

Report on the UNU-IIST/ IFIP WG2.3 Summer School on Formal Models for Software

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Software components are everywhere and they are pointed out by many actors as responsible for many malfunctions in used systems. That's why it is highly important to use formal models for the specification and verification of software systems.

Members of the Working Group G2.3 of the International Federation of Information Processing Societies (IFIP) have been working on these concepts for many years. Schools are organized periodically to diffuse "Formal Software" culture among academics and professionals.

Recently IFIP WG2.3 has joined with the United Nations University – International Institute for Software Technology at Macau (UNU/IIST), the LIP2 Computer Science Laboratory from the faculty of sciences of Tunis and Tunisia Polytechnic School to conduct a school on "Formal Models of Software". The school took place from September 1 to September 6, 2003 at the Tunisia Polytechnic School, La Marsa, Tunisia.

Financial support came from 7th of November University at Carthage, UNU/IIST and Microsoft Research. Lecturers at the school were :

Ralph Back, Abo Akademi, Finland

Manfred Broy, TU Munich, Germany

Ernie Cohen, Microsoft, USA

Rustan Leino, Microsoft, USA

Zhiming Liu, UNU/IIST, Macau

Lectures were organised in 90 minute-sessions, 4 sessions each day separated by coffee breaks and lunch. A discussion session was organised at the end of each day to answer attendees' question and evaluate the daily program. The program of the school included also

an excursion that was organized on Wednesday to some historic sites in Tunisia (Thuburbo Majus, Kairouan and Sousse) that was aimed to give the attendees a brief introduction to the history of Tunisia from old days till the modern era.

The school was attended by 81 participants : 53 regularly registered, 12 invited professors and 16 invited students. The average number of attendees was about 50 persons per lecture. Most participations came from Tunisia and neighbouring Algeria. Other international participations were from France, Italy, Lebanon, United Arab Emirates, and United Kingdom. Participants came from different backgrounds : post-graduate students, professors and professionals in computer science area.

All the lecturers provided documents related to their lectures that were printed and distributed in the welcome pack to all the attendees to help them benefit from the lectures. These documents were either a copy of the slides that were to be presented, a "state of the art" paper or a list of bibliographic material that can help go deeper in presented subjects.

The participation fees were maintained at a very low level (120 euros including accommodation, excursion and welcome pack) thanks to the funding provided by the sponsors and particularly UNU/IIST. Some of the post-graduate students were admitted for free.

Ralph Back presented a series of lectures dedicated to the refinement calculus. He presented the contract theory and applied it to some UML specification examples.

Manfred Broy dedicated his lectures to unifying models and engineering theories of software systems. His lecture dealt particularly with modularity and composition of systems.

Ernie Cohen lectures dealt with 2 subjects. The first was centred around the use of ω -algebra. The second concerned the verification of cryptographic protocols using theorem prover TAPS and was applied onto Needham-Shroeder-Lowe protocol.

Rustan leino lectures were dedicated to the verification of object-oriented software. He included in his lecture some demos based on examples of java-language object-oriented programs.

Zhimming Liu lectured on the use of TLA into the specification of fault-tolerant real-time systems and showed how refinement and scheduling can be done with this class of systems.

The school was successful in spreading the culture of formal software and in bringing together the scientific community to work along the same objectives. The feedback given by the attendees was that the lecturers were on the whole very informative and relevant. The discussion sessions were very appreciated because subjects were open and the lecturers could answer almost all participants questions.