Problem: 1 Write appropriate data types for each of the following items. Provide one line justification for your choice. Solve this problem on a paper sheet.

1. Age of a person (in years)

integer data type (int) since the age is always whole number.

1. Speed of light

Integer since the speed of light is a whole number.

1. Gender

Char since it can be just M or F.

1. Coordinates of a point

Float since the coordinates can also have decimal places.

1. Factorial of a number

Integer (int) since the factorial can only be a whole number and can never have decimal points.

f) The number of plants in a region

Integer (int) since it can only be a whole number and can never have decimal points.

g) Mass of an electron

Long Double because it’s a really large value and might overflow in float and since float can only represent to 7 digits of precision and double can only represent up to 16 digits but the mass of an electron is about 31 digits after the decimal.

Problem: 2

Predict the output of the following expressions. Also, justify your answer by solving the expressions manually. Solve this problem on a paper sheet.

1. If d is a float, then the operation d=2/7 would store 0.000000 in d.

Float can store values up to 7 digits.

1. If x is an integer, then the expression x=-7%2-8 would evaluate to -9.

The % will be served first because of higher precedence giving -1 then finally -1-8 gives -9.

1. If c=0, then the expression 5&&c! =8||!c would evaluate to 1(True).

The “NOT” will be evaluated first since it has a higher precedence changing 0 to 1. Then AND will be served giving 0. Then OR will be served giving 1 on the other side. Since 1 is not equal to 0, it gives True(1).

1. The expression a=b=c=3+4 would evaluate to a = 7, b = 7, c = 7.

Going from left to right, 7 is stored in c then in to b and then into a.

1. The expression y=z=-3%-8/2+7 would evaluate to y = 6, z = 6.

-3%-8 is -3, -3/2 + 7 is -1+7 = 6



