

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

Ans: True and False. We write them as T or F.

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

Ans: Three different types of Boolean operators are: or, and, not

```
In [2]: 1 a=1
        2 b=0
        3 print(a==0 and b==0) # boolean and
        4 print(a==0 or b==0) # boolean or
        5 print(not(a==1)) # boolean not

False
True
False
```

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 evaluates to).

Ans: Truth Table for and operator:

- True and True is True
- True and False is False
- False and True is False
- False and False is False

Truth Table for or operator:

- True and True is True
- True and False is True
- False and True is True
- False and False is False

Truth Table for not operator:

- True not is False
- False not is True

4. What are the values of the following expressions?

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

```
In [4]: 1 (5 > 4) and (3 == 5)
```

```
Out[4]: False
```

```
In [5]: 1 not (5 > 4)
```

```
Out[5]: False
```

```
In [6]: 1 (5 > 4) or (3 == 5)
```

```
Out[6]: True
```

```
In [7]: 1 not ((5 > 4) or (3 == 5))
```

```
Out[7]: False
```

```
In [8]: 1 (True and True) and (True == False)
```

```
Out[8]: False
```

```
In [9]: 1 (not False) or (not True)
```

```
Out[9]: True
```

5. What are the six comparison operators?

Ans: ==, !=, <, >, <=, >=

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

Ans: == is the equal to operator used for comparison between two values and returns a Boolean value.

= is an assignment operator that stores a value in a variable.

```
In [12]: 1 a = 3
         2 print(a)
```

```
3
```

```
In [13]: 1 b = 5
         2 print(a==b)
```

```
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:

```
In [15]: 1 spam = 0
2 if spam == 10:
3     print('eggs')
4 if spam > 5:
5     print('bacon')
6 else:
7     print('ham')
8 print('spam')
9 print('spam')
```

ham
spam
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:

```
In [22]: 1 def spamCode(spam):
2         if spam == 1:
3             print('Hello')
4         if spam == 2:
5             print('Howdy')
6         else:
7             print('Greetings')
8 spamCode(1)
9 spamCode(2)
10 spamCode(3)
```

Hello
Greetings
Howdy
Greetings

9.If your program is stuck in an endless loop, what keys will you press?

Ans: Ctrl + c

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

Ans: Break moves execution to the outside a loop whereas a continue statement moves the execution to the start of the loop.

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

Ans: There is no difference between range(10), range(0, 10), and range(0, 10, 1) since all of them start from 0 and go till 9 in increments of 1.

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:

```
In [27]: 1 for i in range(1,11):
2         print(i)
```

1
2
3
4
5
6
7
8
9
10

```
In [2]: 1 i = 0
        2 num=0
        3 while i<10:
        4     num = num+1
        5     print(num)
        6     i=i+1

1
2
3
4
5
6
7
8
9
10
```

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

Ans: `spam.bacon()`