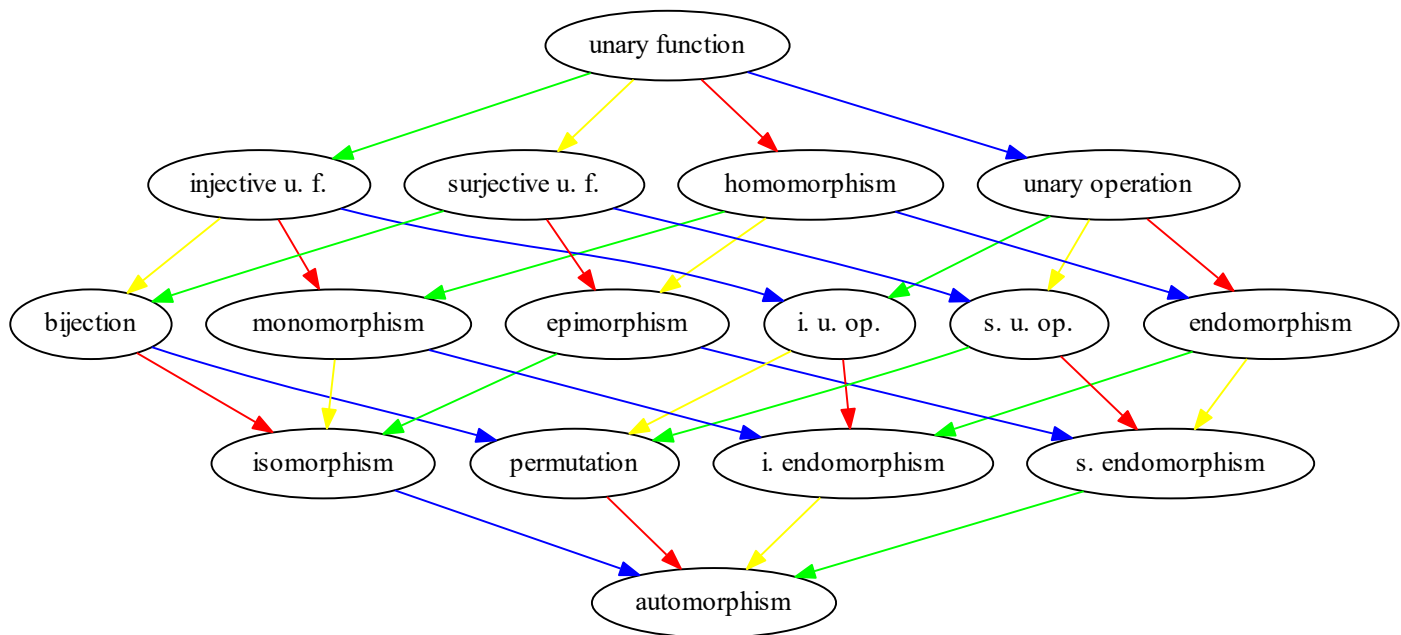# Classification of unary functions

- Each green edge adds the requirement of injectivity.

- Each yellow edge adds the requirement of surjectivity.

- Each red edge adds the requirement of compatibility with operations.

- Each blue edge adds the requirement of identity between the domain and the codomain ("to be an operation").

unary function

injective u. f.   surjective u. f.   homomorphism   unary operation

bijection   monomorphism   epimorphism   i. u. op.   s. u. op.   endomorphism

isomorphism   permutation   i. endomorphism   s. endomorphism

automorphism

This applies for algebraic structures only.

If the structure is finite, then every injective (surjective) unary operation is automatically surjective (injective), therefore every green (yellow) arrow from "unary operation" goes directly to "permutation" and every green (yellow) arrow from "endomorphism" goes directly to "automorphism".