

# CSE 191 Recitation

3/27/23 - 3/31/23 - Functions and Relations



# Relations

Consider the relation  $R_1$  over the set {people in this room}, where  $x R_1 y$  if  $x$  visited at least as many countries as  $y$ .

Is  $R_1$  reflexive? symmetric? anti-symmetric? transitive?

Is  $R_1$  a partial ordering? a total ordering? equivalence relation?  $\exists x \forall y, x R_1 y$ ?

Consider the relation  $R_2$  over the set {people in this room}, where  $x R_2 y$  if  $x$  knows  $y$ 's name.

Is  $R_2$  reflexive? symmetric? anti-symmetric? transitive?

Is  $R_2$  a partial ordering? a total ordering? equivalence relation?  $\exists y \forall x, x R_2 y$ ?

# Functions

Let  $f_0: \{1,2,3\} \rightarrow \mathbb{Z}$ , defined as  $\{(1,1), (1,2), (2,2), (2,3)\}$

Is  $f_0$  a function? domain? codomain? range? injective, surjective, bijective?

Let  $f_1: \mathbb{Z} \rightarrow \mathbb{Z}^+$ , defined by  $f_1(a) = |a|$  (absolute value of  $a$ )

Is  $f_1$  function? domain? codomain? range? injective, surjective, bijective?

Let  $f_2: \mathbb{Z} \rightarrow \mathbb{Z}$ , defined by  $f_2(a) = a + 1$

Is  $f_2$  a function? domain? codomain? range? injective, surjective, bijective? inverse?