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**Modelling an Online Library System using Event-B**COMP1216: Software Modelling and Design

University of Southampton

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**Group 7**

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**Summary:**

As part of the COMP1216 module and as a continuation of the first group coursework where a design specification for an online library system was created using UML, the library system was then formally modelled using Event-B as the second group coursework. The primary requirements of the system are summarized as follows:

* Users can login with their password (multiple device logins are ignored) and have different permission levels which determine what they’re able to do within the system
* Books, websites and articles exist within the system as resources which have properties such as title, author and url.
* Reading lists can be created by lecturers within the system, which contain multiple resources.
* Books can be borrowed using a token system which limits the instances of that book being borrowed to the number of licenses it has, following which, users can request to be added to a first come first serve queue for that book.

**Code:**

The code is primarily split up into 3 files, the context file *LibraryContext.bucx* and the machine files *Library.bumx* and a refinement file *Library1.bumx*.

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**The code within the machine file *Library.bumx* is as follows:**

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Description automatically generated**The code within the machine file *Library1.bumx* is as follows:**

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