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Batch - T2

### Assignment no – 4

1. For each of the logical expressions below, print out what you think the resulting value will be ('true' or 'false'). Then print out the actual expression to see if you were right. An example has been provided below.

43 == 53

print(false)

print(43 == 53)

a. 9 == 9

```
159
160 //i
161
162 9==9
163 print(true)
164 print(9==9)
165
166 //ii
167
168
```

☐

```
true
true
```

b. 9 != 9

```
165
166 //ii
167
168 9 != 9
169 print(false)
170 print(9 != 9)
171
172
173 //iii
174
175 //47>90
176 //print(false)
```

☐

```
false
false
```

c.  $47 > 90$

```
169
170 //iii
171
172 47>90
173 print(false)
174 print(47>90)
175
176
```

☐

```
false
false
```

d.  $47 < 90$

```
175
176 //iv
177
178 47<90
179 print(true)
180 print(47<90)
181
182
```

☐

```
true
true
```

e.  $4 \leq 4$

```
184
185 //v
186 4 <= 4
187 print(true)
188 print(4 <= 4)
189
190
```

☐

```
true
true
```

f.  $4 \geq 5$

```
188 //print(4 <= 4)
189
190 //vi
191 4>=5
192 print(false)
193 print(4>=5)
```

☐

```
false
false
```

g.  $(47 > 90) \&\& (47 < 90)$

```
194
195 //vii
196 (47>90) && (47<=90)
197 print(false)
198 print((47>90) && (47<=90))
```

☐

```
false
false
```

h.  $(47 > 90) \|\| (47 < 90)$

```
199
200 //viii
201
202 (47>90) \|\| (47<90)
203 print(true)
204 print((47>90) \|\| (47<90))
```

☐

```
true
true
```

i. `!true`

```
207
208 !true
209 print(false)
210 print(!true)
```

☐

```
false
false
```

2. Imagine you're creating a machine that will count your money for you and tell you how wealthy you are based on how much money you have. A variable 'dollars' has been given to you with a value of 0. Write an if statement that prints "Sorry, kid. You're broke!" if 'dollars' has a value of 0. Observe what is printed to the console.

`var dollars = 0`

```
212 //2
213
214 var dollars = 0
215 if (dollars == 0){
216 |   print("Sorry, kid. You're broke!")
217 }
```

☐

```
Sorry, kid. You're broke!
```

3. 'dollars' has been updated below to have a value of 10. Write an if-else statement that prints "Sorry, kid. You're broke!" if 'dollars' has a value of 0, but prints "You've got some spending money!" otherwise. Observe what is printed to the console.

```
214 var dollars = 0
215 dollars = 10
216 if (dollars == 0){
217     print("Sorry, kid. You're broke!")
218 }
219 else {
220     print("You've got some spending money!")
221 }
222 //3
```

☐

You've got some spending money!

4. 'dollars' has been updated below to have a value of 105. Write an if-else-if statement that prints "Sorry, kid. You're broke!" if 'dollars' has a value of 0, prints "You've got some spending money!" if 'dollars' is less than 100, and prints "Looks to me like you're rich!" otherwise. Observe what is printed to the console.

```
214 var dollars = 0
215 dollars = 10
216 dollars = 105
217 if (dollars == 0){
218     print("Sorry, kid. You're broke!")
219 }
220 else if(dollars<100){
221     print("You've got some spending money!")
222 }
223 else{
224     print("Looks to me like you're rich")
225 }
```

☐

Looks to me like you're rich

5. You want your fitness tracking app to give as much encouragement as possible to your users. Create a variable 'steps' equal to the number of steps you guess you've taken today. Create a constant 'stepGoal' equal to 10,000. Write an if-else statement that will print "You're almost halfway there!" if 'steps' is less than half of 'stepGoal', and will print "You're over halfway there!" if 'steps' is greater than half of 'stepGoal'.

```
228 //5
229 var steps = 1500
230 let stepGoal = 10_000
231
232 if(steps<stepGoal/2){
233     print("You're almost halfway!")
234 }
235 if(steps>stepGoal/2){
236     print("You're over halfway there!")
237 }
```

☐

You're almost halfway!

