CS1 - Exercise 3

**1. Write down what each of the following pieces of code prints out. If there is an error in the code, describe the error.**

**(a)**

for a in range(0, 5):

for b in range(0, 5):

if is\_perfect\_square(a, b):

print(str(a\*b) + “ is a perfect square)

else:

print(str(a\*b) + “ is not a perfect square)

**(b)**

a = False

while not a:

for x in range(3, 22):

if a == 13:

a = True

**(c)**

def return\_false():

print(False)

return False

def return\_true():

print(True)

return True

a = return\_false() or return\_true()

b = return\_true() or return\_false()

c = return\_false() and return\_true()

d = return \_true() and return\_false()

print(a, b, c, d)

**(d)**

n = -1

while n > -3:

print(n, m)

m = n - 1

while m > -4:

m -= 1

n-= 1

print(m, n)

**2. Write the selection\_sort algorithm with a while loop instead of a for loop (hint: refer to chapter 9).**

**6. Modify the selection\_sort algorithm to order the characters in a string (e.g., “bafdc” -> “abcdf”).**

**7. Modify the bouncing ball gravity problem found in chapter 10 so that the source of gravity flips from the bottom to the top of the screen every x seconds (do this problem on your computer, not by hand).**