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Graphical Representation of Rings

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Let R be a commutative ring with identity. Let $\Gamma(R)$ be a graph with vertices as elements of R, where two distinct vertices a and b are adjacent if and only if $Rx + Ry = R$. This talk is a survey of some of the developments in this subject in which we took some part. We consider a subgraph $\Gamma_2(R)$ of $\Gamma(R)$ which consists of non-unit elements. It is shown that $\Gamma_2(R) \setminus J(R)$ is a complete bipartite if and only if the cardinal of the set of maximal ideals of R is equal 2. We look at the connectedness and the diameter of this graph.

This is joint work with Siamak Yassemi.