Control (1A)

Young Won Lim
3/15/23

Please send corrections (or suggestions) to youngwlim@hotmail.com.

This document was produced by using OpenOffice.

2-d Array

```
if <condition> :
<code>
else if <condition> :
<code>
...
else:
<code>

if <value> in <list> :
```

Control

Young Won Lim
3/15/23

2-d Array

If Statements
if is_hot**:**
    print("hot day")
elif is_cold**:**
    print("cold day")
else:
    print("beautiful day")

Logical operators:
if has_high_income **and** has_good_credit**:**
...
if has_high_income **or** has_good_credit**:**
...
is_day = **True**
is_night = **not** is_day

Young Won Lim
3/15/23

statement block executed only
if a condition is true

if logical condition:
statements block

Can go with several elif, elif...
and only one final else.
Only the block of first true
condition is executed

with a var x:
if bool(x) **==** True**:** ⇔ **if** x**:**
if bool(x) **==** False**:** ⇔ **if not** x**:**

```
if age<=18:
    state="Kid"
elif age>65:
    state="Retired"
else:
    state="Active"
```

if Statements

The if statement evaluates an expression,
and if that expression is True,
it then executes the following indented code:

```
>>> name = 'Debora'

>>> if name == 'Debora':
...         print('Hi, Debora')
...
# Hi, Debora

>>> if name != 'George':
...         print('You are not George')
...
# You are not George
```

Control

Young Won Lim
3/15/23

2-d Array

The else statement executes
only if the evaluation of the if
and all the elif expressions are False:

>>> name = 'Debora'

>>> **if** name **==** 'George'**:**
...   print('Hi, George.')
...   **else:**
...   print('You are not George')
...
You are not George

Young Won Lim
3/15/23

Only after the if statement expression is False,
the elif statement is evaluated and executed:

>>> name = 'George'

>>> **if** name **==** 'Debora'**:**
...   print('Hi Debora!')
...   **elif** name **==** 'George'**:**
...   print('Hi George!')
...
Hi George!

the elif and else parts are optional.

```
>>> name = 'Antony'

>>> if name == 'Debora':
...        print('Hi Debora!')
...    elif name == 'George':
...        print('Hi George!')
...    else:
...        print('Who are you?')
...
# Who are you?
```

Comparison operator

Operator   Meaning
== Equal to
!= Not equal to
<   Less than
>   Greater Than
<= Less than or Equal to
>= Greater than or Equal to

Young Won Lim
3/15/23

Comparison operator

>>> 42 == 42
True

>>> 40 == 42
False

>>> 'hello' == 'hello'
True

>>> 'hello' == 'Hello'
False

>>> 'dog' != 'cat'
True

>>> 42 == 42.0
True

>>> 42 == '42'
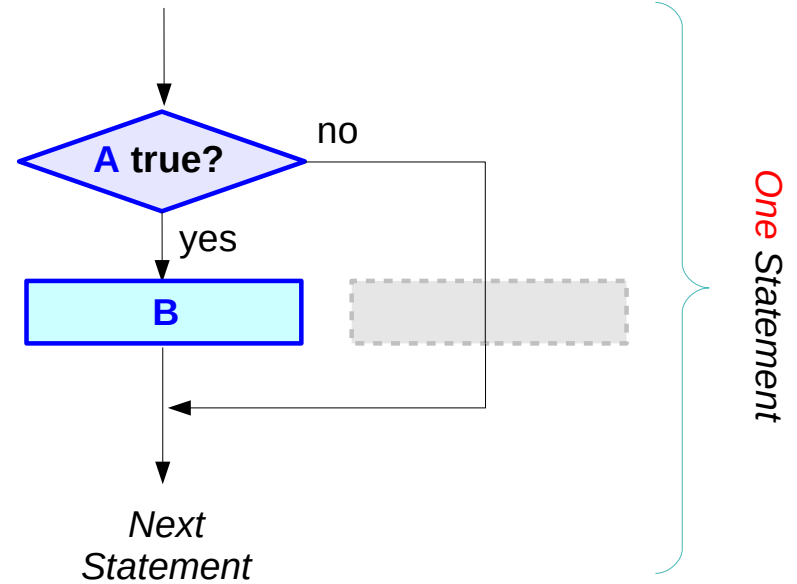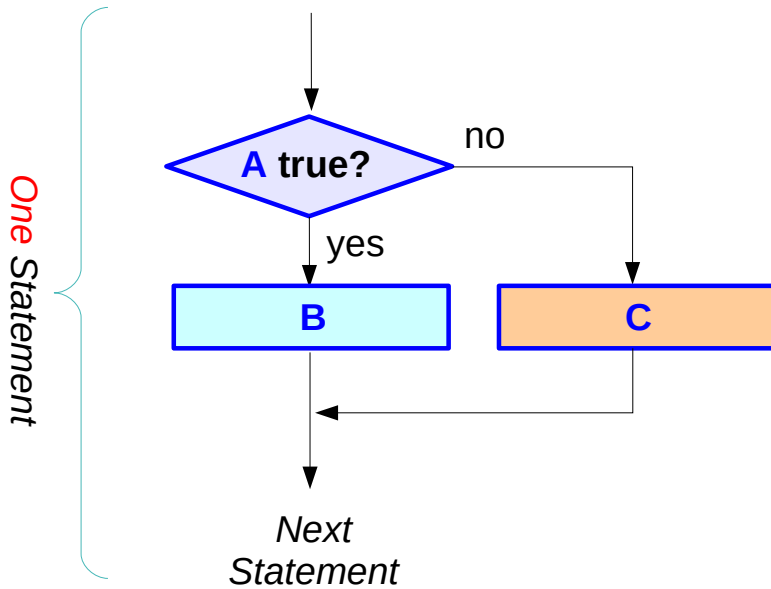False

