1.What are the two values of the Boolean data type? How do you write them?

**Ans:**

True and False are the two values of the Boolean data type. They can be written as below.

True

False

2. What are the three different types of Boolean operators?

**Ans:**

Following are the types of Boolean operators:

== 🡪 equal to

> 🡪 greater than

< 🡪 less than

3. Make a list of each Boolean operator's truth tables (i.e. every possible combination of Boolean values for the operator and what it evaluate).

**Ans:**

Let us consider variable a=2, b=3

|  |  |  |  |
| --- | --- | --- | --- |
| Operator | meaning | Expression | Evaluates to |
| == | Equal to | a == b | False |
| != | Not equal to | a != b | True |
| > | Greater than | a > b | False |
| < | Less than | a < b | True |
| >= | Greater than or equal to | a >= b | False |
| <= | Less than or equal to | a <= b | True |
| & , and | And operator | a < 5 and a > 1 | True |
| or | OR operator | a < 5 or a > 1 | True |
| not | negation | not (2>1) | False |

4. What are the values of the following expressions?

(5 > 4) and (3 == 5)

not (5 > 4)

(5 > 4) or (3 == 5)

not ((5 > 4) or (3 == 5))

(True and True) and (True == False)

(not False) or (not True)

**Ans:**

(5 > 4) and (3 == 5) 🡺 False

not (5 > 4) 🡺 False

(5 > 4) or (3 == 5) 🡺 True

not ((5 > 4) or (3 == 5)) 🡺 False

(True and True) and (True == False) 🡺 False

(not False) or (not True) 🡺 True

5. What are the six comparison operators?

**Ans:**

Following are the comparison operators:

|  |  |
| --- | --- |
| > | Greater than |
| < | Less than |
| == | Equal to |
| >= | Greater than or equal to |
| <= | Less than or equal to |
| != | Not equal to |
| and | Logical AND operator |
| or | Logical OR operator |
| not | negation |

6. How do you tell the difference between the equal to and assignment operators? Describe a condition and when you would use one.

**Ans:**

Equal-to (==) comparison operator is written with double equal without spaces. This is used when we want to compare two objects to one another. Output to this comparison is always a Boolean value unless it is defined explicitly differently for custom objects (for ex. Created Classes).

== 🡺 equal to – a comparison operator

Ex. 2 == 3 🡺 evaluates to False

However, when variable needs to be assigned to the output of an expression, equal sign (=) is used.

= 🡺 expression assignment to a variable

Ex. var = 2 == 3 🡺 here, var variable has the output of the expression (2==3) which is False.

7. Identify the three blocks in this code:

spam = 0

if spam == 10:

print('eggs')

if spam > 5:

print('bacon')

else:

print('ham')

print('spam')

print('spam')

**Ans:**

Following are the 3 blocks in above code:

**Block 1:** Block 1 consists only 1 line.

print('eggs')

**Block 2:** Block 2 consists only 1 line.

print('bacon')

**Block 3:** Block 3 consists only 3 lines.

print('ham')

print('spam')

print('spam')

8. Write code that prints Hello if 1 is stored in spam, prints Howdy if 2 is stored in spam, and prints Greetings! if anything else is stored in spam.

**Ans:**

if spam == 1:

print(‘Hello’)

elif spam == 2:

print(‘Howdy’)

else:

print(‘Greetings!’)

9.If your programme is stuck in an endless loop, what keys you’ll press?

**Ans:**

Press Ctr+C from keyboard.

10. How can you tell the difference between break and continue?

**Ans:**

To skip executions of some lines, continue is used before those line.

To exit from the loop, break is used.

for i in range(1,5):

if i == 2:

continue

print(‘I am printing the value of iterator’, i)

if i > 2:

break

print(‘Printing after break block ’)

Output:

I am printing the value of iterator 1

Printing after break block

I am printing the value of iterator 3

For i == 2, lines are skipped and for i > 2, loop is broke out.

11. In a for loop, what is the difference between range(10), range(0, 10), and range(0, 10, 1)?

**Ans:**

range(10) 🡪 loop from 0 to 9. 10 will not be included in the iteration. Each iteration variable will have values as 0,1,2,3,4,5,6,7,8,9.

range(0, 10) 🡪 loop from 0 to 9. Each iteration variable will have values as 0,1,2,3,4,5,6,7,8,9.

range(0,10,1) 🡪 loop starts from 0 and it increases its iteration variable value by 1 and ends on or before 9. Each iteration variable will have values as 0,1,2,3,4,5,6,7,8,9.

So, in conclusion, all above 3 range functions evaluate to same.

12. Write a short program that prints the numbers 1 to 10 using a for loop. Then write an equivalent program that prints the numbers 1 to 10 using a while loop.

**Ans:**

for i in range(1,11):

print(i)

flag, iter = True, 1

while flag:

print(iter)

if iter == 10:

flag = False

iter += 1

13. If you had a function named bacon() inside a module named spam, how would you call it after importing spam?

**Ans:**

import spam

spam.bacon()