Additional Topics

Justify each of the following statements, with the help of some formal details and examples.

“The dynamic behaviour of programs in a programming language can be defined in terms of a formal logical system, in which each sentence which can be inferred in the logic represents the evaluation of a piece of program.”

“The type discipline of a programming language can be defined in terms of a formal logical system, in which each sentence which can be inferred in the logic represents the assertion that a piece of program obeys the discipline.”

Give and explain two examples of theorems about the behaviour of Standard ML programs which can be expressed and proved in terms of either or both of the two logical systems described above.