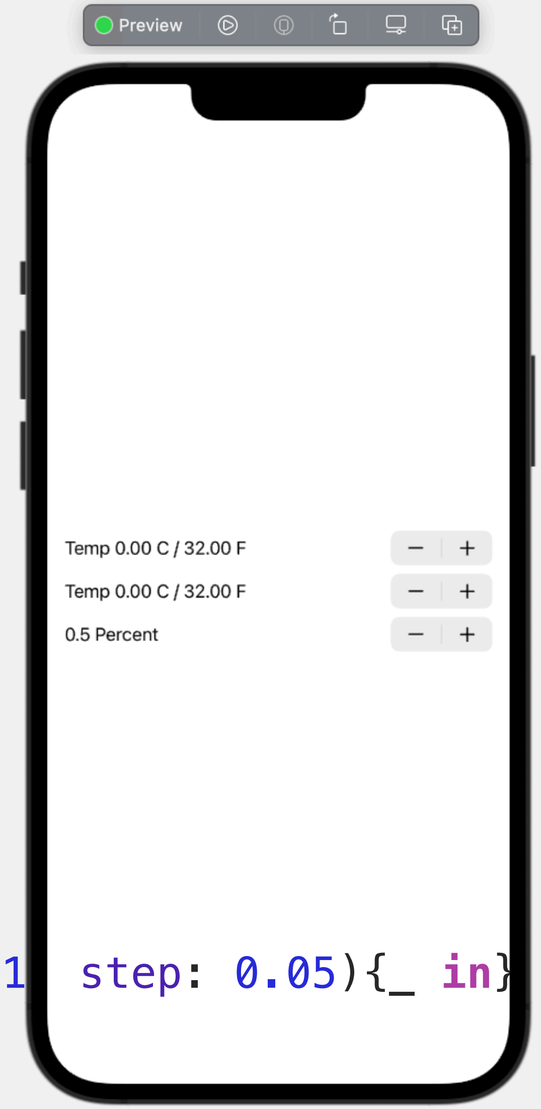
# SwiftUI中的交互的视图组建

## Interacting elements in SwiftUI

```
@State private var c: Double = 0
@State private var f: Double = 32
@State var value: Double = 0.5

Stepper(onIncrement: {
     self.c += 1
     self.f = self.c * (9/5) + 32
 }, onDecrement: {
     self.c -= 1
     self.f = self.c * (9/5) + 32
 }, onEditingChanged: {
     print("\($0)")
 }, label: {
     Text("Temp \(formatVal(c)) C / \(formatVal(f)) F")
 })

 Stepper("\(value) Percent" as String, value: $value, in: 0...1  step: 0.05){_ in}
```



