### PRG1



# WEEK

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# Selection Structure II if...else statement

#### **Programming I (PRG1)**

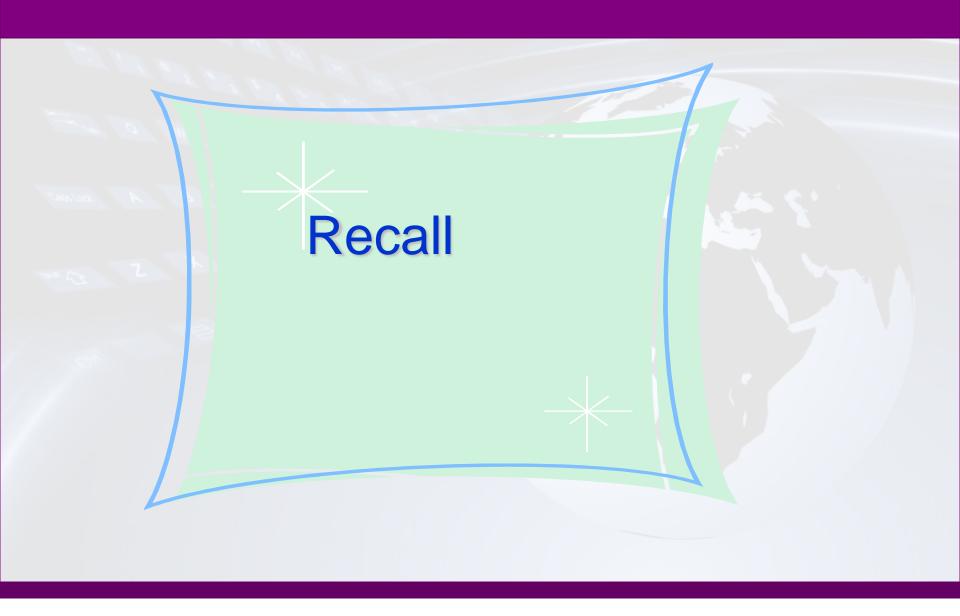
Diploma in Information Technology
Diploma in Financial Informatics
Diploma in Information Security & Forensics
Year 1 (2018/19), Semester 1

# **Objectives**

At the end of this lecture, you will understand

- Selection Structure
  - if...else Statement (Double-Selection)







# **Program Structure**

- There are in general 3 types of control structures that can be used to control program flow:
  - Sequence Structure
  - Selection Structure
  - Repetition Structure



#### **Selection Structure**

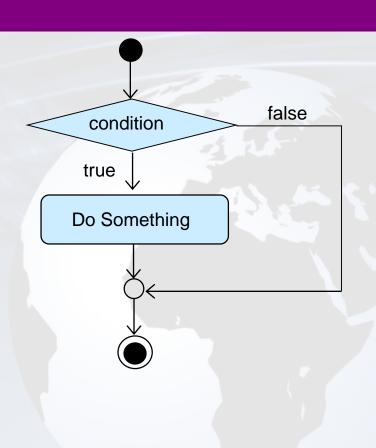
- Selection structures/statements allow selection among alternative courses of action.
- There are a few types of selection statements:
  - if -- Single-Selection statement
  - if...else
     Double-Selection statement
  - if...elif...else -- Multiway-Selection statement



## **Selection Structure**

if statement
 (for single selection)

if condition: (do something)

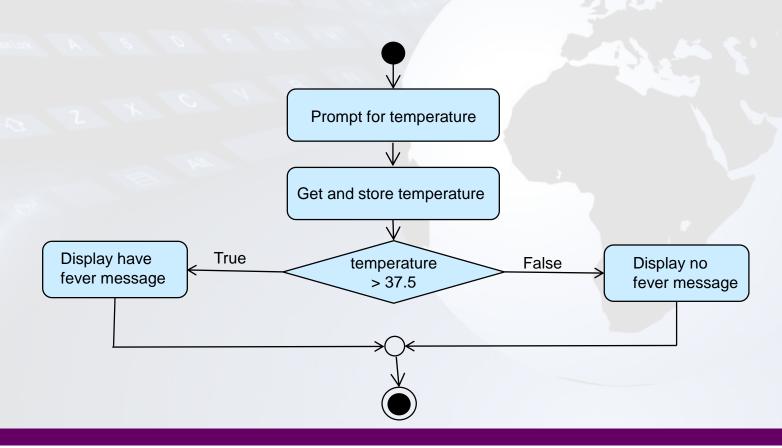






# **Activity 1: Recall**

Tom is said to have a fever when his temperature is higher than 37.5 °C otherwise he is not.





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Tom is said to have a fever when his temperature is higher than 37.5 °C otherwise he is not.

#### **Pseudocode:**

```
IF temperature is greater than 37.5 THEN display "Tom is having a fever."

ELSE display "Tom is not having a fever."

ENDIF
```

Last update: 17/04/2018



The algorithm may be written in code as follows:

#### **Pseudocode:**

```
IF temperature is greater than 37.5 THEN display "Tom is having a fever."

ELSE display "Tom is not having a fever."

ENDIF
```

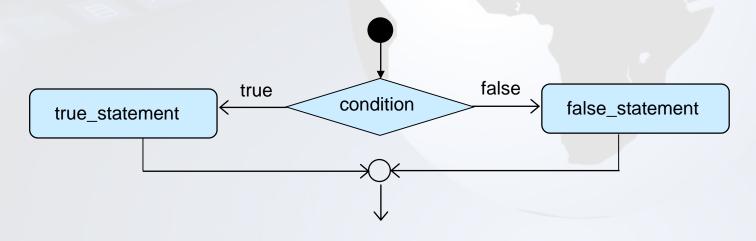
#### Python code:

```
if temperature > 37.5:
    print('Tom is having a fever of {} deg C. ' .format(temperature))
else:
    print('Tom is not having a fever.')
```



- Select from 2 different actions depending on the condition
- General format:

```
if condition:
    true_statement
else:
    false_statement
```





Code blocks in if...else statement

#### **Pseudocode:**

```
IF temperature is greater than 37.5 THEN
display "Tom is having a fever."
display "He should have more rest."
ELSE
display "Tom is not having a fever."
display "He can perform his normal duties."
ENDIF
```

#### Python code:

```
if temperature > 37.5:
    print('Tom is having a fever of {} deg C. ' .format(temperature))
    print('He should have more rest. ')
else:
    print('Tom is not having a fever.')
    print('He can perform his normal duties.')
```



# **Activity 2**

Tom is born on 29 Feb 2004.

- How old is Tom?
- How many birthdays had he celebrated?
- The year 2004 is called a \_\_\_\_\_\_ year.
- How do you determine whether another year is similar to 2004?



# **Activity 2**

A year is said to be a leap year if it is divisible by 4 but not divisible by 100, except those that is divisible by 400.

Code this in Python.



# **Activity 2**

A year is said to be a leap year if it is divisible by 4 but not divisible by 100, except those that is divisible by 400.

```
#This program checks if the year is a leap year
year = int(input('Please enter the year: '))
if year % 4 == 0 and year % 100 != 0 or year % 400 == 0:
    print('This is a leap year')
else:
    print('This is not a leap year')
```



# Reading Reference

- How to Think Like a Computer Scientist: Learning with Python 3
  - Chapter 5
  - http://www.openbookproject.net/thinkcs/python/english3e/c onditionals.html
- PolyMall Problem Solving and Programming
  - https://polymall.polytechnic.edu.sg/



# **Summary**

 The if...else Double-Selection Statement executes a course of action(s) if condition evaluates to true, and another course of action(s) if condition is false.

