

Answer on Question #57044 – Math – Statistics and Probability

A hash table has space for 75 records, then the probability of collision before the table is 6% full.

Solution

To make the table 6% full, we need to insert at least $\left(\frac{75 \cdot 6}{100}\right) = 4.5$ round up to 5 values.

Probability of collision during first insertion is 0

Probability of collision during second insertion is $\frac{1}{75}$

Probability of collision during third insertion is $\frac{2}{75}$

Probability of collision during fourth insertion is $\frac{3}{75}$

Probability of collision during fifth insertion is $\frac{4}{75}$

Probability of collision during sixth insertion is $\frac{5}{75}$

So, total probability of collision to make the table 6% full is

$$\frac{1 + 2 + 3 + 4 + 5}{75} = 0.2$$

Answer: 0.2.