6. Now create a new, but similar, if-else-if statement that prints "Way to get a good start today!" if 'steps' is less than a tenth of 'stepGoal', prints "You're almost halfway there!" if 'steps' is less than half of 'stepGoal', and prints "You're over halfway there!" if 'steps' is greater than half of 'stepGoal'.

```
240
241 var steps = 1500
242 let stepGoal = 10_000
243
244 if(steps<stepGoal/10){
245     print("Way to get a good start today!")
246 }
247 if(steps<stepGoal/2){
248     print("You're almost halfway!")
249 }
250 if(steps>stepGoal/2){
251     print("You're over halfway there!")
252 }
```

☐

You're almost halfway!

7. Imagine you're going to dinner with friends and are struggling to decide where to go. Two of you have very strong opinions and have clearly laid out your requirements for dinner as follows:

- You want to eat somewhere that has either fish or pizza
- Your friend wants to eat somewhere with vegan options.

Another friend brings up a restaurant she thinks will fit both of your criteria. This restaurant's attributes are represented by a few constants below. Write an if-else statement that will print "Let's go!" if the restaurant's attributes match the group's dietary requirements, and otherwise will print "Sorry, we'll have to think of somewhere else."

```
let hasFish = true
let hasPizza = false
let hasVegan = true
```

```
256 let hasFish = true
257 let hasPizza = false
258 let hasVegan = true
259
260 if((hasFish || hasPizza) && (hasVegan)){
261     print("Let's Go!")
262 }
263 else{
264     print("Sorry, we'll have to think of somewhere else")
265 }
▶
```

☐

Let's Go!

8. Imagine you're trying to decide whether or not to go on a walk. You decide that you'll go on a walk if it's not raining or if it's 82 degrees or warmer and sunny out. Create a constant 'isNiceWeather' that is equal to an expression that evaluates to a boolean indicating whether or not the weather is nice enough for you to go for a walk. Write an if statement that will print "I'm going for a walk!" if the weather is nice.

```
let temp = 82
```

```
let isRaining = true
```

```
let isSunny = true
```

```
269 let isRaining = true
270 let temp = 82
271 let isSunny = true
272 let iswarmer = true
273 let isNiceWeather = (!isRaining || temp == 82 || isSunny || iswarmer)
274
275 if(isNiceWeather){
276     print("I'm going for a walk")
277 }
▶
```

□

I'm going for a walk

9. You decide that you want your fitness tracker to have a feature that helps users stay inside specified heart rate zones while they are working out. You'll display a message to the user telling them to go a little faster to increase their heart rate if they are below the target, tell them that they are spot on if they are in the target, and tell them to slow it down a little if they are over the target.

Create constants 'isInTarget', 'isBelowTarget', and 'isAboveTarget' that equal expressions that evaluate to whether or not 'currentHR' is between the lower and upper bounds, below the lower bound, and above the upper bound, respectively. Then write an if-else-if statement that will print "You're right on track!" if the user is inside the target zone, "You're doing great, but try to push it a bit!" if the user is below the target zone, and "You're on fire! Slow it down just a bit." if the user is above the target zone.

```
let targetLowerBound = 120
```

```
let targetUpperBound = 150
```

```
let currentHR = 147
```

```
281 let isInTarget = currentHR >= targetLowerBound && currentHR <= targetUpperBound
282 let isBelowTarget = currentHR < targetLowerBound
283 let isAboveTarget = currentHR > targetUpperBound
284 let targetLowerBound = 120
285 let targetUpperBound = 150
286 let currentHR = 147
287
288 if(isInTarget){
289     print("You're right on track!")
290 }
291 else if(isBelowTarget){
292     print("You're doing great, but try to push it a bit!")
293 }
294 else{
295     print("You're on fire! Slow down just a bit")
296 }
▶
```

□

You're right on track!



