

CSc 245 Discrete Structures - Summer 2020

Quiz #5

Solutions

1. (6 points) Given the function $F : \{(1, 1), (2, 3), (3, 2), (4, 1), (5, 2)\}$ from $\{1, 2, 3, 4, 5\}$ to $\{1, 2, 3\}$
 - (a) If we add another pair to F , can it still be a function? If yes, give such a pair.
No. All values in our Domain are already mapping to a value. Any pair we add will map a value in the domain to a second value which violates the definition of a function
 - (b) Is this function injective or surjective (or both)?
The function is surjective because every element in the codomain is mapped to at least once. It is not injective because it maps to 1 and 2 multiple times.
 - (c) Why can't the relation (edit: function) be bijective?
The function is not injective so it can't be bijective.
The function cannot be bijective because the function is not invertible. The codomain is smaller than the domain so if you invert the function's elements of the new domain will map to multiple values in the new codomain.
2. (4 points) Integers
 - (a) What are the factors of 68?
1,2,4,17,34,68
 - (b) What is the prime factorization of 68?
 $2^2 \cdot 17$
 - (c) What are the LCM and GCD of 68 and 42?
 $42 = 2 \cdot 3 \cdot 7$.
 $\text{GCD}(68,42) = 2$
 $\text{LCM}(68,42) = 2^2 \cdot 17 \cdot 3 \cdot 7 = 1428$