1096-05-1805 **Stephen T. Hedetniemi*** (hedet@clemson.edu), School of Computing, Clemson University, Clemson, SC 29634, **Sandra M. Hedetniemi** (shedet@clemson.edu), School of Computing, Clemson University, Clemson, SC 29634, **Renu C. Laskar** (rclsk@clemson.edu), Department of Mathematical Sciences, Clemson University, Clemson, SC 29634, and **Gerd H. Fricke** (g.fricke@moreheadstate.edu), Department of Mathematics, Morehead State University, Morehead, KY 40351. *A Contribution to Irredundance and Distance-2 Domination in Graphs.* Preliminary report.

Let $G = (V, E)$ be a graph. The *open neighborhood* of a vertex $v \in V$ is the set $N(v) = \{u | uv \in V\}$ and the *closed neighborhood* of v is the set $N[v] = N(v) \cup \{v\}$. The *open neighborhood* of set S of vertices is the set $N(S) = \bigcup_{v \in S} N(v)$, while the *closed neighborhood* of a set S is the set $N[S] = \bigcup_{v \in S} N[v]$. A set $S \subset V$ *dominates* a set $T \subset V$ if $T \subseteq N[S]$. A set $S \subset V$ is a *dominating set* if $N[S] = V$; is a *minimal dominating set* if it is a dominating set, but no proper subset of S is also a dominating set; and is a γ*-set* if it is a dominating set of minimum cardinality. In this paper we consider the family $\mathcal{D}$ of all dominating sets of a graph G, the family $\mathcal{MD}$ of all minimal dominating sets of a graph G, and the family γ of all γ-sets of a graph G. The study of these three families of sets provides new characterizations of *distance*-2 *domination* and *irredundance* in graphs. (Received September 16, 2013)