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COS 497 Spring 2011 Class Exercise 5 4 questions; 2 pgs. Due 2011-01-25 12:15 p.m.
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This exercise is based on the Programming Pearls column on literate programming. ${ }^{1}$

1. List the members of your group below. Underline your name.
2. Consider the problem defined in Section 1 of Program 1 of the paper. What is the number of distinct outputs as a function of $N$ and $M$ ? What is the growth rate of your answer? Justify your answer.
3. Is the while loop in Section 6 of the program guaranteed to terminate? What is the expected number of iterations? Why?

[^0]4. Trace the operation of the program for $N=100$ and $M=10$, depicting the state of the hash array after each new element is inserted.
Assume that the function rand_int $(1,100)$ returns the number obtained by adding one to number formed by consecutive 2-digit substrings in the decimal expansion of $\pi-3$ :
 58209749445923078164062862089986280348253421170679


[^0]:    ${ }^{1}$ Jon Bentley and Don Knuth, "Programming Pearls: Literate Programming," Communications of the ACM 29/5 (1986).