If Statement

if A :
    B
else :
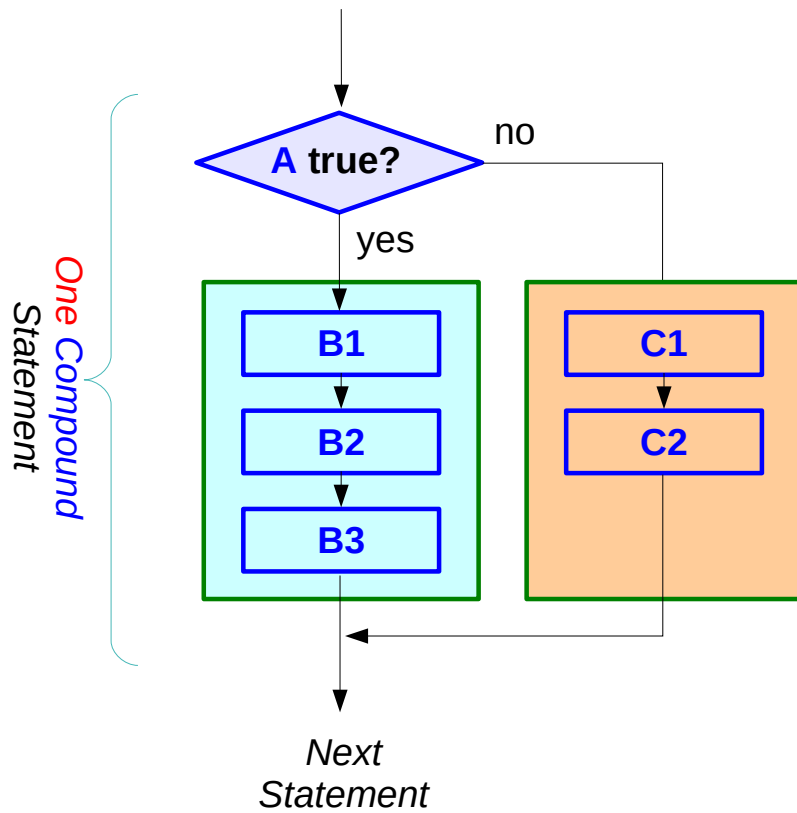   C

if A :
    B

One Statement

A true? — no

yes

B   C

Next Statement

One Statement

A true? — no

yes

B

Next Statement

If Compound Statement


```
if   A  :
      B1; B2; B3
else :
       C1; C2
```

```
if   A  :
      B1; B2; B3
```

