CONTROL STRUCTURES

A Structured programming is an important feature of a programming language which comprises following logical structure:

1. **SEQUENCE**
2. **SELECTION**
3. **ITERATION OR LOOPING**
4. **BRANCHING OR JUMPING STATEMENTS**

1. SEQUENCE

Sequence is the default control structure; instructions are executed one after another.

Statement 1
Statement 2
Statement 3
……..
……..
……..

1. SEQUENCE – FLOW CHART

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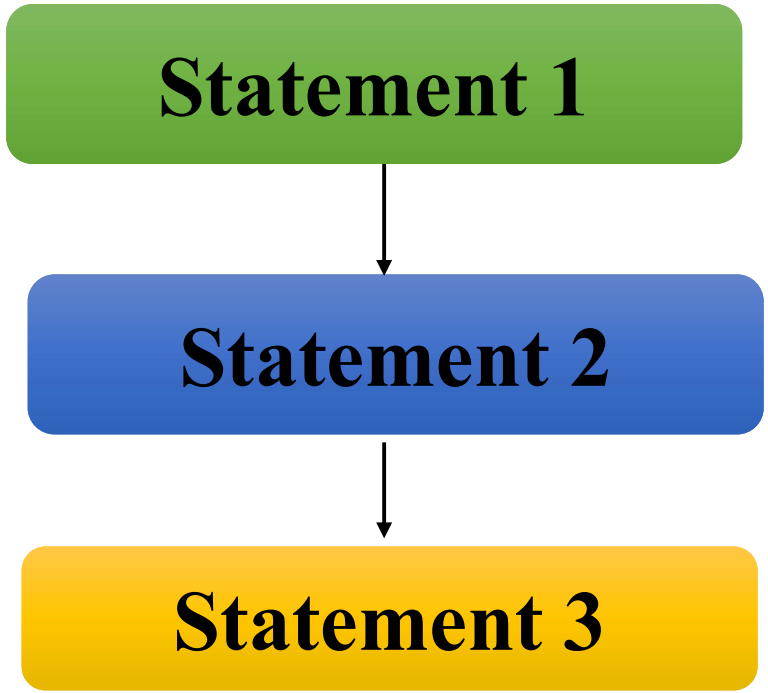

