

## Flow Charts And Pseudo Codes

Grade 12

### What is an Algorithm?

- An algorithm is a complete step-by-step procedure for solving a problem or accomplishing a task

### Representing an Algorithm

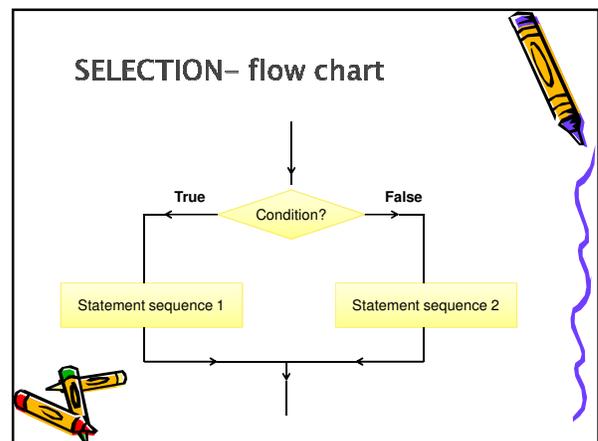
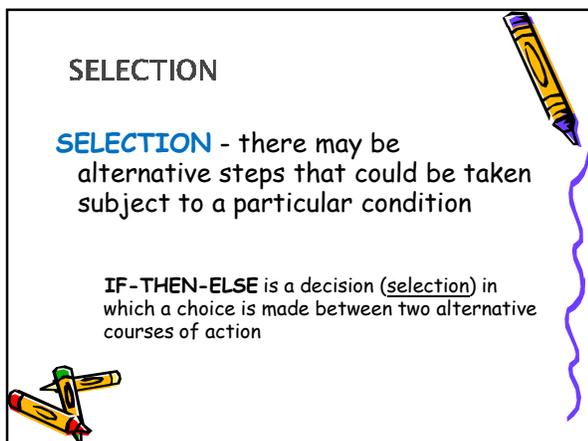
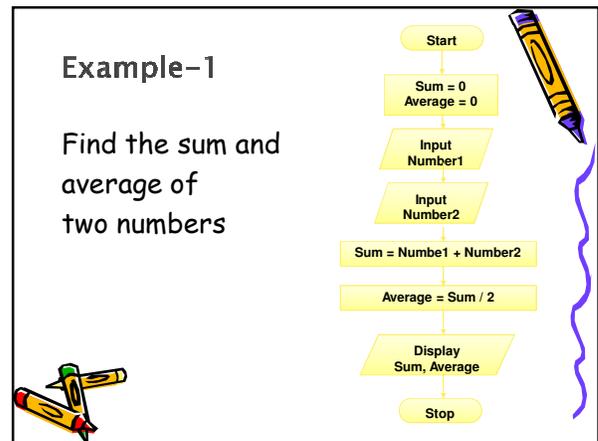
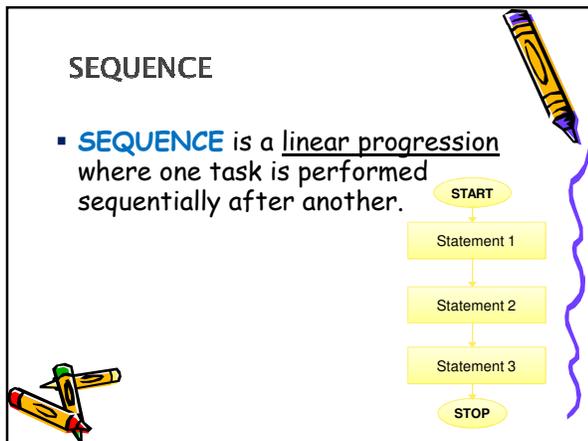
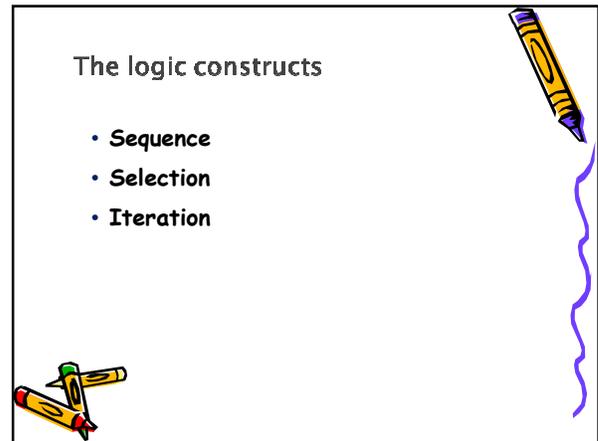
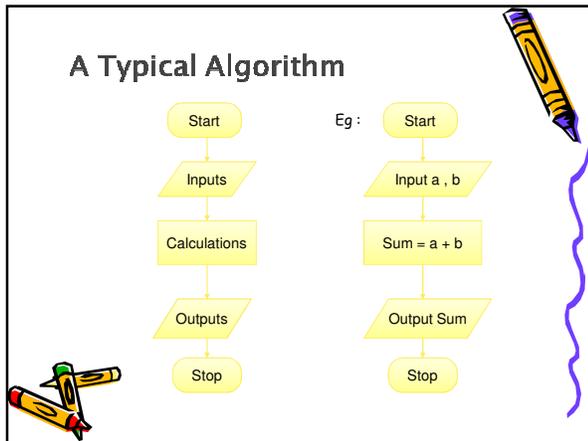
- Flowcharts
- Pseudo Codes

