Nathaniel Daniel

Nicolescu

CS 477

25 September 2020

HW4

1.

    a. Yes.

    b. No.

    c. Worst Case.

    d. Worst Case.

2.

    a. See problem2.cpp.

3. Let X = I(G) = 1 if a visitor gets their own bag, 0 if they don't.

   Let P(G) be the probability a visitor gets their bag back.

   P(G) = 1/n

   P'(G) = (n - 1) / n

   E(X) = [1(1/n) + (0 * [(n - 1) / n])(n - 1)](n)

   E(X) = (1/n)n = 1

   E(X) = 1.

   Therefore, only one visitor is expected to get their bag back.

4. Yes, the company will make a profit. E(x) = (49)(3) + (-80)(1) = 67. So, the company will make a profit in the long term, as they make an average of $67 per 50 toys.