10. Imagine you're on a baseball team nearing the end of the season. Create a 'leaguePosition' constant with a value of 1. Using a 'switch' statement, print "Champions!" if the 'leaguePosition' is 1, "Runners up" if the value is 2, "Third place" if the value is 3, and "Bad season!" in all other cases.

```
299
300 let leaguePosition = 1
301 switch leaguePosition{
302   case 1: print("Champions!")
303   case 2: print("Runner up")
304   case 3: print("Third place")
305   default:
306     print("Bad season")
307 }
```

☐ Champions!

11. Write a new 'switch' statement that prints "Medal winner" if 'leaguePosition' is within the range of 1-3. Otherwise, print "No medal awarded."

```
309 //11
310
311 let leaguePosition = 1
312 switch leaguePosition{
313   case 1...3 : print("Medal winner")
314
315   default:
316     print("No medal awarded")
317 }
318 }
```

☐ Medal winner

12. If you completed the Target Heart Rate exercise, you showed different statements to the user based on whether or not the user's heart rate was inside of a target zone. Now you decide to just tell them what zone they are in rather than tell them what zone to be in.

Write a switch statement that will print different statements based on what range 'currentHR' falls into. Below is a list of ranges and the associated statements

- 100-120: "You are in the Very Light zone. Activity in this zone helps with recovery."
- 121-140: "You are in the Light zone. Activity in this zone helps improve basic endurance and fat burning."
- 141-160: "You are in the Moderate zone. Activity in this zone helps improve aerobic fitness."
- 161-180: "You are in the Hard zone. Activity in this zone increases maximum performance capacity for shorter sessions."
- 181-200: "You are in the Maximum zone. Activity in this zone helps fit athletes develop speed."

```
321
322 let currentHR = 147
323 switch currentHR{
324 case 100...120: print("You are in the Very Light zone. Activity in this zone
    helps with recovery.")
325 case 121...140: print("You are in the Light zone. Activity in this zone helps
    improve basic endurance and fat burning.")
326 case 141...160: print("You are in the Moderate zone. Activity in this zone helps
    improve aerobic fitness.")
327 case 161...180: print("You are in the Hard zone. Activity in this zone increases
    maximum performance capacity for shorter sessions.")
328 case 181...200: print("You are in the Maximum zone. Activity in this zone helps
    fit athletes develop speed.")
329 default:
330     print()
331 }
```

☐ You are in the Moderate zone. Activity in this zone helps improve aerobic fitness.

13. If 'currentHR' is above the listed zones, print some kind of warning asking the user to slow down.

let currentHR = 128

```
320 //12
321
322 let currentHR = 128
323 switch currentHR{
324 case 100...120: print("You are in the Very Light zone. Activity in this zone helps with recovery.")
325 case 121...140: print("You are in the Light zone. Activity in this zone helps improve basic endurance and fat burning.")
326 case 141...160: print("You are in the Moderate zone. Activity in this zone helps improve aerobic fitness.")
327 case 161...180: print("You are in the Hard zone. Activity in this zone increases maximum performance capacity for shorter sessions.")
328 case 181...200: print("You are in the Maximum zone. Activity in this zone helps fit athletes develop speed.")
329 default:
330     if(currentHR > 200){
331         print("Warning! You need to Slow down")
332     }
333 }
334
335
336
337
```

☐ You are in the Light zone. Activity in this zone helps improve basic endurance and fat burning.

