CS754 Assignment-4

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Declaration: The work submitted is our own, and we have adhered to the principles of academic honesty while completing and submitting this work. We have not referred to any unauthorized sources, and we have not used generative AI tools for the work submitted here.

Question 2

Part (a)

We are sampling from a set of n coupons, with replacement.

So far, from the previous $j-1$ trials, we have been getting unique coupons. So, now we have $n-j+1$ coupons left, out of which we can select any one for uniqueness. Total varieties of coupons = n. So, the probability of picking up a unique coupon is: $\frac{n-j+1}{n}$. (For $j > n$, this probability is 0, because of pigeon-hole principle.)

$q_1 = \frac{n-1+1}{n} = 1$ (This also follows from the fact that the first coupon will be always unique.)