One Compound Statement

A true?   no

yes

| B1 |
| B2 |
| B3 |

| C1 |
| C2 |

Next Statement

One Compound Statement

A true?   no

yes

| B1 |
| B2 |
| B3 |
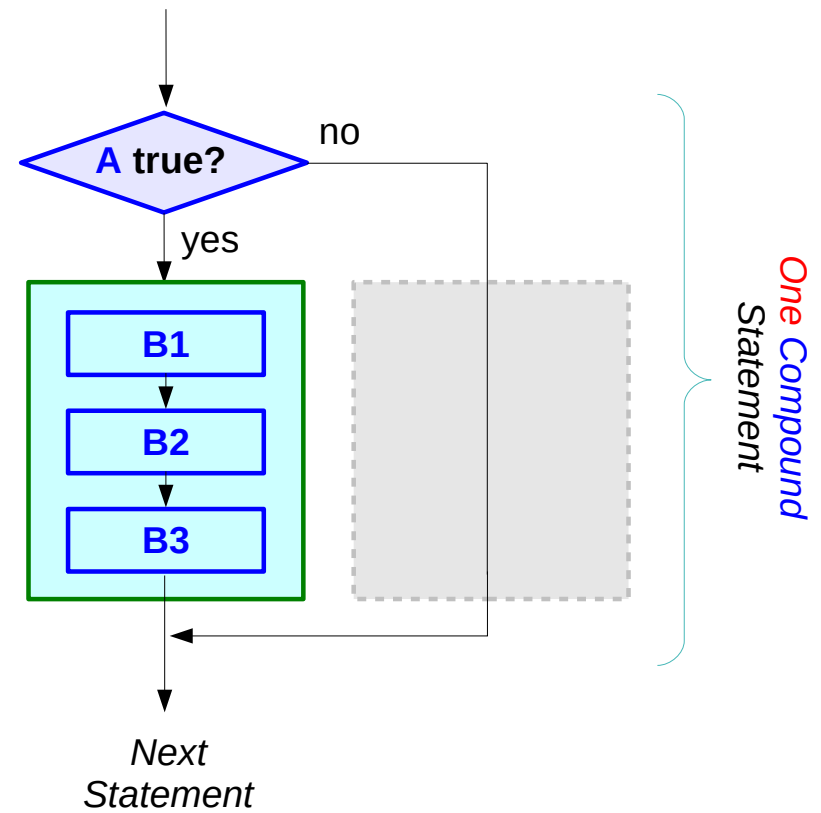
Next Statement

Cases of **if-else** Statements (1)

*Each of these if statements are treated as a **single statement**.*

if **A** :

if **A** :
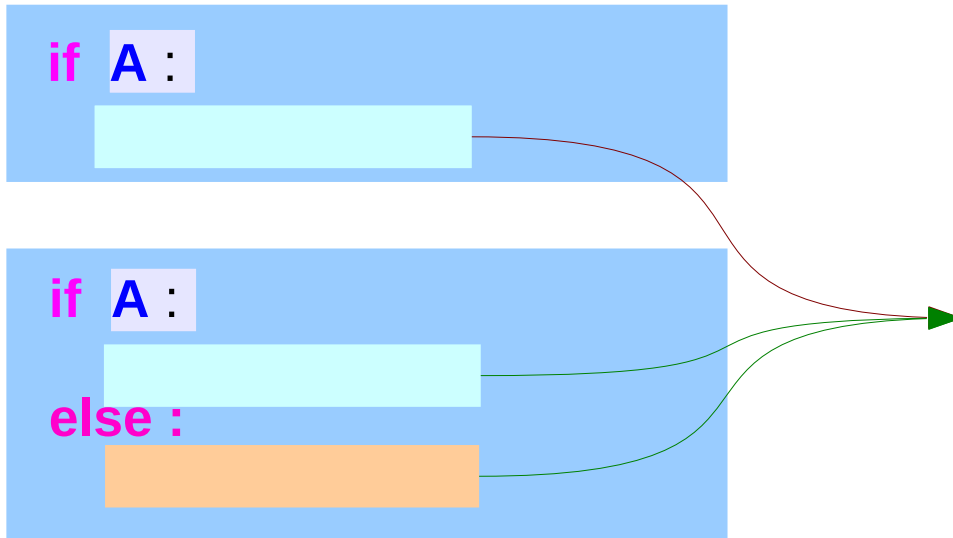
else :

If clause and else clause can be

1) a single statement

    St1;

2) a compound statement

    St1; **St2**; **St3**;

3) a nested if statement

    if **B** :

4) a nested if-else statement

    if **B** :

    else :

Control

15

References

[1]   Essential C, Nick Parlante
[2]   Efficient C Programming, Mark A. Weiss
[3]   C A Reference Manual, Samuel P. Harbison & Guy L. Steele Jr.
[4] C Language Express, I. K. Chun