# SwiftUI中的交互的视图组建

## Interacting elements in SwiftUI

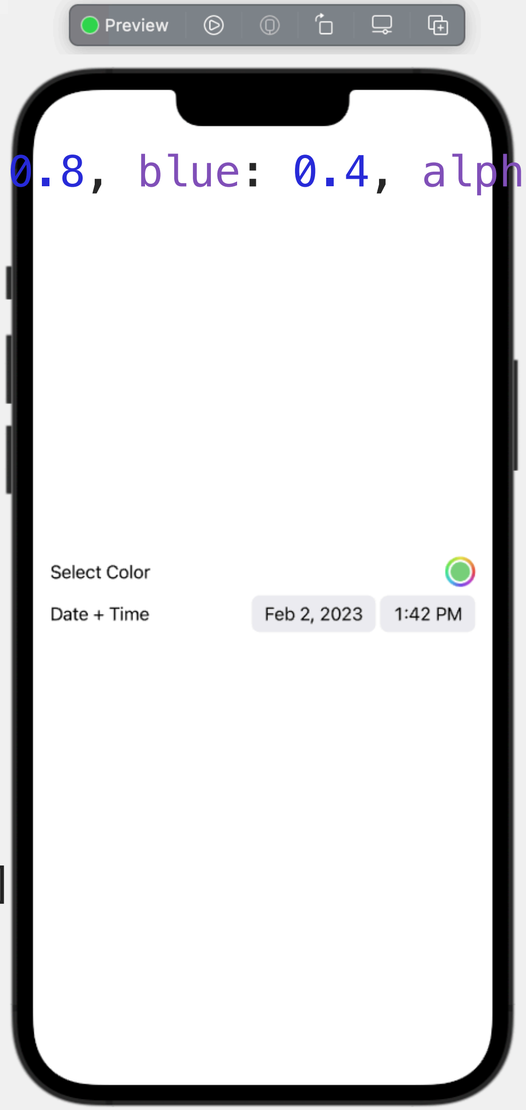
```
@State private var cgColor: CGColor = CGColor(red: 0.4, green: 0.8, blue: 0.4, alpha: 1.0)
@State private var selectedDate = Date()
let colors: [Color] = [.green, .yellow, .orange, .red]

let title = "Select Color"

var body: some View{

    VStack {
        ColorPicker(title, selection: $cgColor,
                    supportsOpacity: true)

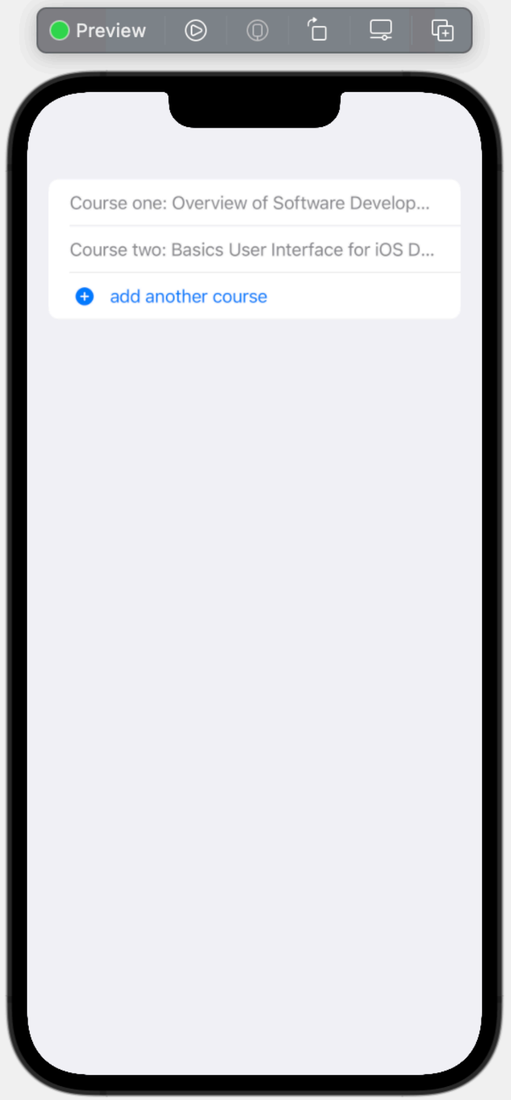
        DatePicker("Date + Time",
                   selection: self.$selectedDate,
                   displayedComponents: [.hourAndMinute, .date])
            // .datePickerStyle(WheelDatePickerStyle())
    }
    .padding()
}
```



# SwiftUI中的交互的视图组建

Interacting elements in SwiftUI

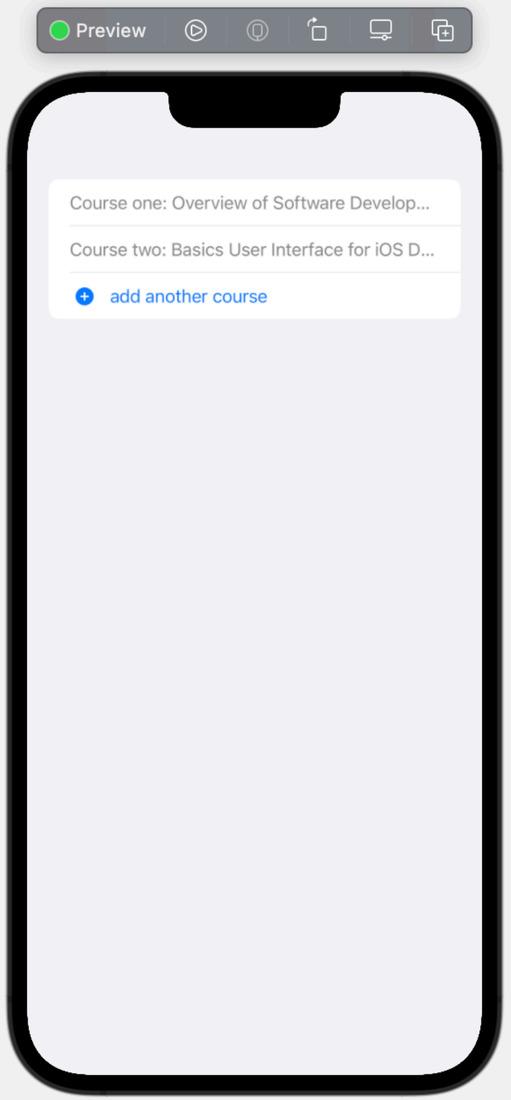
```
import SwiftUI
struct ContentView: View {
    var body: some View {
        List{
            Text(...)
            Text(...)
            Button(...)
        }
    }
}
```