14. Refactor the code below so that `largest` is declared and assigned to in one line using the ternary operator.

```
let number1 = 14
```

```
let number2 = 25
```

```
var largest: Int
```

```
if number1 > number2 {
```

```
    largest = number1
```

```
} else {
```

```
    largest = number2
```

```
}
```

```
339
340 //14
341 let number1 = 14
342 let number2 = 25
343 var largest: Int
344 largest = number1 > number2 ? number1 : number2
345 print(largest)
```



25

15. The code below should look similar to code you wrote in the Fitness Decisions exercise. The if-else statement is actually unnecessary, and instead you can print either one statement or the other all on one line using the ternary operator. Go ahead and refactor the code below to do just that.

```
let stepGoal = 10000
```

```
let steps = 3948
```

```
if steps < stepGoal / 2 {
```

```
    print("Almost halfway!")
```

```
} else {
```

```
    print("Over halfway!")
```

```
}
```

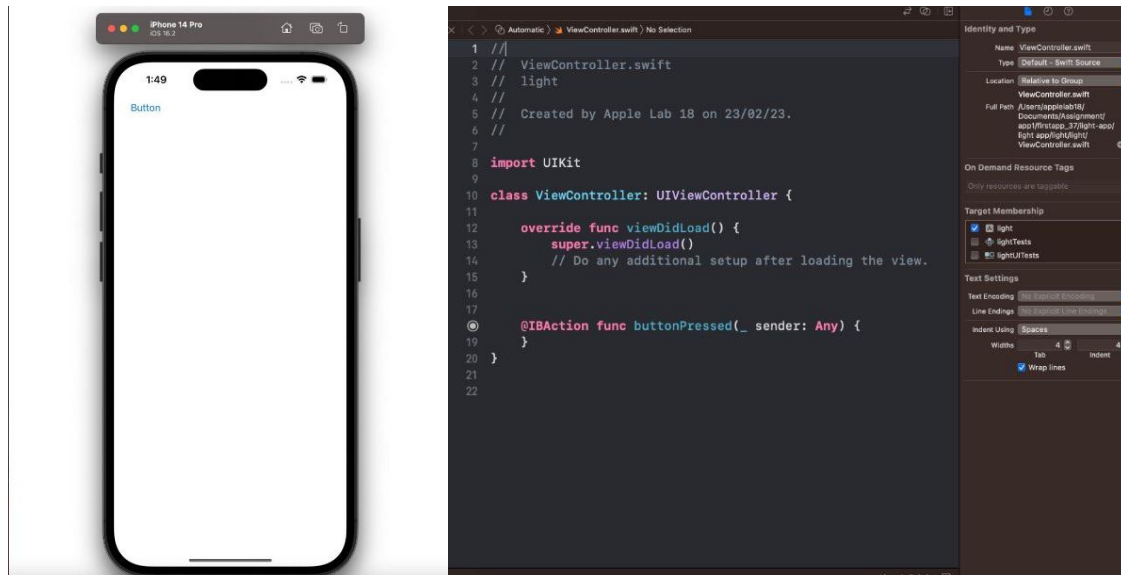
```
348 //15
349 let stepGoal = 10000
350 let steps = 3948
351
352 steps < stepGoal / 2 ? print("Almost Halfway!") : print("Over halfway")
353
354
```



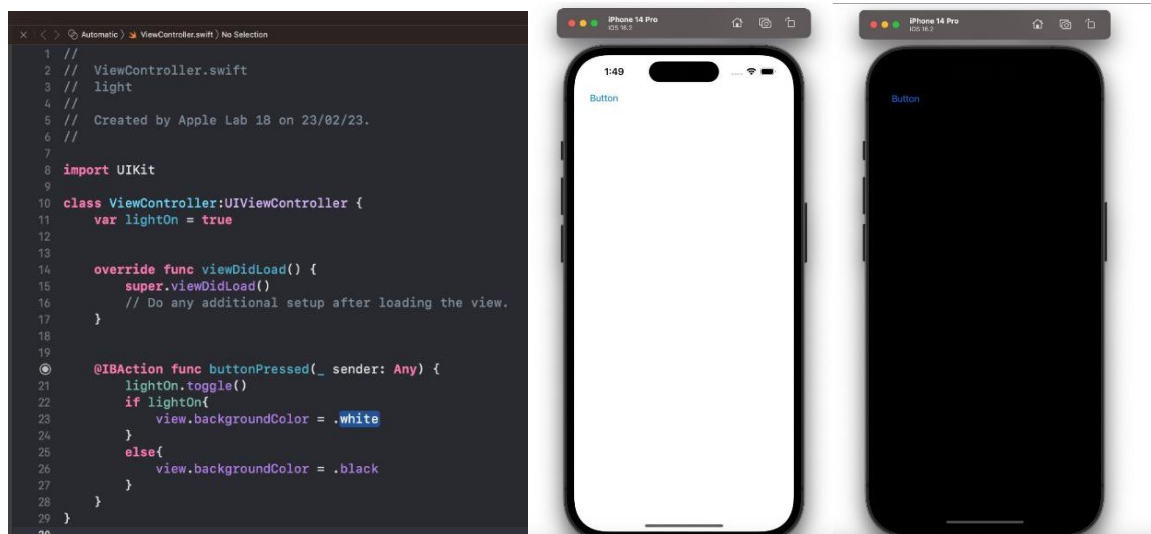
Almost Halfway!

