



# SLIIT ACADEMY

## FCIT – Semester 1

---

### SELECTION CONTROL STRUCTURES

Ovini Seneviratne

SLIIT ACADEMY PVT LTD. © 2019

1

## Selection Control Structures

---

- 
- The **condition** in the IF statement is based on a **comparison of two items** **and** is usually expressed with one of the relational operators.



SLIIT ACADEMY PVT LTD. © 2019

## Simple selection :(simple IF statement)

---

```
IF(condition p) THEN
    statement block
ELSE
    statement block
ENDIF
```

### *Example:*

```
IF (age >= 18) THEN
    print 'Eligible for voting'
ELSE
    print 'Not Eligible for
voting'
ENDIF
```



SLIIT  
ACADEMY

SLIIT ACADEMY PVT LTD. © 2019

## Simple selection with null ELSE statement

---

```
IF(condition p) THEN
    statement block
ENDIF
```

### *Example:*

```
IF (num1 > num2) THEN
    Print ' Max = ', num1
ENDIF
```



SLIIT  
ACADEMY

SLIIT ACADEMY PVT LTD. © 2019

## Combined selection (combined IF statement)

Syntax :

```
IF(condition 1) THEN
    statement block
ENDIF
IF(condition 2) THEN
    statement block
ENDIF
IF(condition 3) THEN
    statement block
ENDIF
```



SLIIT  
ACADEMY

SLIIT ACADEMY PVT LTD. © 2019

## Combined selection (combined IF statement)

*Example:*

```
IF(( student_attendance == full_time) AND (student_gender == female) )THEN
    female_full_time_count= female_full_time_count+1
ENDIF

IF ((student_attendance == part_time )OR (student_gender == female) )THEN
    female_part_time_count= female_part_time_count+1
ENDIF

IF((record_code == '23') OR (update_code = delete )AND (account_balance ==
0)) THEN
    delete customer record
ENDIF
```



SLIIT  
ACADEMY

SLIIT ACADEMY PVT LTD. © 2019

## The NOT operator

```
IF NOT (condition p) THEN
    statement block
ENDIF
```

### *Example:*

```
IF NOT (record_code == '23') THEN
    update customer record
ENDIF
```



SLIIT  
ACADEMY

SLIIT ACADEMY PVT LTD. © 2019

## Linear nested IF statements

### Syntax :

```
IF(condition 1) THEN
    statement block
ELSE
    IF(condition 2) THEN
        statement block
    ELSE
        IF(condition 3) THEN
            statement block
        ELSE
            statement block
        ENDIF
    ENDIF
ENDIF
```



SLIIT  
ACADEMY

SLIIT ACADEMY PVT LTD. © 2019

## Linear nested IF statements

**Example :**

```
IF (record_code == 'A' ) THEN
    counter_A= counter_A + 1
ELSE
    IF (record_code == 'B') THEN
        counter_B= counter_B + 1
    ELSE
        IF (record_code == 'C') THEN
            counter_C= counter_C + 1
        ELSE
            Print 'Invalid record code'
        ENDIF
    ENDIF
ENDIF
ENDIF
```



SLIIT  
ACADEMY

SLIIT ACADEMY PVT LTD. © 2019

## Non-linear nested IF statements

**Syntax :**

```
IF(condition 1) THEN
    IF(condition 2) THEN
        statement block
    ELSE
        IF(condition 3) THEN
            statement block
        ELSE
            statement block
        ENDIF
    ENDIF
ENDIF
ELSE
    statement block
ENDIF
```



SLIIT  
ACADEMY

SLIIT ACADEMY PVT LTD. © 2019

# Example 1: Process customer record

•A program is required to read a customer’s name, a purchase amount and a tax code.

The tax code has been validated and will be one of the following:

- 0 - tax exempt (0%)
- 1 - state sales tax only (3%)
- 2 - federal and state sales tax (5%)
- 3 - special sales tax (7%)

•The program must compute the sales tax and the total amount due, and print the customer’s name, purchase amount, sales tax and total amount due.



## A Defining Diagram

| Input | Processing | Output |
|-------|------------|--------|
|       |            |        |
|       |            |        |
|       |            |        |
|       |            |        |



# Solution Algorithm

SLIIT ACADEMY PVT LTD. © 2019

## The Case Structure

---

- ❑ The case control structure in pseudocode is another way of expressing a linear nested IF statement.
- ❑ The case control structures used in pseudocode for two reasons:
  - Can be translated into many high-level languages,
  - Makes the pseudocode easier to write and understand.



SLIIT  
ACADEMY

SLIIT ACADEMY PVT LTD. © 2019

## The Case Structure

```

CASE OF single_variable
    value_1 : statement block_1
    value_2 : statement block_2
    .
    .
    .
    value_n : statement block_n
    default : statement block_other
ENDCASE

```



SLIIT  
ACADEMY

SLIIT ACADEMY PVT LTD. © 2019

## The Case Structure

```

IF (record_code == 'A') THEN
    counter_A= counter_A+1
ELSE
    IF (record_code == 'B') THEN
        counter_B= counter_B+1
    ELSE
        IF (record_code == 'C') THEN
            counter_C= counter_C+1
        ELSE
            Print 'Invalid record code'
        ENDIF
    ENDIF
ENDIF

```



SLIIT  
ACADEMY

SLIIT ACADEMY PVT LTD. © 2019



## Solution algorithm expressed using a case construct



SLIIT ACADEMY PVT LTD. © 2019

## Summary

- ☐ Selection control structure
- ☐ Simple selection :(simple IF statement)
- ☐ Simple selection with null false branch (null ELSE statement)
- ☐ Combined selection (combined IF statement)
- ☐ The NOT operator
- ☐ Linear nested IF statements
- ☐ Non-linear nested IF statements
- ☐ The Case Structure



SLIIT  
ACADEMY

SLIIT ACADEMY PVT LTD. © 2019

18