# SwiftUI中的交互的视图组建

Interacting elements in SwiftUI

```
import SwiftUI
struct ContentView: View {
    var body: some View {
        Form{
            Text(...)
            Text(...)
            Button(...)
        }
    }
}
```



# SwiftUI中的交互的视图组建

## Interacting elements in SwiftUI

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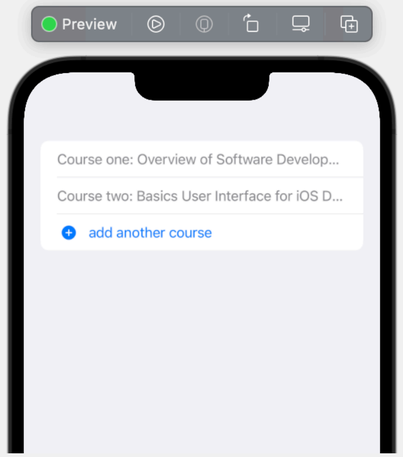
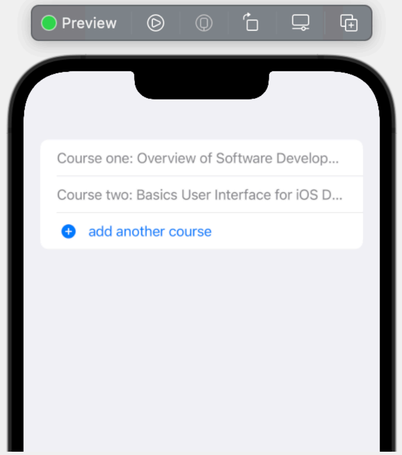
### List




(Default)

### Form




(Default)

# SwiftUI中的交互的视图组建

## Interacting elements in SwiftUI

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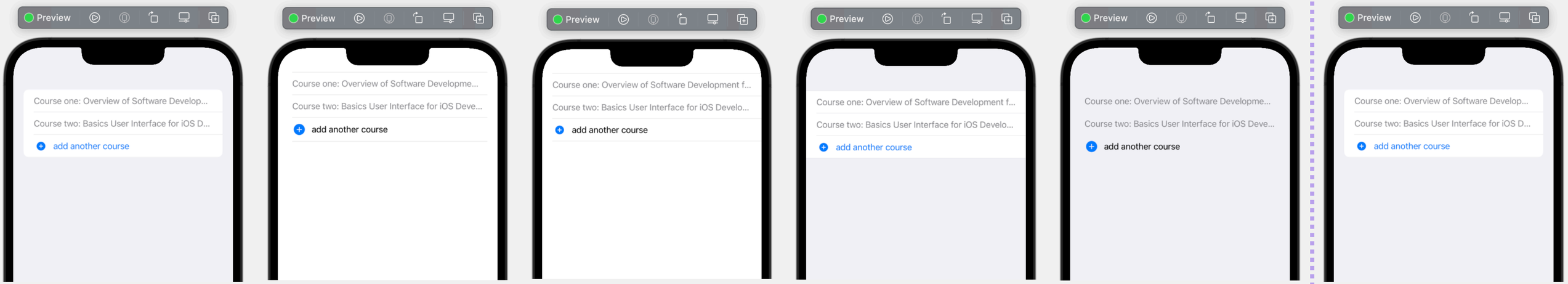
**List**

**.listStyle(.inset)**

**.listStyle(.grouped)**

**Form**




**(Default)**

**.listStyle(.plain)**

**.listStyle(.sidebar)**

**(Default)**

# SwiftUI中的交互的视图组建

Interacting elements in SwiftUI

```
import SwiftUI
struct ContentView: View {
    var body: some View {
        List{
          Text("1")
             . . .
          Text(“10")
        }
    }
}
```

