ASSIGNMENT -2 (PYTHON)

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

The two values of the Boolean data type are typically represented as true and false. In many programming languages, these values are written exactly as shown: true and false.

Booleans are fundamental in programming as they are used to control the flow of execution in conditional statements and loops, among other things.

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

The three different types of Boolean operators are:

1. AND: This operator returns true if both operands are true, otherwise, it returns false. In many programming languages, it's represented by the symbol &&.
2. OR: This operator returns true if at least one of the operands is true, otherwise, it returns false. In many programming languages, it's represented by the symbol ||.
3. NOT: This operator returns the opposite boolean value of the operand. If the operand is true, it returns false, and if the operand is false, it returns true. In many programming languages, it's represented by the symbol !.

3. Make a list of each Boolean operator&#39;s truth tables (i.e. every possible combination of Boolean

values for the operator and what it evaluate ).

1. AND Operator (&&):

| **Operand 1** | **Operand 2** | **Result** |
| --- | --- | --- |
| false | false | false |
| false | true | false |
| true | false | false |
| true | true | true |

1. OR Operator (||):

| **Operand 1** | **Operand 2** | **Result** |
| --- | --- | --- |
| false | false | false |
| false | true | true |
| true | false | true |
| true | true | true |

1. NOT Operator (!):

| **Operand** | **Result** |
| --- | --- |
| false | true |
| true | false |

These tables represent every possible combination of Boolean values for each operator and the result of evaluating those combinations.

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)

1. (5 > 4) and (3 == 5)
   * (5 > 4) evaluates to true
   * (3 == 5) evaluates to false
   * true and false evaluates to false
2. not (5 > 4)
   * (5 > 4) evaluates to true
   * not true evaluates to false
3. (5 > 4) or (3 == 5)
   * (5 > 4) evaluates to true
   * (3 == 5) evaluates to false
   * true or false evaluates to true
4. not ((5 > 4) or (3 == 5))
   * (5 > 4) evaluates to true
   * (3 == 5) evaluates to false
   * true or false evaluates to true
   * not true evaluates to false
5. (True and True) and (True == False)
   * True and True evaluates to true
   * True == False evaluates to false
   * true and false evaluates to false
6. (not False) or (not True)
   * not False evaluates to true
   * not True evaluates to false
   * true or false evaluates to true

So, the values of the given expressions are:

1. False
2. False
3. True
4. False
5. False
6. True

5. What are the six comparison operators?

The six comparison operators are:

1. Equal to (==): This operator checks if two operands are equal. It returns true if they are, otherwise false.
2. Not equal to (!=): This operator checks if two operands are not equal. It returns true if they are not equal, otherwise false.
3. Greater than (>): This operator checks if the left operand is greater than the right operand. It returns true if the condition is met, otherwise false.
4. Less than (<): This operator checks if the left operand is less than the right operand. It returns true if the condition is met, otherwise false.
5. Greater than or equal to (>=): This operator checks if the left operand is greater than or equal to the right operand. It returns true if the condition is met, otherwise false.
6. Less than or equal to (<=): This operator checks if the left operand is less than or equal to the right operand. It returns true if the condition is met, otherwise false.

6. How do you tell the difference between the equal to and assignment operators?Describe a

condition and when you would use one.

The equality operator (==) and the assignment operator (=) are two distinct operators used in programming, and they serve different purposes.

1. Equality Operator (==):
   * The equality operator is used to compare two values to determine if they are equal.
   * It evaluates to true if the values on both sides of the operator are equal, and false otherwise.
   * Example: if (x == 5) checks if the value of variable x is equal to 5.
2. Assignment Operator (=):
   * The assignment operator is used to assign a value to a variable.
   * It assigns the value on the right side of the operator to the variable on the left side.
   * Example: x = 5 assigns the value 5 to the variable x.

To distinguish between them:

* Equality Operator (==) is used in conditional statements or expressions to compare values.
* Assignment Operator (=) is used to assign values to variables.

For example, let's say you have a variable age and you want to check if it's equal to 18. You would use the equality operator as follows:

age = 18

if age == 18:

print("You are 18 years old!")

Here, the equality operator (==) is used to compare the value of age with 18 to determine if they are equal.

On the other hand, if you want to assign the value 18 to the variable age , you would use the assignment operator (=):

age = 18

Here, the assignment operator (=) is used to assign the value 18 to the variable age

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')

1. Block 1:

if spam == 10:

print('eggs')

This block contains the first conditional statement. It checks if the value of the variable spam is equal to 10. If it is, it prints 'eggs'.

1. Block 2:

if spam > 5:

print('bacon')

This block is the second conditional statement. It checks if the value of the variable spam is greater than 5. If it is, it prints 'bacon'. However, this block is not properly indented to be part of the first if statement, so it's a standalone conditional statement.

1. Block 3:

else:

print('ham')

print('spam')

print('spam')

This block contains the else clause for the first if statement. It prints 'ham' when the condition spam == 10is false. Additionally, it contains two print statements that are not conditioned by any if-statement.

So, the three blocks are:

* Block 1: Contains the first conditional statement.
* Block 2: Contains the second conditional statement, although it's not correctly nested under the first if statement.
* Block 3: Contains the else clause for the first conditional statement, along with two standalone print statements.

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.

spam = 3 # Assuming spam can store any integer value

if spam == 1:

print('Hello')

elif spam == 2:

print('Howdy')

else:

print('Greetings!')