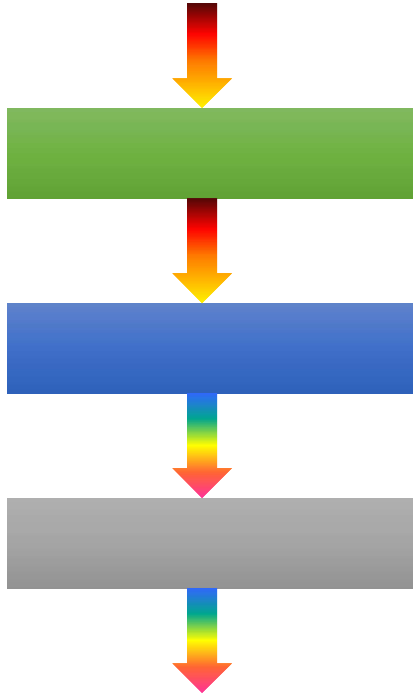

SEQUENCE

1. SEQUENCE - PROGRAM

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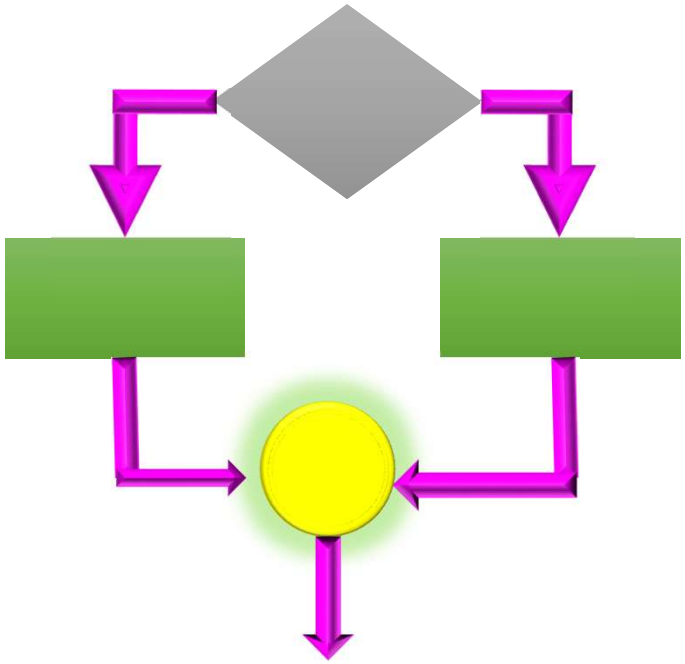
Sequence is the default control structure; instructions are executed one after another.

```
# This program adds two numbers
def  sum_of_two_no():
    num1 = 1.5
    num2 = 6.3
    sum = float(num1) + float(num2)
    print('The sum is =‘, sum)
sum_of_two_no():
```

2. SELECTION



SELECTION

2. SELECTION

A selection statement causes the program control to be transferred to a specific flow based upon whether a certain condition is true or not.

