CS131 Homework #3 (15 pts)

1. (5 pts) Translate the following sentences into formal logic, explaining the domain of the variable x and the meaning of the propositional functions.

In a, b, c use all people as a domain of x.

* 1. Every student of CS131 knows Python and Java.
  2. Some students of CS131 know C or C++ or C#.
  3. Every student majoring in CS that gets a grade less than C in CS131 needs to retake it.
  4. For NFC (near-field communication) between phone devices to work, they have to be no more than an inch apart. (Phones being close is necessary for NFC to work).

Dist(d1,d2) – distance between d1 and d2

Dist(d1,d2)≤1)

Alternatively:

Dist(d1,d2)>1NFC(d1,d2))

* 1. For every real number ε > 0, there exists a positive number C such that |f(x) – L| < ε whenever x > C.

1. (4 pts) Name four main programming paradigms and a corresponding programming language.

Imperative: Fortran, Cobol, C

Object-oriented: C++, Java, C#, Python, Scala

Functional: Haskell, Lisp, Scheme, R, Mathematica, Scala

Logical: Prolog

1. (6 pts) Using facts and rules of a Prolog program at slides 5 and 6 of Lecture 7 make Prolog queries: “who is instructor of CS301?”, “who is taking CS301?”, “what professors are teaching student kiko?”, and write Prolog responses to these queries.

?instructor(X,CS301).

X=grossman;

no

?enrolled(X,CS301).

X=juana;

X=kiko;

no

?teaches(X,kiko).

X=chan;

X=grossman;

no