# The Birthday Problem

## 1 Introduction

Suppose that 15 people are gathered together in a room. What are the odds that two people in the room share the same birthday? In this project, you will estimate this quantity and its generalization using simulations.

## 2 Objective

The goal of this activity is to use simulations to estimate the probability that two out of $N$ people in a room share the same birthday. It is guaranteed that $2 \leq N \leq 30$.

## 3 Additional Notes

1. You may assume that no one in the room is born on February 29th.
2. While the actual probability can be computed if you have taken a statistics course, that is not the objective here. The goal is to *estimate* the probability by running many simulations.

## 4 Grading Criteria

This project is worth a total of 10 points:

- (3 points) Introduction and Discussion - Introduce the problem and explain how your algorithm/function works.
- (5 points) Algorithm and Implementation - The algorithm designed and implemented in Python solves the problem.
- (2 points) Neatness and Timeliness - Your write-up is neat, clear, and turned in on time. The assignment must be typed (as a Jupyter notebook) and completed by 11:59pm on November 9th.