### Flow Charts

- It is a step by step Diagrammatic representation of the program
- Each type of task is represented by a symbol

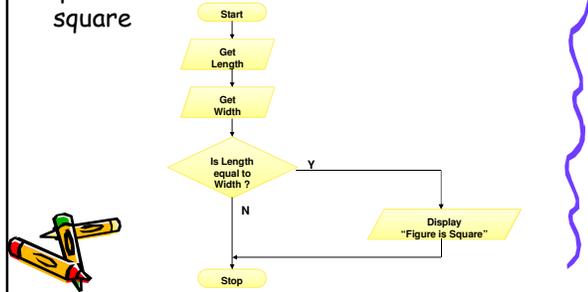
Diagram	Notation	Representation
	Oval	Start / End of a Program
	Parallelogram	Input / Output of Data
	Rectangle	Processing Operation
	Rhombus	Decision Box

Diagram	Notation	Representation
	Circle	Connection
	Flow Lines	Direction of Flow
	Rectangle	Sub Process



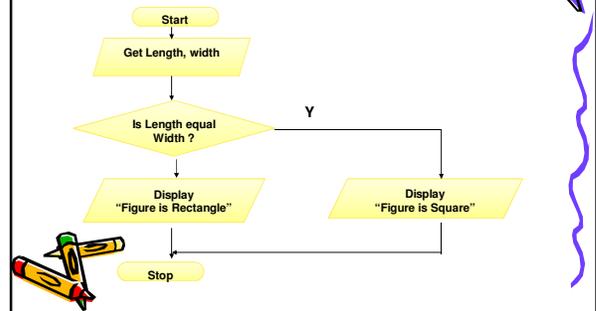
### Example-2

- Input the length and width of a quadrilateral and state whether it is a square



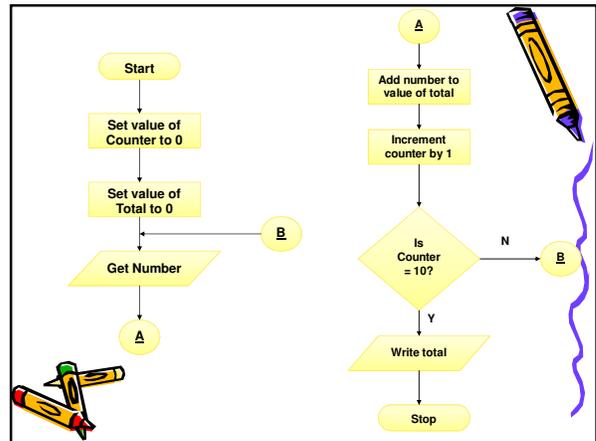
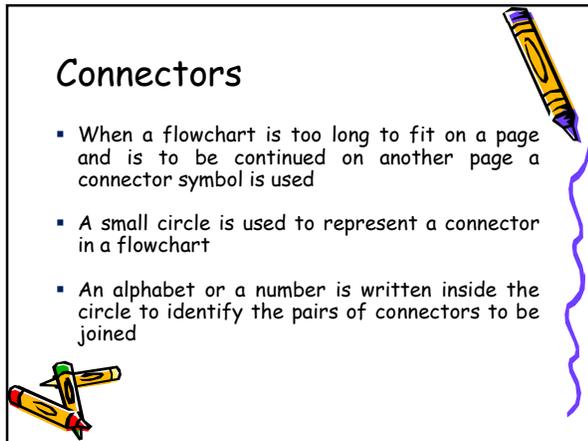
### Example-3

