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STATISTICS FOR DATA SCIENCE

ASSIGNMENT 13

1. Ignoring leap days, the days of the year can be numbered 1 to 365. Assume that birthdays are equally likely to fall on any day of the year. Consider a group of n people, of which you are not a member. An element of the sample space Ω will be a sequence of n birthdays (one for each person).

(a) Define the probability function P for Ω..

(b) Consider the following events:

       A: “someone in the group shares your birthday”

       B: “some two people in the group share a birthday”

       C: “some three people in the group share a birthday”

Carefully describe the subset of Ω that corresponds to each event.

(c) Find an exact formula for P(A). What is the smallest n such that P(A) > .5?

(d) Find an exact formula for P(B) and P(C)

Answer.

1. The probability P for Ω is **n/365 .**
2. A: **(6)**

B: **(6,6)**

C: **(6,6,6)**

1. P(A) = **n/365** . The minimum value of n for which P(A)>.5 = **183**
2. P(B) = **(n-1)/365**

P(C) = **(n-2)/365**