The probability of any two people both deciding to visit on any given day is = .0001

The chance that they will visit the same hotel = .0001 /10^5 = 10 ^-9

The chance that they will visit the same hotel on two different days = (10 ^ -9) ^2 = 10 ^-18

The number of pair of people = 10^9 C 2 = 5 \* 10 ^ 15

The number pair of days = 1000 C 2 = 5 \* 10 ^5

The number of people can do evil things 5 \*10 ^17 \* 5 \* 10^5 \* 10 ^ -18 =250,000

1.2.1

a.

The number of days = 2000

The probability of any two people both deciding to visit on any given day is = .0001

The chance that they will visit the same hotel = .0001 / 10^5 = 10 ^-9

The chance that they will visit the same hotel on two different days

= (10 ^ -9) ^2 = 10 ^-18

The number of pair of people = 10^9 C 2 = 5 \* 10 ^ 17

The number pair of days = 2000 C 2 = 2000 \* 2000 /2 = 2 \* 10 ^6

The number of people can do evil things 5 \*10 ^17 \* 2 \* 10^6 \* 10 ^ -18 = **10 ^6**

**One million people will look like evil-deors.**

**b.**

The number of days = 1000

Number of people = 2 \* 10 ^9 (2 billion)

Hotels = 200,000

The probability of any two people both deciding to visit on any given day is

= .0001

The chance that they will visit the same hotel

= 0.0001 /2 \* 10^5

= 10 ^-9 /2

= 5 \* 10 ^ -10

The chance that they will visit the same hotel on two different days

= (5\* 10 ^ -10) ^2

= 25 \* 10 ^ -20

The number of pair of people

= 20^9 C 2

= 2 \* 2\* 10 ^ 18 /2

= 2 \* 10 ^ 18

The number pair of days = 1000 C 2

= 1000 \* 1000 /2

= 5 \* 10 ^5

The number of people can do evil things

= 25 \* 10 ^ -20\* 2 \* 10 ^ 18 \*5 \* 10 ^5

= **250000**

**250,000 people will look like evil-deors.**

**C. People who are stayed in same hotel for Three different days**

The number of days = 1000

Number of people = 1 \* 10 ^9 (2 billion)

Hotels = 100,000

The probability of any two people both deciding to visit on any given day is

= .0001

The chance that they will visit the same hotel

= 10 ^-9

The chance that they will visit the same hotel on three different days

= 10 ^ -27

The number of pair of people

= 10 ^9 C 2

= 10 ^ 18 /2

The number 3 of days = 1000 C 3

= 1.66 \* 10 ^8

The number of people can do evil things

= 10 ^ -27 \* 5 \* 10 ^ 17 \* 1.66 \* 10 ^8

= 5 \* 1.67 \* 10^-2

= 0.083

**1.2.2**

**People purchases at super market = 10 ^ 8**

**Each person goes to super market 100 times a year.**

**Probability one person selecting 10 items out of 1000 items in 100 days = 100 /1000 C 10**

**2-person selecting 10 items out of 1000 items 100 days**

**= (100/ 1000 C 10) ^2 [ 1000 C 10 = 2.63 \* 10^ 23]**

**= 38 \* 38 \* 10^-46**

**Number of pair of people = 10 ^8 C 2 = 5 \* 10 ^15**

**Number of people buying same item in 100 days =100 \* 5 \* 10 ^ 15 \* 38 \* 38 \* 10^-46**

**There is no chance of people buying same items in a year.**