- Input the length and width of a quadrilateral and state whether it is a square or a rectangle.



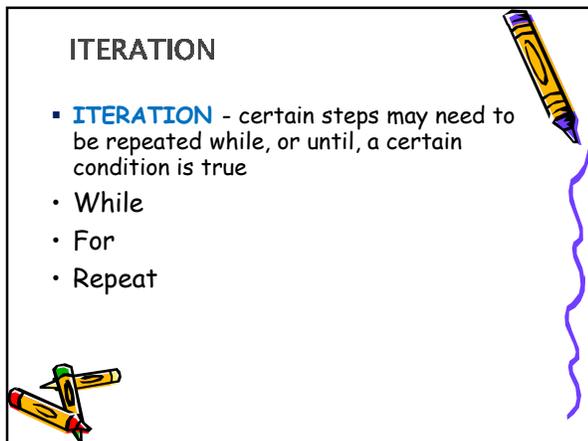
### Connectors

- When a flowchart is too long to fit on a page and is to be continued on another page a connector symbol is used
- A small circle is used to represent a connector in a flowchart
- An alphabet or a number is written inside the circle to identify the pairs of connectors to be joined

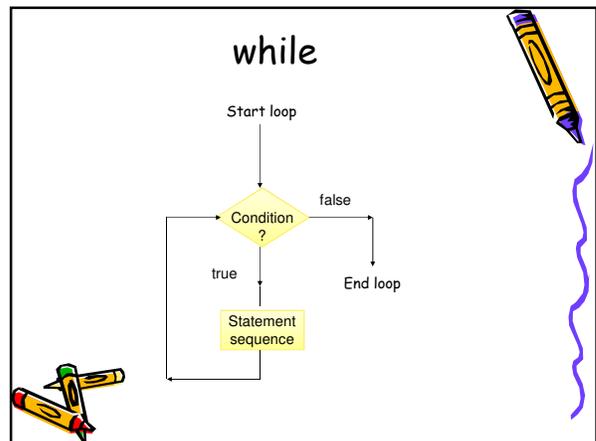


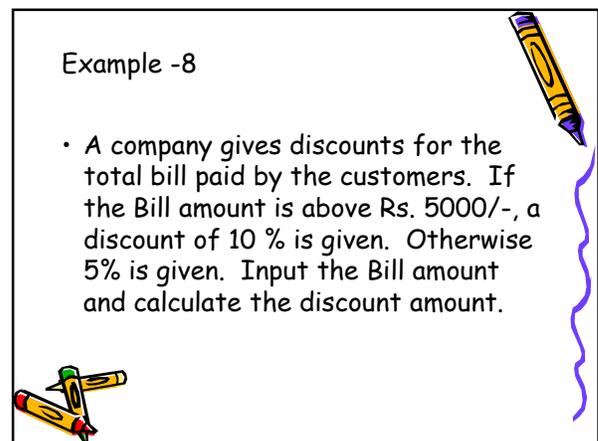
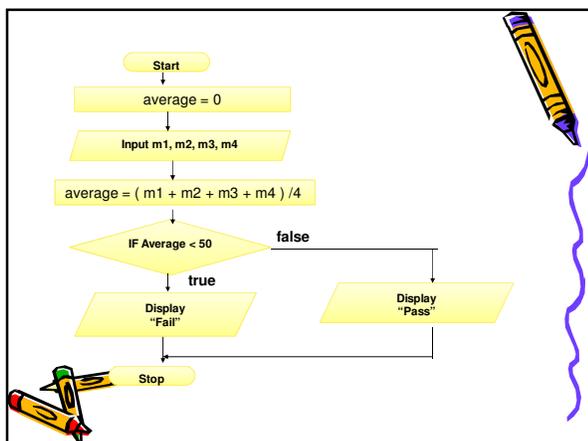
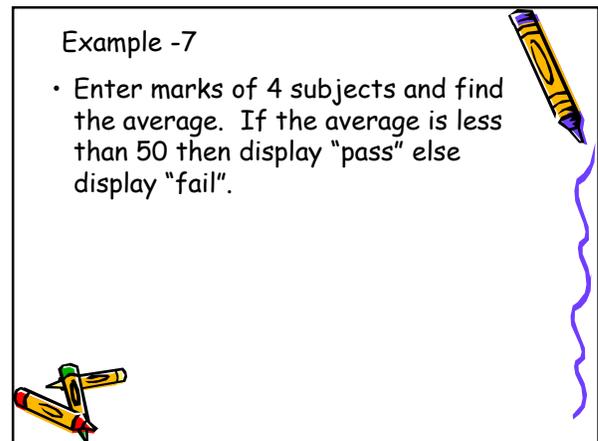
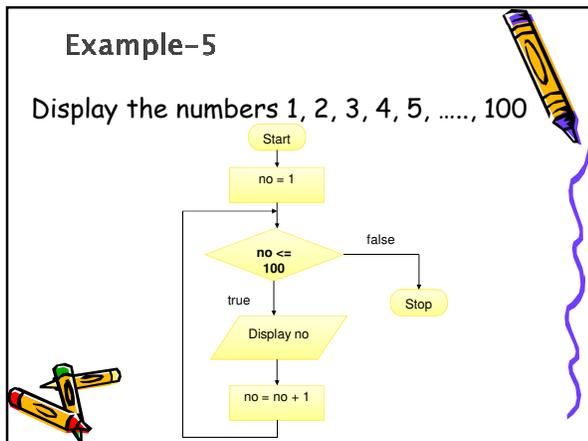
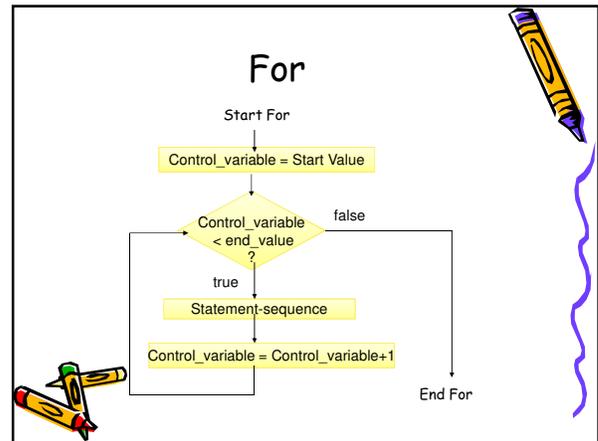
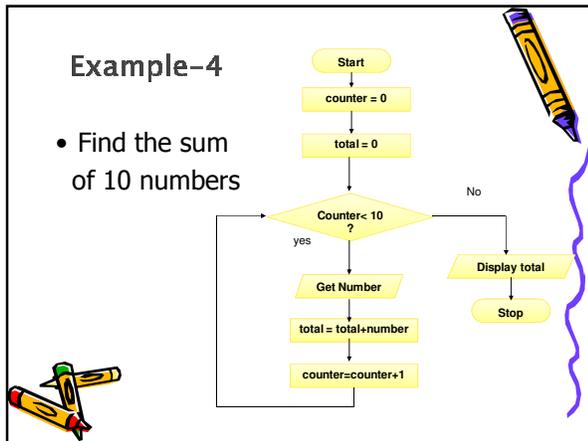
### ITERATION