16. Implement Apple Light project(guided project) given in book.

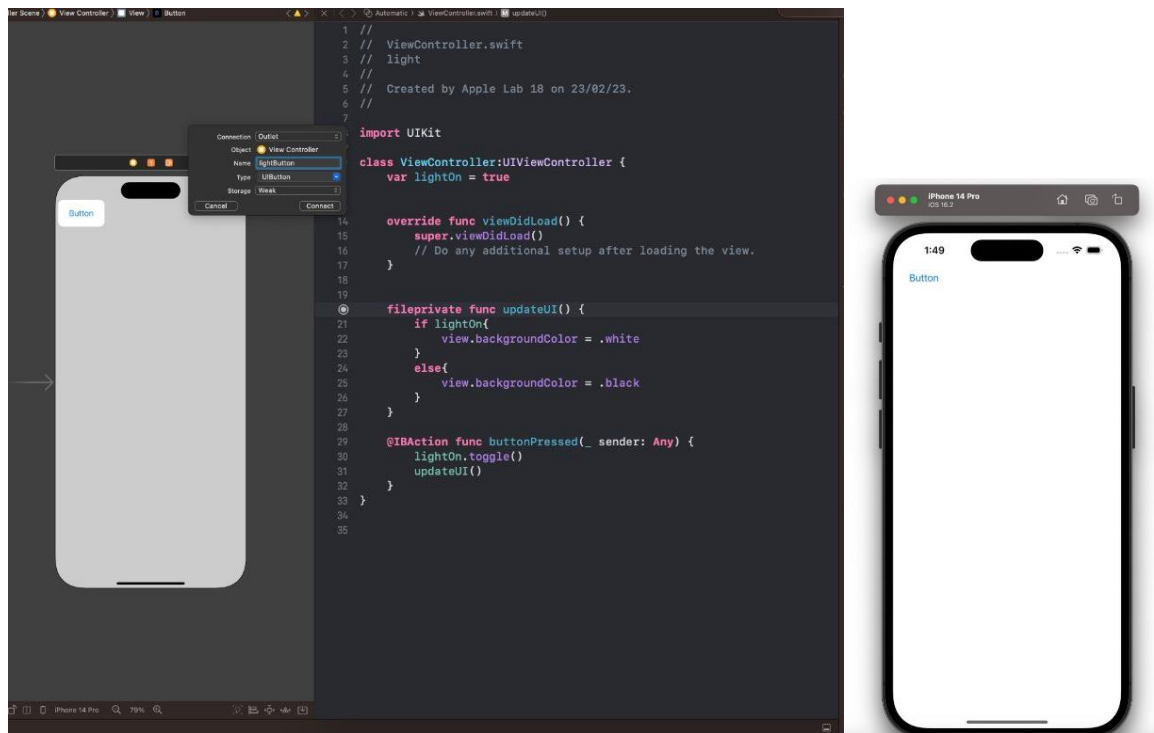
Step 1: Create button and add break point. Build and run app.



