Lab-8 Group-2

Q1. B

there are ${}^{n}C_2$ pairs of keys that may collide; each pair collides with probability $1/m$ if $h$ is chosen at random from a universal family $\mathcal{H}$ of hashing functions.

Let $X$ be a random variable that counts the number of collisions. When $m = n^2$

The Expected number of collisions is

$$E[X] = {}^{n}C_2 * \frac{1}{n^2}$$

$$= \frac{n^2 - n}{2} * \frac{1}{n^2}$$

$$= \frac{1}{2} - \frac{1}{2n}$$

$$< 1/2$$