Generation of Discrete RVs

- Suppose we wish to generate the outcomes of a random experiment with sample space $S_X = \{a_1, \ldots, a_n\}$ with probabilities of elementary events $p_j = P[\{a_j\}]$. How to generate the outcome of this experiment using computer simulation:
  1. Divide the unit interval into n subintervals
  2. Set the length of the j-th subinterval to p_j, corresponding to the outcome a_j
  3. Generate a random number U in a unit interval
  4. Set the outcome of the experiment to a_j if U is in the j-th subinterval.