

SOEN331: Introduction to Formal Methods  
for Software Engineering  
Assignment 2 on Object-Z specification

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January 31, 2019

# 1 Employee management

*EmployeeSalaries*

$\uparrow (\text{AddEmployee}, \text{DeleteEmployee}, \text{ModifySalary})$

$\text{employeeSalary} : \text{Employee} \rightarrow \mathbb{R}$

$\forall d : \text{dom } \text{employeeSalary} \bullet \text{employeeSalary}(d) > 0.0$

*INIT*

$\text{employeeSalary} = \emptyset$

*AddEmployee*

$\Delta(\text{employeeSalary})$

$\text{newEmployee?} : \text{Employee}$

$\text{salary?} : \mathbb{R}$

$\text{salary?} > 0.0$

$\text{newEmployee?} \notin \text{dom } \text{employeeSalary}$

$\text{employeeSalary}' = \text{employeeSalary} \cup \{\text{newEmployee} \mapsto \text{salary?}\}$

*DeleteEmployee*

$\Delta(\text{employeeSalary})$

$\text{who?} : \text{Employee}$

$\text{who?} \in \text{dom } \text{employeeSalary}$

$\text{employeeSalary}' = \{\text{who}\} \triangleleft \text{employeeSalary}$

*ModifySalary*

$\Delta(\text{employeeSalary})$

$\text{employee?} : \text{Employee}$

$\text{newSalary?} : \mathbb{R}$

$\text{newSalary?} > 0.0$

$\text{employee?} \in \text{dom } \text{employeeSalary}$

$\text{employeeSalary}' = \text{employeeSalary} \oplus \{\text{employee?} \mapsto \text{newSalary?}\}$