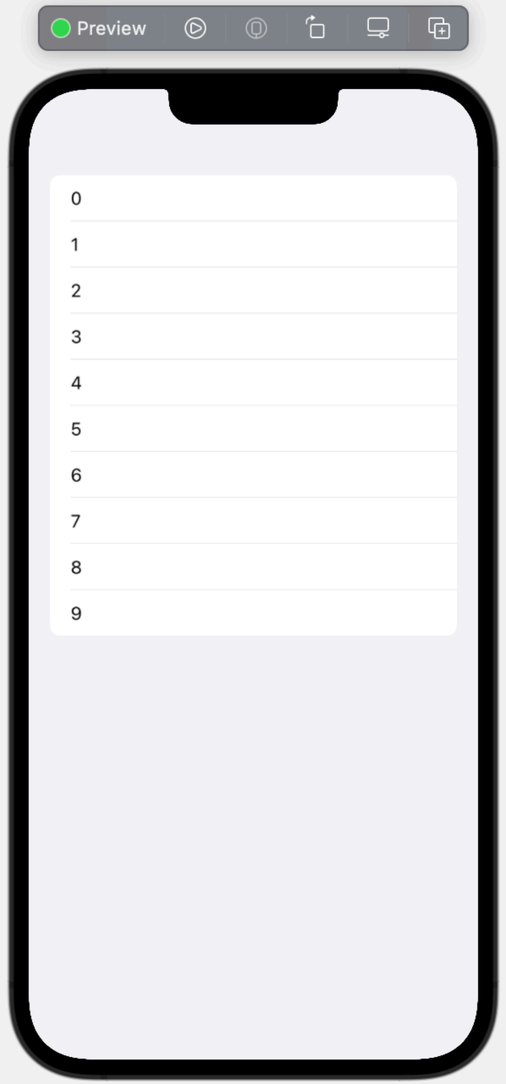
# SwiftUI中的交互的视图组建

Interacting elements in SwiftUI

```
import SwiftUI
struct ContentView: View {

    var body: some View {
        List{
            ForEach(0...9 , id: \.self){ i in
                Text("\(i)")
            }

        }
    }
}
```



# SwiftUI中的交互的视图组建

Interacting elements in SwiftUI

```
import SwiftUI
struct ContentView: View {
    var body: some View {
        List{
            Section{
                Text("1")
                Text("10")
            }
        }
    }
}
```

# SwiftUI中的交互的视图组建

Interacting elements in SwiftUI

```
import SwiftUI
struct ContentView: View {

    var body: some View {
        List{
            Section(header: Text("!!")) {
                Text("1")
                    .
                    .
                    .
                Text("10")
            }
        }
    }
}
```

# SwiftUI中的交互的视图组建

## Interacting elements in SwiftUI

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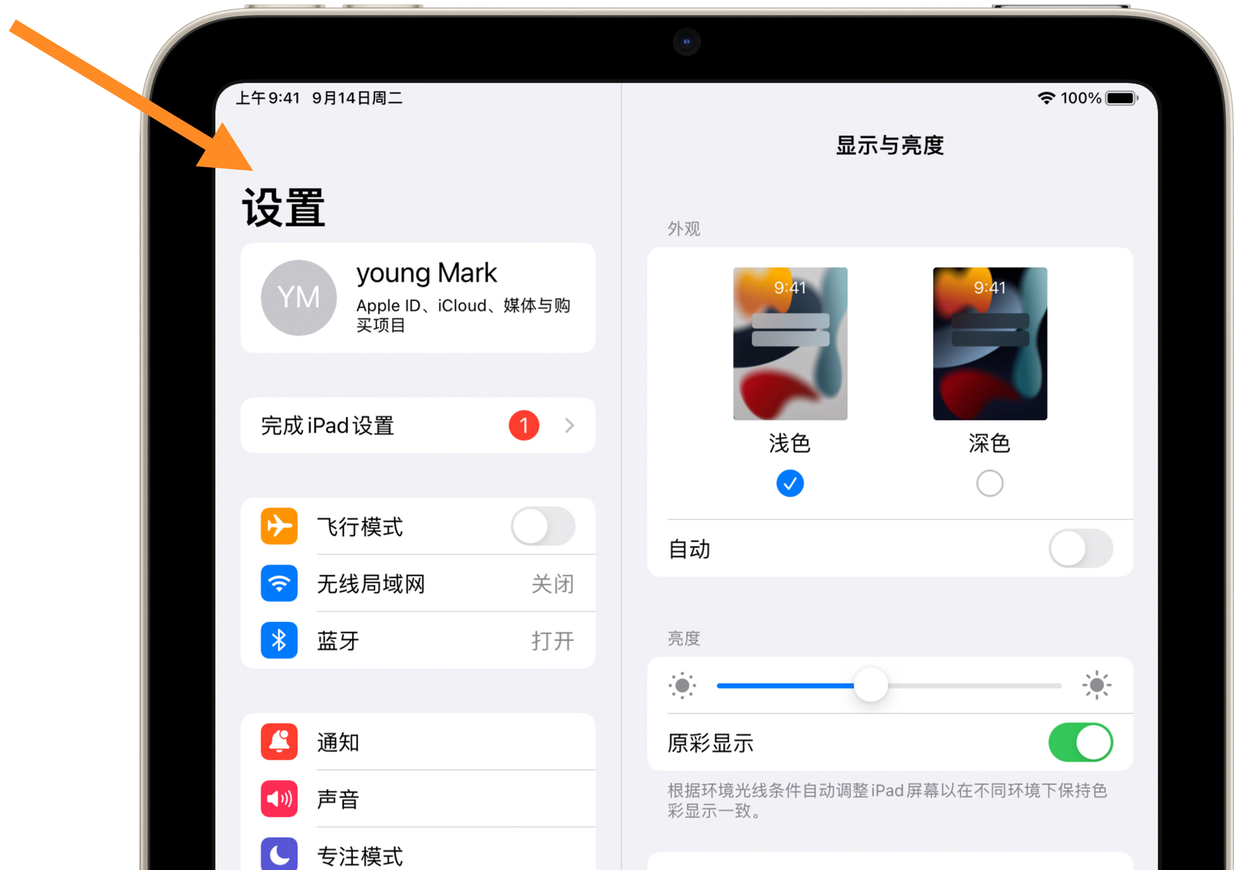


