CSCI910 – Software Requirements, Specifications and Formal Methods

Tutorial 7, CCNU Summer 2020

Objectives

- Get familiar with predicates

Exercise 1: Practice to write predicates

Consider to management of bank accounts.

1. Write a declaration to introduce *AccNo* as a given set for account numbers.

2. Write a single declaration to introduce the following sets:
   a. *Active* is the set of account numbers that are in use.
   b. *Overdrawn* is the set of account numbers of the accounts that are overdrawn.
   c. *Depositor* is the set of account numbers of deposit account, i.e. accounts that received interest.
   d. *Current* is the set of account numbers of current account, i.e. accounts that receive no interests.

3. Write predicates to formalize the following statements:
   a. Only active accounts can be overdrawn.
   b. Only current accounts can be overdrawn
   c. The active accounts are the deposit accounts and the current accounts taken together.
   d. No account can be both a deposit accounts and a current account.
   e. No deposit account can be overdrawn.

4. Write a predicate to formalize the statement ‘overdraw accounts are those accounts that have negative balance’.
   Suppose that we have defined balance by a partial function:
   Balance: $AcctNo \pfun Z$