Continuing our series of talks specially organised for our postgraduate candidates, Ms Tan Ai Wee presented a talk on what is software testing and how to be successful with test automation. The audience consisted mainly of Master of Information Systems and Master of Computer Science candidates and staff of UTAR.

The Malaysian IT Industry has matured from the era of implementing foreign-based package business systems to Malaysian-made and advanced into developing and exporting business and embedded software. Functional testing was strongly emphasized during the Y2K era. We are seeing greater interest developing in the area of a systematic approach in software testing particularly in the test automation.

Software testing encompasses the privilege and responsibility of software implementation, common encounters, the software crisis, types of development systems, trace symptoms to root causes, when should testing occur, software testing life cycle, level and types of testing, evaluation and metrics, how to be successful with test automation, test automation benefits and software testing maturity scale.

Some of the common encounters of software testing are: the schedule has no time allocation for test preparation, there is not much thought process in the formulation of test plan, testing team, skills set needed, test strategies, test process, problem escalation and change management process, exit criteria, severity level definition, measurement and metrics of test coverage and software quality. It is the users responsibility to derive the test cases, test data and expected results.

Software crisis may arise from: hardware advances outpacing the ability to build software for this hardware, declining cost of hardware, growing availability of high-speed networks, the ability to build in pace with demands, increasing dependency on software, struggle to build reliable and high quality software, poor design and inadequate skilled resource, failure to use design reviews and code inspections, failure to perform risk management and excessive, irrational schedule pressure in user requirements.

Ms Tan Ai Wee elaborated on the types of development systems available. Some of
these are the turnkey system which consists of the waterfall and iterative packages, maintenance or customization, legacy system which is character-based and browser-based. In level testing, there is developer testing, unit testing, integration testing, system testing and user acceptance testing. Furthermore, there are the white box, black box and regression testing. Types of testing include the functionality type which consists of function and security. In the usability type, there are human factors, esthetics, consistency in the user interface, online and context sensitive help, wizards and agents, user documentation and training materials. In the reliability type, there are integrity, structure and stress. In the performance type, there consist of load and performance validation. Lastly, in the supportability type, there are the configuration and installation.

In conclusion, test automation provides benefits of speed testing to accelerate releases, allow testing to happen more frequently, reduce costs of testing by reducing manual labour, improve test coverage, ensure consistency, improve the reliability of testing, allow testing to be done by staff with less skill, define and document the testing process and reduce dependence on the few who know it, data migration-conversion or production and automate capturing of test evidences. On the software testing maturity scale, it is proven that it is cheaper to prevent defects from being introduced than it is to test defects out of products.