**Python Basics**

**Score: 9/12**

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**1.What is the output of the following code? x = 10 y = 5 print(x//y)**

* 2
* 2.0
* 3
* 3.0

**Explanation**

The '//' operator performs floor division, which returns the largest integer that is less than or equal to the result of the division. So, the output of the code will be 2.

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**2.Which of the following statements is true about mutable objects in Python?**

* Lists and dictionaries are mutable
* Tuples are mutable
* Sets are mutable
* Strings are mutable

**Explanation**

Mutable objects in Python can be changed or modified after creation. This means that the value of the object can be altered.

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**3.What will be the value of x after the following code is executed? x = [1, 2, 3] y = x y.append(4)**

* [1, 2, 3]
* [1, 2, 3, 4]
* [1, 2, 4]
* [1, 2, 3, 4, 4]

**Explanation**

In Python, when a list is assigned to a new variable, it points to the same list object in memory. So, any changes made to 'y' will also affect 'x'. Therefore, the value of 'x' will be [1, 2, 3, 4] after the code is executed.

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**4.In Python, what is the purpose of the 'and' operator?**

* It is a bitwise operator
* It is used for string concatenation
* It is used for logical conjunction
* It is used to check object mutability

**Explanation**

The 'and' operator in Python is used for logical conjunction. It returns True if both the operands are True; otherwise, it returns False.

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**5.What will be the output of the following code? x = 5 y = 8 z = 10 print(x < y and y < z)**

* True
* False

**Explanation**

The 'and' operator checks the truth value of both operands. In this case, x is less than y (True) and y is less than z (True), so the result of the 'and' operation will be True.

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**6.Which of the following is a valid Python comment?**

* // This is a comment
* # This is a comment
* /\* This is a comment \*/

**Explanation**

In Python, comments are created using the '#' symbol, and anything following the '#' on that line is considered a comment and is ignored by the interpreter.

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**7.What is the value of 'result' after the following code is executed? x = 10 result = 'Pass' if x > 10 else 'Fail'**

* Pass
* Fail
* Error
* None

**Explanation**

The code uses a conditional expression (ternary operator) to assign the value of 'result'. Since x is not greater than 10 (x = 10), the expression 'x > 10' evaluates to False, so the value of 'result' will be 'Fail'.

x = 10

result = 'Pass' if x > 10 else 'Fail'

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**8.What is the output of the following code? x = True y = False print(not x or y)**

* True
* False

**Explanation**

The 'not' operator negates the boolean value of x (True), resulting in False. The 'or' operator returns True if at least one of the operands is True. In this case, the result will be False.

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**9.Which of the following is NOT a valid comparison operator in Python?**

* =
* ==
* !=
* >=

**Explanation**

In Python, '=' is an assignment operator, '==' is used for equality comparison, '!=' is used to check for inequality, '<' for less than, '>' for greater than, '<=' for less than or equal to, and '>=' for greater than or equal to. However, '=' alone is not a comparison operator.

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**10.What will be the output of the following code? x = 15 if x < 10: print('Less than 10') else: print('Greater than or equal to 10')**

* Less than 10
* Greater than 10
* Greater than or equal to 10
* Error

**Explanation**

Since the value of x is 15, the condition 'x < 10' is False. Therefore, the 'else' block will be executed, and the output will be 'Greater than or equal to 10'.

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**11.What is the value of 'result' after the following code is executed? x = 7 result = 'Even' if x % 2 == 0 else 'Odd'**

* Even
* Odd
* Error
* None

**Explanation**

The code uses a conditional expression (ternary operator) to assign the value of 'result' based on whether x is even or odd. Since 7 is not even (7 % 2 != 0), the value of 'result' will be 'Odd'.

x = 7

result = 'Even' if x % 2 == 0 else 'Odd'

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**12.In Python, which of the following is NOT a valid boolean value?**

* True
* False
* 0
* 1

**Explanation**

In Python, the boolean values are 'True' and 'False'. Any other values, such as 0 and 1, are interpreted as False and True, respectively.

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