**Python Statements**

1. **Assignment Statement** – Assigns a value to a variable.

Syntax**:**

**\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Variable value, expression, variable

Examples:

hr = 10.0 ; smoker = True ;

rate = 10.55 ; middleInitial = ‘T’ ;

gross = hr \* rate ; name = fname + lname ;

temp = gross ; a = b;

1. **Input or output**  Functions

**Input:** name = **input**(“What is your name? “)

age = int(**input**(“How old are you? “))

salary = float(**input**(“What is your salary? “))

**Output:** print(“Hello “, name, “ so, you are “ , age, “ years old!”)

or print(“Hello “ + name + “ so, you are “ + str(age) + “ years old!”)

1. **If Statements** – allows for decision making, by testing a condition to see if it is true or false.

**Syntax:**

**If \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ :**

*condition(s)*  True

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Statement

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Statement

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Statement

. . .

**else:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**opt**  Statement

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Statement

**. . .**

#**endif**

Note: The else: clause is optional. If there is nothing to do if the condition is false, omit the **else:** and the **statements** that follow. Then, add the **#endif** . Else clause is optional (opt).

Flowchart and resultant python code: (note the alignment in code)

Example a:

Python code:

**F** age > 18 **T**

If age > 18:

print(“Hurray”)

output “Hurray” #end if

**Note:** no **else:** clause

Example b:

Python code:

**F** amt > 500.0 T If amt > 500.0 :

disc = 0.15

discAmt = disc \* amt

disc = 0.0 disc = 0.15 else:

disc = 0.0

discAmt = disc \* amt #endif

Example c:

**F T** Python code:

amt > 500.0

if amt > 500.0 :

if amt > 800.0 :

discAmt = 0.0 **F T** discRate = 0.15

amt > 800.0 else:

discRate = 0.10

discRate = 0.10discRate = 0.15 #endif

discAmt = amt \* discRate

else :

discAmt =amt \* discRate discAmt = 0.0

#endif

Example d.

X > 100

**F T** Inputval

**F** x < 200 **T**

**F**  X > 50 **T**

fac = 0.18fac = 0.33

fac = 0.4 - valfac = 0.08 + val

g = 12/(fac\*x) g = fac \* x

output g

Python code:

if x > 100 :

if x < 200 :

fac = 0.33

else :

fac = 0.18

#endif

g = fac \* x

else :

val = float( input(“Enter val amount: “))

if x > 50 :

fac = 0.08 + val

else :

fac = 0.04 – val

#endif

g = 12/(fac\*x)

#endif

print(“Value of g is “,g)

1. While Statement: for pre-test loop – While the condition(s) is True, do the indented statements!

Syntax:

while \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **:**

*conditions(s)* True

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *Note: Body of the loop includes*

*Statement* Indented statements.Note

Body of loop *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ only body statements indented!*

*Statement Also Note:*

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Statements that follow loop *Statement*  bodyshould not be indented

. . .

#end while

Pre-test loop problem example:

Example a: Input id, qty, and price. Calculate cost of item, taxes to be paid, and output id and total cost for the item you may wish to purchase. Repeat for as many items you wish to purchase. Use the end of data tag id equal to -999 to terminate your loop.

Input id **Python Code:**

id = int( input ( “Enter ID: “) )

F

id != -999 A while id != -999 :

qty = int( input(“Enter Qty: “))

T price = float( input( “Enter price: “) )

input qty, price cost = qty \* price

tax = cost \* 0.0635

Body of loop total = cost + tax

cost = qty \* price print( “ID: “, id)

print( “total cost $”, total)

tax = cost \* 0.0635 id = int( input ( “Enter ID: “) )

#end while

total = cost + tax print( “ . . . End of Job!”)

output id, total

input id

A Note: insert statements of the loop body, inside a while-statement!

output (“… End of Job!”

Example b: While statement – pre test loop: Find the sum from 1 to 100:

c = 0

sum = 0

Python Code:

c = 0

c < 100 F A sum = 0

while c < 100 **:**

T c = c + 1

c = c + 1 sum = sum + c

Body of loop #end while

sum = sum + c print(“sum from1 -100 is”, sum)

A

output (sum)

Example c: While statement – pre test loop: Find the sum from 1 to 100: (note condition change!)

c = 0

sum = 0

Python Code:

T c = 0

c < 100 A sum = 0

while not (c < 100) **:**

F c = c + 1

c = c + 1 sum = sum + c

Body of loop #end while

sum = sum + c print(“sum from1 -100 is”, sum)

Note: Loop flowchart says, while FALSE do loop. You

A must change it to TRUE to do the loop, and FALSE

to leave the loop to use the WHILE statement.

output (sum) This is easily done by using the not Boolean

opterator.

1. Use the While Statement **for Post Test Loops** Since there is no “Post test loop” instruction in Python, we use the While statement and create a post\_test loop with it! An endless while statement is created by saying” “while True:” and “#end while”. The indented statements are done over and over again. We program to break out at the bottom of this while loop, if a certain condition is TRUE. Thus, the test to end this loop takes place at the bottom of the while statement, using an if-statement!

Syntax:

while \_\_\_\_\_\_True\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **:**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *Note: Body of the loop includes*

*Statement* Indented statements.They

Body of loop *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* are repeated.

*Statement Also Note:*

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Statements that follow loop

*Statement* should not be indented

. . .

If \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ :

*condition(s) True*

break

#endif

#end while

Example 1. Post test loop: Find the sum from 1 to 100:

Python Code for post-test loop example:

c = 0

c = 0

sum = 0 sum = 0

while True **:**

c = c + 1

c = c + 1 sum = sum + c

Body of loop if c == 100 **:**

sum = sum + c break

#end if

#end while

F c == 100 print(“sum is “, sum)

T

Print(“sum is ”, sum)

Example 2 Post test loop: Convert temperature from Fahrenheit to Celsius.

Python Code:

Input tempF while True **:**

tempF = float ( input ( “Enter Fahrenheit: “))

tempC = 5/9 \* ( tempF - 32)

tempC = 5.0/0.0 \* ( tempF - 32 )

output tempC, t empF print( “Temperature in Celcius is “, tempC )

print( “Temperature in Fahrenheit is “, tempF)

ans = input( “Do again? (Y/N): “)

ans = input ( “Do again? (Y/N) : “)

F

( ans != ‘Y’) or (ans != ‘y’) if (ans != ‘Y’) or ( ans != ‘y’ ) **:**

break

T #endif

A

#end while

output “End of Job!” print( “ End of Job! “)