# SwiftUI中的交互的视图组建

Interacting elements in SwiftUI

```
import SwiftUI
struct ContentView: View {
    var body: some View {
        NavigationView{
            List{
                . . .
            }
        .navigationTitle("设置")
        }
    }
}
```

# SwiftUI中的交互的视图组建

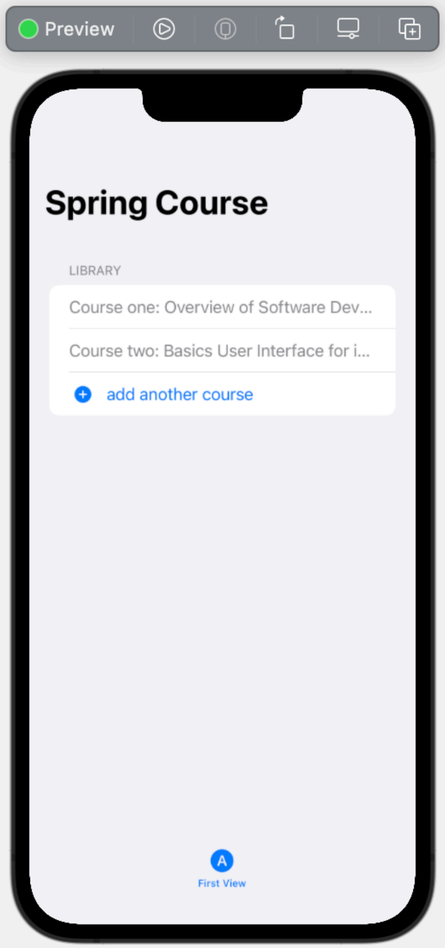
Interacting elements in SwiftUI

```
import SwiftUI
struct ContentView: View {
    var body: some View {

        TabView{

            homePage
                .tabItem {
                    Label("First View",
                          systemImage: "a.circle")
                }
        }

    }
```