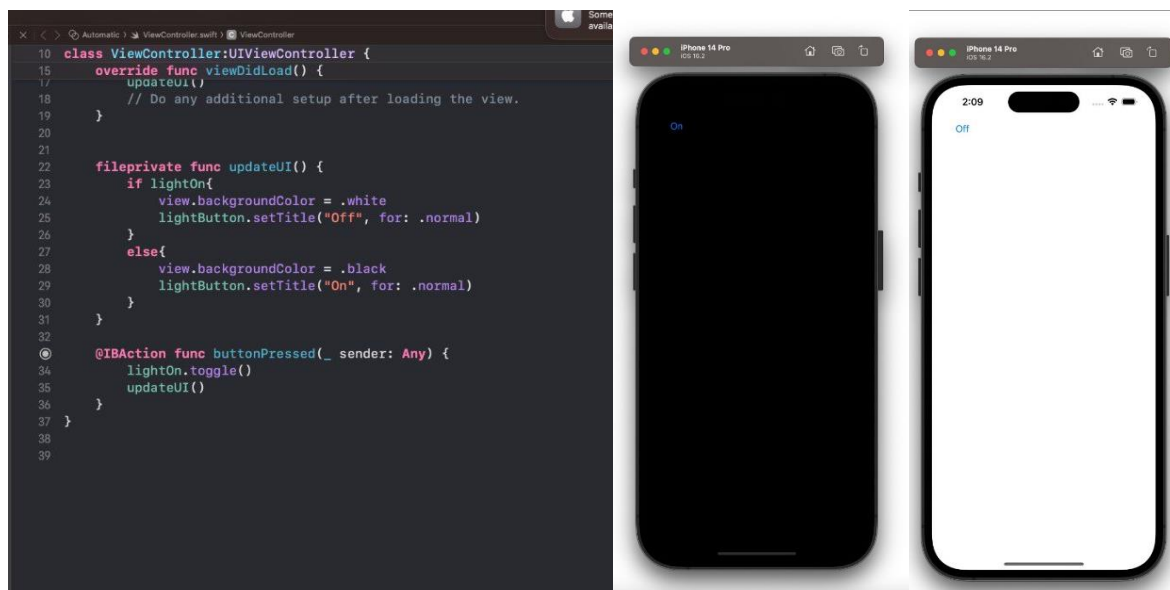
Step 2: Write an if-else statement to change background color of screen.