CONDITIONAL CONSTRUCT – if else STATEMENT

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Conditional constructs (also known as if statements) provide a way to execute a chosen block of code based on the run-time evaluation of one or more Boolean expressions. In Python, the most general form of a conditional is written as follows:

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CONDITIONAL CONSTRUCT – if else STATEMENT

: Colon Must

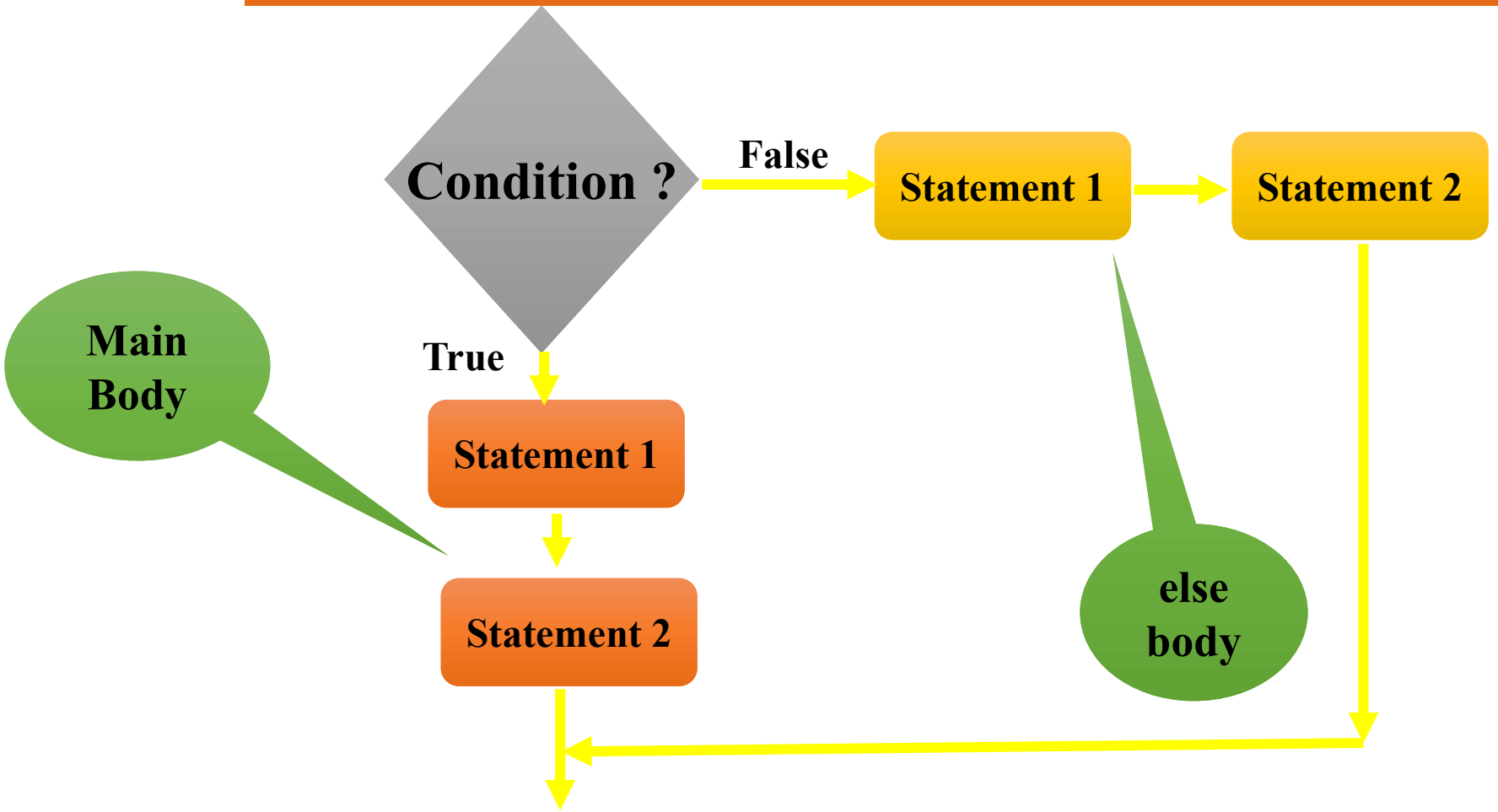
```
if first condition:
    first body
elif second condition:
    second body
elif third condition:
    third body
else:
    fourth body
```

