MTA 98-381
LESSON 3
MAKING DECISIONS

DECISION

- Gent toilet is on the left side, ladies is on the right

```
if gender is Male
     turn left
else
     turn right
```

- General structure

```
if condition is true
     statements for true condition
else
     statements for false condition
```

CONDITION

- A *condition* is an expression that
  - use relational operators: <, >=, ==, !=, in, etc.
  - use logical operators: and, or, not, etc.
  - evaluates to either True or False
- A Boolean expression returns either True or False.
- Example conditions:

```
10 <= 20                # True
10 == 20                # False, is 10 equal 20?
10 >= 20                # False
not (10 < 20)           # False
10 < 20 or 10 == 20     # True
10 < 20 and 10 == 20    # False
```

== AND IS OPERATORS

- `==` operator checks whether 2 variables/objects have the same contents.
- `is` operator checks whether 2 variables/objects have the same address.

```
a = 1
b = 2/2
print (a == b, a is b)  # True, False
b = 1
print (a == b, a is b)  # True, True
```

THE IF CONSTRUCT

- 3 types of `if` Construct:
- 1. `if` only: No code when condition is false.
  - Syntax:

```
if condition:
    print ("The condition is True")
```

- 2. `if-else`: Has codes for both true and false.
  - Syntax:

```
if condition:
    print ("The condition is True")
else:
    print ("The condition is False")
```

THE IF CONSTRUCT (CONT.)

- 3. Multiple `if-else` syntax:

```
if condition1:
    print ("condition1 is True")
elif condition2:
    print ("condition2 is True")
else:
    print ("All previous conditions are False")
```

INDENTATION IN PYTHON

- Indentation denotes block level.
- Code in the same level must have same indentation.
- The statements/block for a True or False condition must be properly indented:

```
if condition:
    print ("True") # OK, indented, in 'if'.

if condition:
print ("True") # Error, not indented.
```

INDENTATION IN PYTHON (CONT.)

```
if condition:
  print ("Hello") # In 'if'.
  print ("World") # In 'if'.

if condition:
  print ("Hello") # In 'if'.
print ("World")   # Not in 'if'.
```

INDENTATION IN PYTHON (CONT.)

- Error or not?

```
if condition:
  print ("Hello")
 print ("World")


if condition:
  print ("True")
    print ("True")
```

EXERCISE 1:

- Write a Python program to calculate whether an integer has 1, 2, 3, or more than 3 digits?
- 2 or -2 (1 digit)
- 34 or -34 (2 digits)
- 567 or -567 (3 digits)
- 1234 or -1234 (more than 3 digits)

EXERCISE 2:

- Write a Python program to a ticket fee based on the following rules:
- Age under 7 = free
- Age 7 to 18 = RM20
- Age 18 or above = RM30

EXERCISE 3:

- Write a Python program to a ticket fee based on the following rules:
- Age under 7 = free
- Age 7 or above, and schooling = RM10
- Age 7 to 18, and not schooling = RM20
- Age 18 or above, and not schooling = RM30