In this chapter we aim to prove Lindström’s characterization of first-order logic as the maximal logic for which (given certain further constraints) the Compactness and the Downward Löwenheim–Skolem theorems hold (?? and ??). First, we need a more general characterization of the general class of logics to which the theorem applies. We will restrict ourselves to relational languages, i.e., languages which only contain predicate symbols and individual constants, but no function symbols.

Photo Credits

Bibliography