CON101 Assignment#4-B

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1. Strategy

We know that X_1 is uniform for $\{1, 4, 16, 64\}$, X_2 in $\{1, 3, 9, 27\}$ and X_3 in $\{1, 2, 4, 8\}$. $E(X_1) = 21.25,\ E(X_2) = 10\ and\ E(X_3) = 3.75$. Now or strategy will be:

1. First choose box X_1

2. If we reject X_1, we have to choose both X_2 and X_3. Therefore we can reject X_1 only if $X_1 < min(E(X_2), E(X_3)) = 3.75$.

3. On accepting X_1 strategy for X_2 is similar. I $X_2 < 3.75$, we reject it and choose 3rd box, else we choose 2nd.

2. Expected Pay

We calculate payoff as follows.

1. If $X_1 < 3.75$, which has probability $1/4$, then the sum expected is $E(X_2) + E(X_3) = 13.75$

2. Else we have 2 cases.
   i. If $X_2 < 3.75$, which has probability $1/2$, we will reject it, then expected sum = 28 + 3.75 = 31.75.
   ii. Else we accept X_2, probaility = $1/2$. Expected Sum = 46

Hence Expected sum can be written as:

$$E(X) = \frac{1}{4} * 13.75 + \frac{3}{4} * (\frac{1}{2} * 31.75 + \frac{1}{2} * 46) = 32.59$$