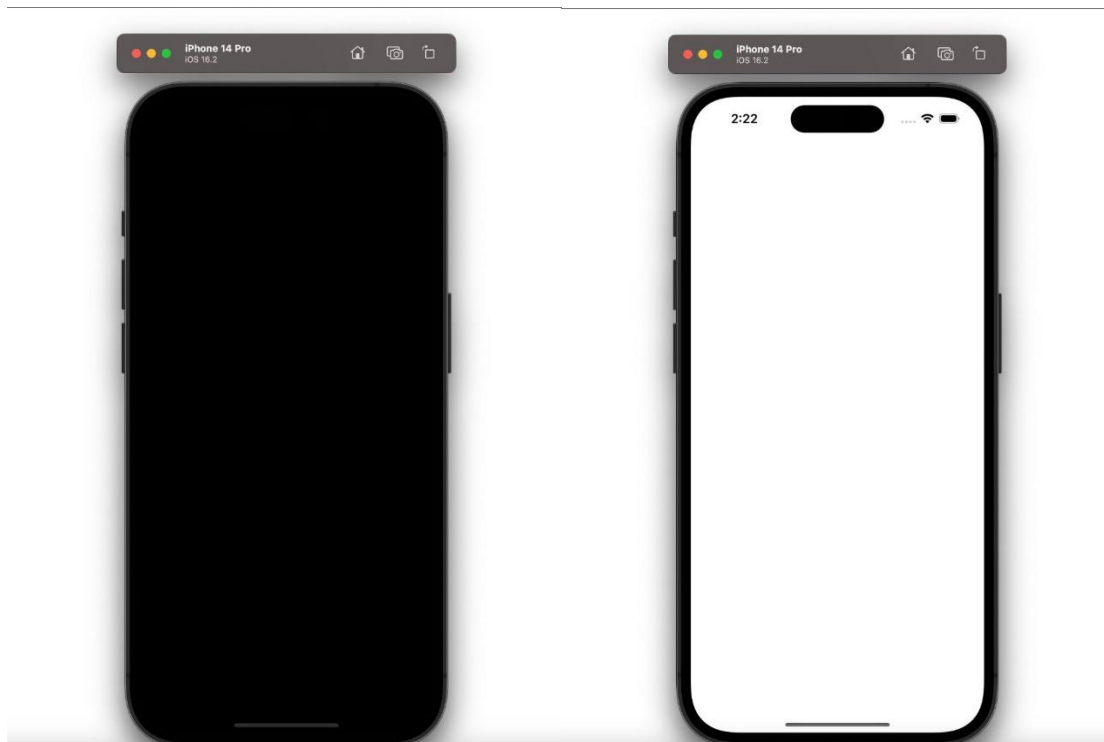
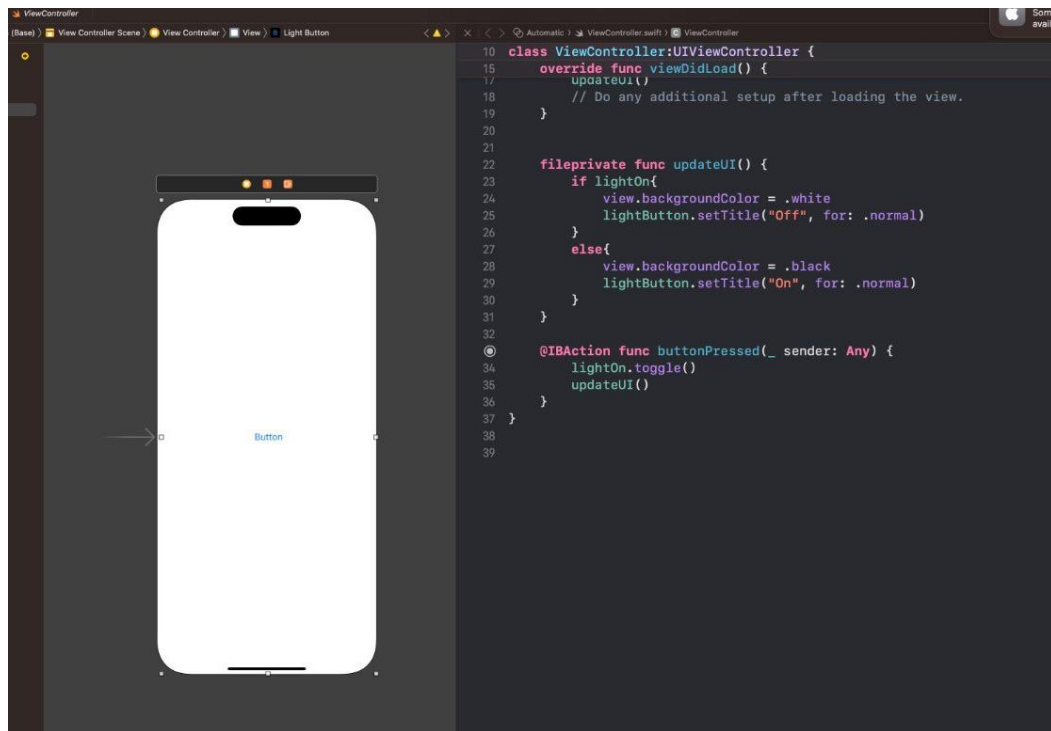
Step 3: Write clean code using a separate method for if-else statement.



Step 4: Changing value of button.



Step 5: Increase button size and remove the text button and make the screen act as a button.



Step 6: Optimize code of if-else statement using ternary operator.