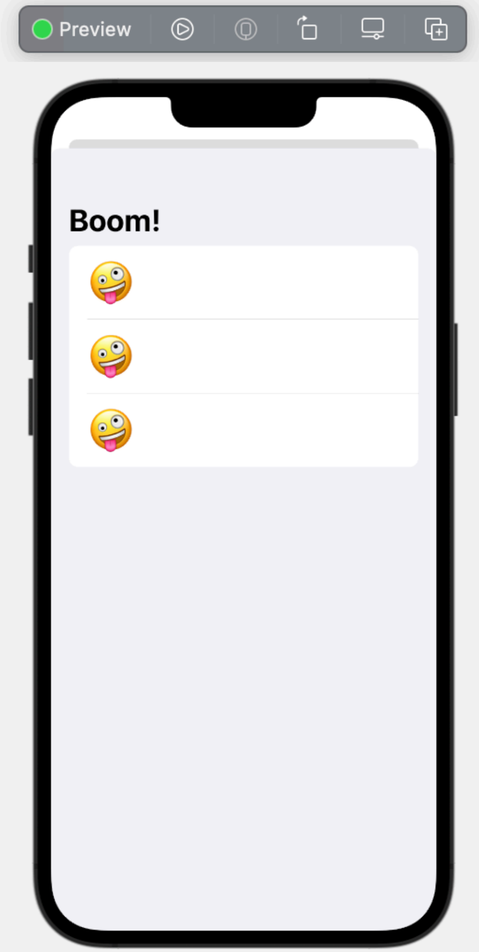


# SwiftUI中的交互的视图组建

## Interacting elements in SwiftUI

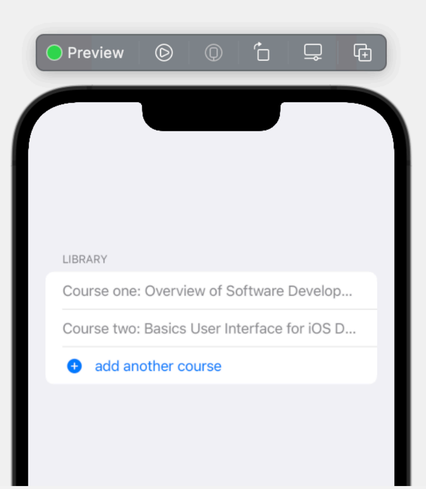
```
import SwiftUI

struct ContentView: View {
    @State var pressed = false
    var body: some View{
        Button("Trick or Treat", action: {pressed.toggle()})
            .buttonStyle(.bordered)
            .sheet(isPresented: $pressed){
                MySheet
            }
            .sheet(isPresented: $pressed,
                   onDismiss: { print("finished!") },
                   content: {
                    MySheet
                    .presentationDetents([.medium, .large])
                    .presentationDragIndicator(.visible)
            })
    }
}
```

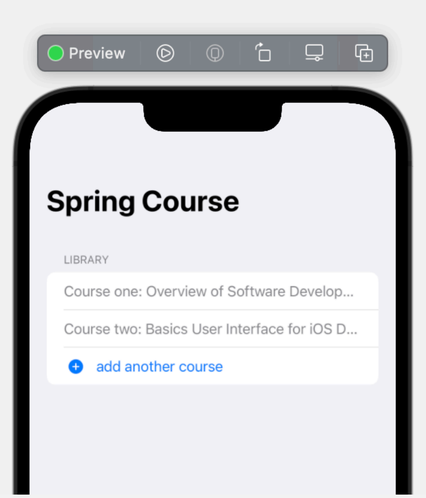


# SwiftUI中的交互的视图组建

## Interacting elements in SwiftUI




Form / List / Section




NavigationStack


TabView

SheetView

# SwiftUI中的动画

The Animation in SwiftUI

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存储属性 `var playerName = "Yoo"`

- 是存储在`class`或`struct`中的属性，可以是常量或者变量
- 初始化：在定义时进行初始化，或者在`init()`函数中进行初始化

计算属性 `var playerBlood { ... }`

- 计算属性没有存储值，而是提供了一个`Getter`和一个可选的`Setter`，在引用这个属性时再进行计算

# SwiftUI中的动画

The Animation in SwiftUI

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## 属性包装器 `@wrapperName`

- 属性包装器可以对属性的操作进行统一过滤

  `@State` 是SwiftUI用于管理存储属性的包装器，当被`@State`包装的属性发生更改时，当前的视图直接废止，并重新计算`body`的值

  一般来说：只在当前视图内部访问被`@State`包装的属性，
  防止外部干扰，所以被`@State`包装的属性一般声明为`private`

# SwiftUI中的动画

## The Animation in SwiftUI

存储属性　`var playerName = "Yoo"`

计算属性　`var playerBlood { ... }`

属性包装器　`@wrapperName`

@State装饰的属性改变时，body计算属性重新计算

```
struct PlayView: View{
    @State private var isPlaying: Bool = false

    var body: some View{
        HStack{
            Text("Start Play")
                .font(.title)
                .padding()
            Button(action:{
                self.isPlaying.toggle()
            }){
                Image(systemName: isPlaying ?
                    “pause.circle":"play.circle")
            }
        }
    }
}
```

bool值取非

# SwiftUI中的动画

The Animation in SwiftUI

存储属性　`var playerName = "Yoo"`

计算属性　`var playerBlood { ... }`

属性包装器　`@wrapperName`

引起UI刷新之源头

```
struct PlayView: View{
    @State private var isPlaying: Bool = false

    var body: some View{
        HStack{
            Text("Start Play")
                .font(.title)
                .padding()
            Button(action:{
                self.isPlaying.toggle()

            }){
                Image(systemName: isPlaying ?
                   “pause.circle":"play.circle")
            }
        }
    }
}
```

