

Concordia University Department of Computer Science and Software Engineering

SOEN 331 Section S: Formal Methods
for Software Engineering

Assignment 2

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1 System Requirements

Consider a system such as *flightradar24.com*. A flight is associated with a **flight number** (such as UA79), a specific code that an airline assigns to a particular flight in its network, and a route which is a source-destination city pair such as $(NY, Tokyo)$. For example, the United Airlines flight from New to Tokyo is tracked by the system as $UA79 \mapsto (NY, Tokyo)$. The formal specification of the system introduces the following three types:

FLIGHT_NUMBER,
ROUTE,
CITY

where

$ROUTE : CITY \times CITY$

Flight numbers are unique, and there are possibly several flights that cover the same route. For example, there are possibly several flights from New York to Tokyo. The system must keep track of all active flights. Formally, let us have the following variables:

1. *active*: holds all active flight numbers.
2. *map*: holds a collection of active flight-route pairs.

2 Your Assignment

2.1 Description:

1. (2 pts) Provide a declaration for variable *active*.

Solution: