independent identically distributed

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Entry type	Definition
Classification	msc 60-00
Synonym	iid
Synonym	independent and identically distributed
Defines	identically distributed

Two random variables X and Y are said to be *identically distributed* if they are defined on the same probability space $(\Omega, \mathcal{F}, P)$, and the distribution function F_X of X and the distribution function F_Y of Y are the same: $F_X = F_Y$. When X and Y are identically distributed, we write $X \stackrel{d}{=} Y$.

A set of random variables X_i, i in some index set I, is identically distributed if $X_i \stackrel{d}{=} X_j$ for every pair $i, j \in I$.

A collection of random variables X_i ($i \in I$) is said to be *independent identically distributed*, if the X_i's are identically distributed, and http://planetmath.org/Independent independent (every finite subfamily of X_i is independent). This is often abbreviated as *iid*.

For example, the interarrival times T_i of a Poisson process of rate λ are independent and each have an exponential distribution with mean $1/\lambda$, so the T_i are independent identically distributed random variables.

Many other examples are found in statistics, where individual data points are often assumed to realizations of iid random variables.