# SwiftUI中的动画

The Animation in SwiftUI

存储属性　var playerName = "Yoo"

计算属性　var playerBlood { ... }

属性包装器　@wrapperName

```
struct PlayView: View{
    @State private var isPlaying: Bool = false

    var body: some View{
        HStack{
            Text("Start Play")
                .font(.title)
                .padding()
            Button(action:{
                withAnimation(.spring()){
                    self.isPlaying.toggle()
                }
            }){
                Image(systemName: isPlaying ?
                    “pause.circle":"play.circle")
                .resizable()
                .frame(width: isPlaying ? 50 : 20,
                       height: isPlaying ? 50 : 20)
            }
        }
    }
}
```

Animation

# SwiftUI中的动画

The Animation in SwiftUI


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**TapGesture**

**LongPressGesture**

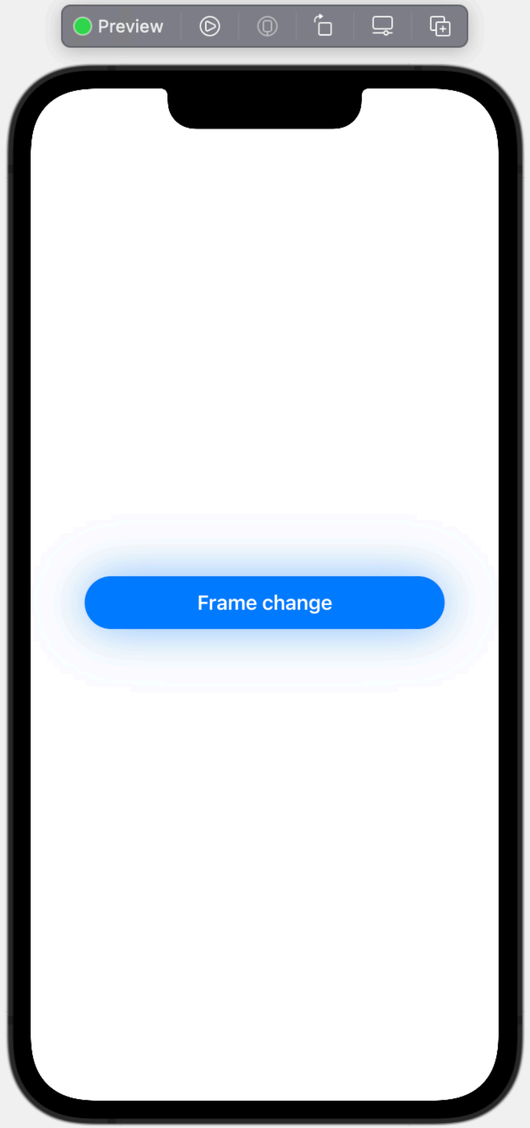
**DragGesture**

**CustomGesture**

# SwiftUI中的动画

## The Animation in SwiftUI

```
var ButtonA: some View{
    Text("Frame change")
        .bold()
        .foregroundColor(.white)
        .frame(width: changeFrame ? 320 : 300,
               height: changeFrame ? 100 : 44)
        .background(.blue)
        .cornerRadius(30)
        .shadow(color: Color.blue.opacity(0.5), radius: 20)
}
```



