**In-class activity 9 – Boolean expressions, logical operators, and if statements**

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1. Indicate whether each Boolean expression below evaluates to True or False. Let **n=10** and **k=20**. Test your answer in Thonny.
   1. (n>10) and (k==20) ANSWER: False
   2. (n>10) or (k==20) ANSWER: True
   3. not( (n>10) and (k==20) ) ANSWER: True
   4. (not(n>10)) and (not(k==20)) ANSWER: False
   5. (n>10) or (k==10 or k != 5) ANSWER: True
   6. (n<20) or (k==20) ANSWER: True

For example, in Python you could write:

A close up of a logo

Description automatically generated

1. Give a Boolean expression for each of the following. Determine if variable **num** is:
   1. greater than or equal to 0 and less than 100.

ANSWER: (num >=0) and (num < 100)

* 1. less than 100 and greater than or equal to 0, or it is equal to 200.

ANSWER: (num < 100) and (num >= 0 or num=200)

* 1. a strictly positive number but not larger than 150 (inclusive).

ANSWER: (num > 0) and (num >=150)

1. Consider these lines of code to answer the following questions. Test your answer in Thonny.

if x>5:

print("A")

elif y<10:

print("B")

elif x==10:

print("C")

else:

print("D")

* 1. What prints out if initially x = 5 and y = 11? ANSWER: D
  2. What prints out if initially x = 10 and y = 11? ANSWER: A
  3. What prints out if initially x = 0 and y = 5? ANSWER: B
  4. Is there any value of x or y that will print “C”? ANSWER: No, if x is larger than 5 it will print out A

1. What exactly do the following statements print in Thonny? (Don’t forget to import random)
   1. print( random.random() ) ANSWER: 0.5340522266968155
   2. print( random.random() ) ANSWER: 0.5326701258853604
   3. print( random.random() ) ANSWER: 0.4230907473516944
   4. Why are they different? ANSWER: The random function introduces a random number that allow for simulations to behave differently
2. If you finish early
   1. complete problem 2.33 on page 72 of your book. Copy your function definition below.

ANSWER:

def orangeCost(lbs):

oranges = 0.32

shipping = 7.50

if lbs < 100:

cost = (oranges \* lbs) + shipping

elif lbs > 100:

cost = (oranges \* lbs) + (shipping - 1.50)

return(cost)

* 1. complete problem 2.35 on page 72 of your book. Copy your function definition below.

ANSWER:

?

**Each individual will submit this word document to Moodle (Activity 9) when finished.**