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Submitter :
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Binomial Random Numbers

Subroutine subprogram RNBNML generates a random integer $N > 0$ according to the binomial distribution

$$Prob(N = n) \; = \; \binom{M}{n} P^n \, (1 - P)^{M-n}$$

where the 'sample size' $M > 0$ and the probability P ($0 \leq P \leq 1$) are specified by the user.

Structure:

SUBROUTINE subprogram
User Entry Names: RNBNML
External References: RANLUX (V115)

Usage:

```
CALL RNBNML(M,P,N,IERR)
```

M	(INTEGER) Sample size M.
P	(REAL) Probability P.
N	(INTEGER) The generated random number N, binomially distributed in the interval $0 \leq N \leq M$ with mean $P \times M$.
IERR	(INTEGER) Error flag. $=$ 0 : Normal case, $=$ 1 : P $\leq$ 0 or P $\geq$ 1.

Notes:

RNBNML should not be used when M is 'large' (say > 100). The normal approximation is then recommended instead (with mean $\mathtt{P} * \mathtt{M} + 0.5$ and standard deviation $\sqrt{\mathtt{M} * \mathtt{P} * (1 - \mathtt{P})}$).

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