$xy|x^m, y^n$ implies that $x|y^{n-1}$ and $y|x^{m-1}$ i.e. every non zero non unit of R is a quantum and hence a prime quantum because of the HCF property and hence R is a rank one valuation domain.

To proceed further we need some more definitions.

An integral domain R in which every finitely generated ideal is principal(invertible) is called a Bezout(Prüfer) domain. It is well known that a Prüfer domain which is also an HCF domain is a Bezout domain and equally well known is the fact that an integral domain R is Prüfer iff R_P is a valuation domain for each prime ideal P (cf e.g. [5]). A generalized Krull domain which is also Prüfer(Bezout) will be called a Prüfer(Bezout) GKD.

As no convenient and to the point reference is available we include

Lemma 18. A GKD R is a Prüfer GKD iff every non zero prime ideal of R is maximal.

Proof. Let R be a Prüfer GKD and let P be a non zero prime ideal in R, then R_P is a GKD ([9] p. 513). But the Prüfer condition implies that R_P is a valuation domain. If P is not minimal then R_P is a valuation domain of rank greater than 1, which implies that there exist non units in R_P which are contained in no minimal prime ideals, a contradiction to the fact that R_P is a GKD and hence implying that every non zero prime ideal of R is minimal. The converse is obvious.

Now a GUFD is an HCF-GKD and so for a GUFD to be Bezout all we need to state is

Corollary 8. A GUFD R is a Bezout GUFD(Bezout GKD) iff every non zero prime ideal of R is maximal.

Gilmer and Ohm in [18] prove that a UFD is a PID iff it has the Q.R-property, where an integral domain R is said