morphisms between bound quivers

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Let (Q, I) and (Q', I') be http://planetmath.org/AdmissibleIdealsBoundQuiverAndItsAlg quivers over the same base field k.

Definition. A morphism $F : Q \to Q'$ is said to be **bounded by** (I, I') if http://planetmath.org/MorphismsOfPathAlgebrasInducedFromMorphismsOfQuiversthe induced linear map $\overline{F} : kQ \to kQ'$ is such that

$$\overline{F}(I) \subseteq I'.$$

In this case we write

$$F : (Q, I) \to (Q', I')$$

and we say that F is a **morphism of bound quivers**.

If $F : (Q, I) \to (Q', I')$ is a morphism of bound quivers, then $\overline{F} : kQ \to kQ'$ induces a linear map

$$\overline{\overline{F}} : kQ/I \to kQ'/I'.$$

Furthermore, if F_0 is injective, then $\overline{F}$ is a homomorphism of algebras (see http://planetmath.org/MorphismsOfPathAlgebrasInducedFromMorphismsOfQuiversthis entry for details) and thus $\overline{\overline{F}}$ is a homormorphism of algebras.