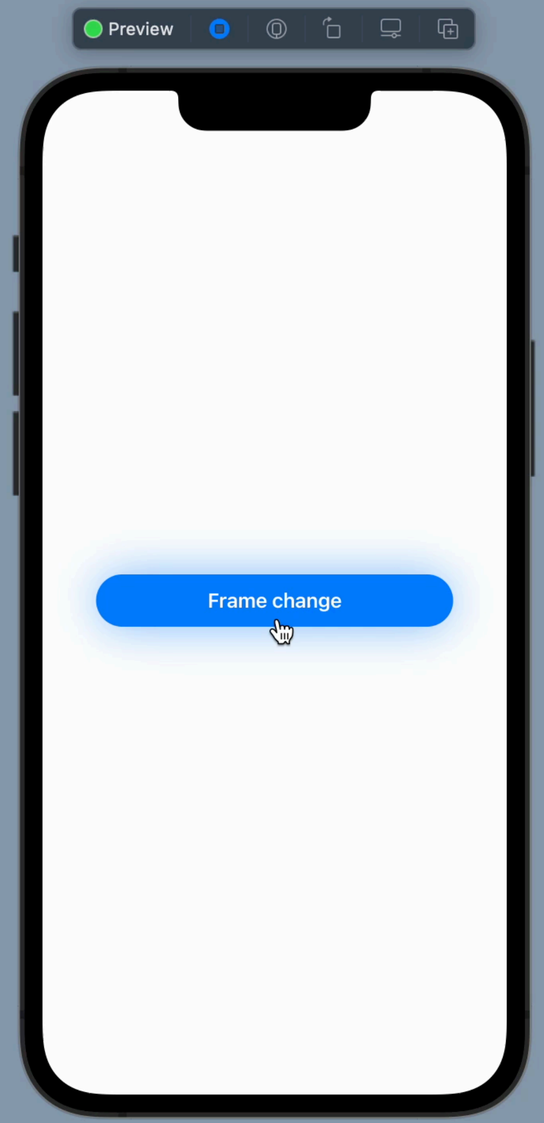
# SwiftUI中的动画

## The Animation in SwiftUI

```
@State var changeFrame = false

var body: some View {
    ButtonA
        .onTapGesture{
            withAnimation(.spring()){
                changeFrame.toggle()
            }
        }
}
```

== Button



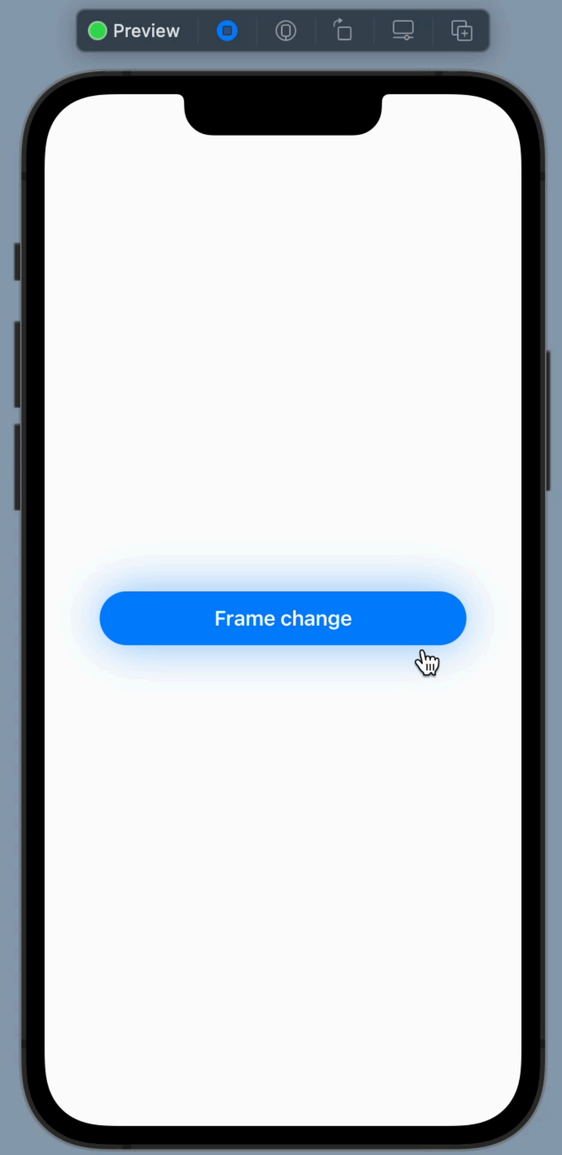
# SwiftUI中的动画

The Animation in SwiftUI

```
@State var changeFrame = false

var body: some View {
    ButtonA
        .onTapGesture(count: 2){
            withAnimation(.spring()){
                changeFrame.toggle()
            }
        }
}
```

== Double tap



# SwiftUI中使用MapKit

MapKit in SwiftUI

```
var body: some View {
    let parking = CLLocationCoordinate2D(
        latitude: 42.354528, longitude: -71.068369
      )

    Map {
          Annotation("Parking", coordinate: parking){
                ZStack {
                    Image(systemName: "car").padding(5)
                }
            }
        }
}
```