Problem.

The Birthday Problem: The birthday problem is stated as follows:

If there is a group of n people in a room, what is the probability that two or more of them having same birthday? It is possible to determine answer to this question by simulation. (Hint: You can generate random dates, n times and determine the fraction of people who born in a given day). Write a function that determines the answer to this question by simulation. The program you write can take n as the input and prints out the probability that two or more of n people will have the same birthday for n=2,3,4…. 40

Solution.

Code (MATLAB)

```matlab
function probability()
    clc();

    % Input
    n = input('The number of people: ');
    m = 1000;
    simSuc = 0;

    % Simulation loop
    for i = 1:1:m
        simGrp = randi(365, 1, n);
        if length(unique(simGrp)) ~= n
            simSuc = simSuc + 1;
        end
    end
    % Output
    fprintf('The probability that two or more of %d people\nwill have the same birthday equals %f\n', n, simSuc/m);
end
```

Result

```
The number of people: 25
The probability that two or more of 25 people
will have the same birthday equals 0.580000
>>
```