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Programming Language

Lab 5a

First thing:

|  |  |  |  |
| --- | --- | --- | --- |
| Python | Runs? | Java | Runs? |
| if (2 + 2 ) :          print("(2 + 2 ) is True")      else :          print("(2 + 2 ) is False") | Run | if ( 2 + 2 ) {    System.out.println("(2 + 2) istrue"); } else {    System.out.println("(2 + 2) is false");  } | Not running |
| if (x = 2 + 2 ) :          print("(2 + 2 ) is True")      else :          print("(2 + 2 ) is False") | Not running | if ( x = 2 + 2 ) {    System.out.println("(2 + 2) istrue"); } else {    System.out.println("(2 + 2) is false");  } | Not running |
| a = 14  b = 4  c = 0    print(a and b)  print(c and b)  print(b or a) | Run | int a = 14; int b = 4; int c = 0;    System.out.println(b && a); System.out.println(c &&b);  System.out.println(b || c); | Not running |

In this way, we can conclude that, for python, arithmetic expression can be a part of a Boolean (as seen in the first case where it can be used as True). However, it is not working as a Boolean if the statement is to declare the value for a variable. On the other hand, Java differs for not being able to compile a Boolean that contains arithmetic expression within it.

Second Thing:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| A and B    (e.g.  x<y and y<z) | A | B | A and B | A or B    (e.g.  x<y or y<z) | A | B | A or B |
| T | T | Check both | T | T | Check one |
| T | F | Check both | T | F | Check one |
| F | T | Check one | F | T | Check both |
| F | F | Check one | F | F | Check both |

For this exercise, the code only compile once for cases where it can already able to conclude base on the first element that it examine.

* For A and B: check one case is where the first element that they check has already able to conclude Boolean is False.
* For A or B: check one case is where the first element that they check has already able to conclude Boolean is True.

I have also run the embedded code to double check and it showed similar pattern of short circuit.

Third Thing:

Comparing between the two files that run on Java and Python we can see that :

* Differences: On Python, the code where the input involves with “and” or “or” would be working as it will return the latter element that was input. However, for the case of Java, the equivalent “&&” did not make it, as I try to run the code, there will be errors disrupting program compilation.
* Similarities: Both environments accept the bitwise arithmetic, where it will evaluate the input integers bit by bit and the outcome of the process is a new bit that can eventually be converted back into a real integer. Furthermore, it is also notable that both environments return the same output when running the same codes, indicating that both executes the code and compare the bit integers similarly.