CONDITIONAL CONSTRUCT – if else STATEMENT

FLOW CHART

CONDITIONAL CONSTRUCT – if else STATEMENT

FLOW CHART



CONDITIONAL CONSTRUCT – if else STATEMENT

- Each condition is a Boolean expression, and each body contains one or more commands that are to be executed conditionally.

- If the first condition succeeds, the first body will be executed; no other conditions or bodies are evaluated in that case.

CONDITIONAL CONSTRUCT – if else STATEMENT

- If the first condition fails, then the process continues in similar manner with the evaluation of the second condition. The execution of this overall construct will cause precisely one of the bodies to be executed.

- There may be any number of elif clauses (including zero), and
- The final else clause is optional.

CONDITIONAL CONSTRUCT – if else STATEMENT

EXAMPLE - PROGRAM

EXAMPLES – if STATEMENT

Python 3.4.0: ifelse.py - C:\Python34\ifelse.py

File Edit Format Run Options Windows Help

```
def if_example():
    a = 5
    if (a <10):
        print ("5 is less than 10")
    print ("Statement after if statement")
if_example()
```

Ln: 8 Col: 0

else is missing, it is an optional statement

OUT PUT

Python 3.4.0 Shell

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```
5 is less than 10
Statement after if statement
>>>
```

Ln: 14 Col: 4

CONDITIONAL CONSTRUCT

EXAMPLE – if else STATEMENT

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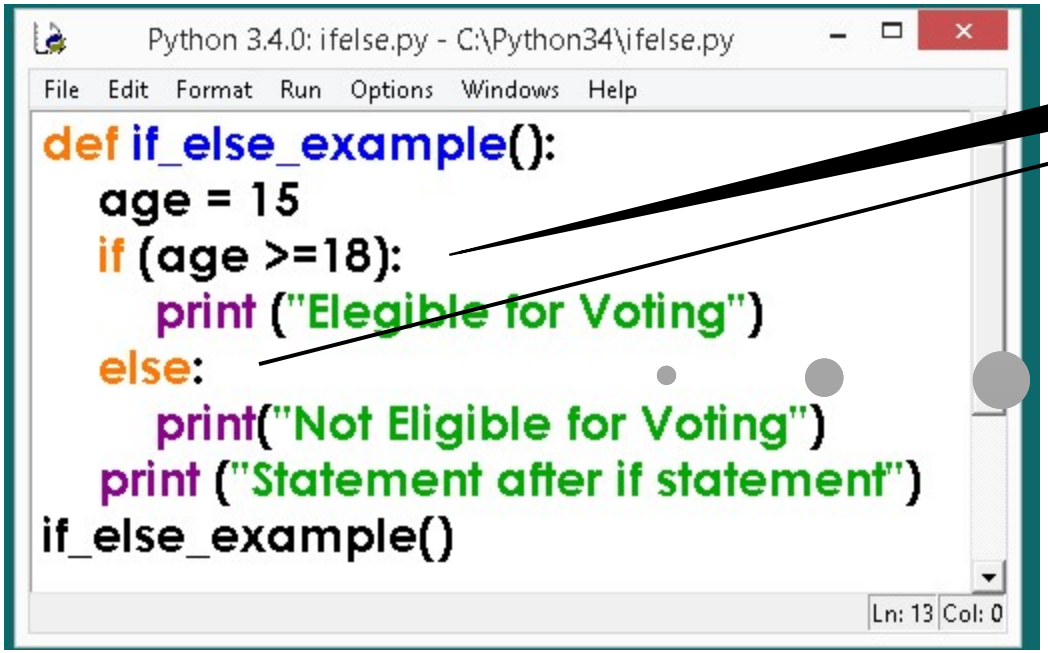

: Colon Must

else is used

OUT PUT

CONDITIONAL CONSTRUCT

EXAMPLES – if elif STATEMENT

EXAMPLES – if elif STATEMENT

Python 3.4.0: ifelse.py - C:\Python34\ifelse.py

File Edit Format Run Options Windows Help

```
def if_elif_example():
    Age = 27
    if Age >= 60:
        print ('Senior Discount')
    elif 18 <= Age < 60:
        print ('No Discount')
    else:
        print ('Junior Discount')
if_elif_example()
```

Ln: 12 Col: 0

READ AS

18 is less than age and 18 is less than 60

OUTPUT

Python 3.4.0 Shell

File Edit Shell Debug Options Windows Help

No Discount

Ln: 9 Col: 4

PROGRAM LIST ON if CONTSTUCT

PROGRAM LIST ON if CONTSTUCT

BELOW AVERAGE PROGRAMS

1. Write a PYTHON program that reads a value of n and check the number is zero or non zero value.
2. Write a PYTHON program to find a largest of two numbers.
3. Write a PYTHON program that reads the number and check the no is positive or negative.
4. Write a PYTHON program to check entered character is vowel or consonant.

PROGRAM LIST ON if CONTSTUCT

AVERAGE PROGRAMS

5. Write a PYTHON program to evaluate the student performance

If % is >=90 then Excellent performance

If % is >=80 then Very Good performance

If % is >=70 then Good performance

If % is >=60 then average performance

else Poor performance.

6. Write a PYTHON program to find largest of three numbers.

7. Write a PYTHON program to find smallest of three numbers

PROGRAM LIST ON if CONTSTUCT

ABOVE AVERAGE PROGRAMS

8.Write a PYTHON program to check weather number is even or odd.

9.Write a PYTHON program to check a year for leap year.

10. A company insures its drivers in the following cases:

- If the driver is married.
- If the driver is unmarried, male and above 30 years of age.
- If the driver is unmarried, female and above 25 years of age.

PROGRAM LIST ON if CONTSTUCT

ABOVE AVERAGE PROGRAMS

In all the other cases, the driver is not insured. If the marital status, sex and age of the driver are the inputs,

Write a PYTHON program to determine whether the driver is insured or not

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