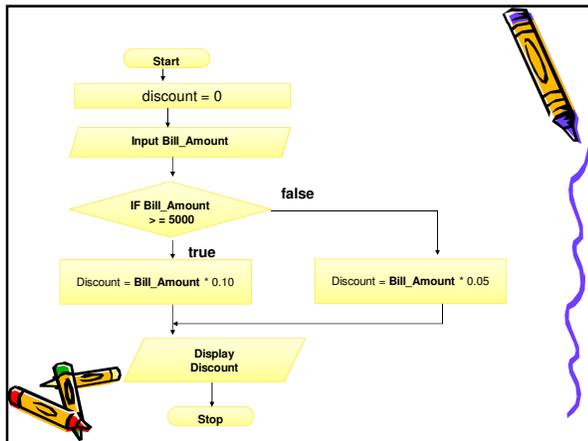
- ITERATION** - certain steps may need to be repeated while, or until, a certain condition is true
- While
- For
- Repeat



### while



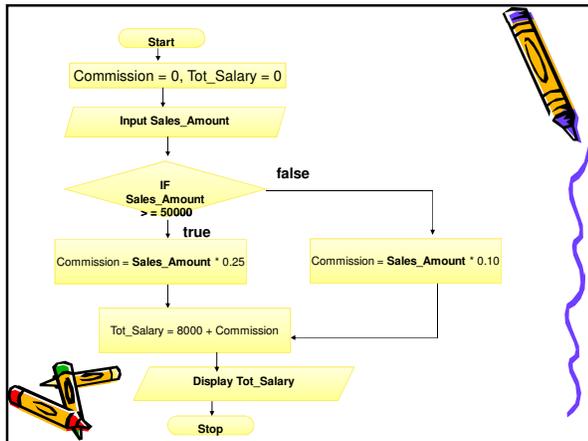




### Example - 9

- A company pays a basic salary of Rs. 8000/- to the salesmen. If a salesman does sales of Rs. 50,000/- or above, he is given a 25% commission. Otherwise only 10%.

Input the sales done by a salesman and calculate his salary for the month.



### Pseudocodes

- Pseudo codes use every day language...to prepare a brief set of instructions...in the order...in which they will appear in a finished program
- It is an abbreviated version of actual computer code (that's why it is called Pseudocode)
- Once pseudocode is created, it is simple to translate into real programming code.

### Control Structures Of a Program

- Sequence**
  - Use set of instructions one after the other
- Selection**
  - Use IF ... THEN ... ELSE
- Repetition**
  - Use WHILE, FOR, REPEAT...UNTILL

### Sequence

Pseudocode;

```

    START
    Statement 1
    Statement 2
    Statement 3
    STOP
  
```

Example - 10

- Write a pseudo code that inputs two numbers (a and b) and calculates the sum of the numbers and output the sum

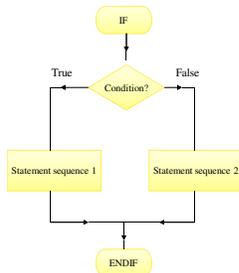
```

INPUT a
INPUT b
sum = a + b
OUTPUT sum
    
```

**Selection**

- **Compare and Select One of Two Alternative Actions**
- Select one path according to the condition
  - IF ... THEN
    - If the condition is true do the statements inside IF
    - No operation if the condition is false
  - IF ... THEN ... ELSE
    - If the condition is true do the statements inside IF
    - If the condition is false do the statements inside ELSE

**Selection**



Pseudocode:

```

IF condition
THEN
sequence-1(statements)
ELSE
sequence-2(statements)
ENDIF
    
```

```

IF <condition> THEN
sequence 1
ENDIF
    
```

• *Example1:*  
 IF a>0 THEN  
 Print a  
 END IF

```

IF <condition> THEN
sequence 1
ELSE
sequence 2
ENDIF
    
```

• *Example2:*  
 IF a>b THEN  
 Print a  
 ELSE  
 Print b  
 END IF

Example-11

- Write a pseudo code that inputs two numbers (a and b) and output the largest number.

```

INPUT a
INPUT b
IF a < b THEN
OUTPUT b
ELSE
OUTPUT a
END IF
    
```

**Repetition**

- WHILE ... ENDWHILE

