

Coding challenges

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Exercise 0.1 Write a function to swap the values of two variables in place (that is, without temporary variables). For instance, if $variable1 = 6$ and $variable2 = 5$, after calling the function, $variable1 = 5$ and $variable2 = 6$.

Solution : The classical way of swapping the values of two variables is to create a temporary variable *temp* and put :

$variable1 = temp, variable1 = variable2$ and $variable2 = temp$.

We can use a tuple also and put

$(variable1, variable2) = (variable2, variable1)$.

Let a the initial value of $variable1$ and b the initial value of $variable2$ Two swap in place the algorithm is the following :

1. $variable1 = variable1 - variable2$, ($variable1$ contains $a - b$)
2. $variable2 = variable1 + variable2$, ($variable2$ contains $a - b + b = a$)
3. $variable1 = variable2 - variable1$. ($variable1$ contains $a - (a - b) = b$).

```

130 func swapVariables( _ variable1: inout Int, _ variable2: inout Int) {
131     var temp: Int
132     temp = variable1
133     variable1 = variable2
134     variable2 = temp
135 }
136
137 func swapVariablesbis( _ variable1: inout Int, _ variable2: inout Int) {
138     (variable2, variable1) = (variable1, variable2)
139 }
140
141 func swapVariablesthirde( _ variable1: inout Int, _ variable2: inout Int) {
142
143     variable1 = variable1 - variable2
144     variable2 = variable1 + variable2
145     variable1 = variable2 - variable1
146 }
147
148 var c = 7; var d = 6
149 var e = 8; var f = -7
150 var h = 5; var j = 8
151 swapVariables(&c, &d)
152 print([c,d])
153 swapVariablesbis(&e, &f)
154 print([e,f])
155 swapVariablesthirde(&h, &j)
156 print([h,j])

```

7
6
7
(0, 8, -1 -7)
-3
5
8
(2 times)
(2 times)
(2 times)
"[6, 7]\n"
"[-7, 8]\n"
"[8, 5]\n"

```

^
[6, 7]
[-7, 8]
[8, 5]

```