**Teaching of IA-32 assembly language programming usingIntel®Galileo**

**ABSTRACT**

Most universities are still using microprocessor training board that equipped with Intel® 8086 to introduce students about assembly language and computer architecture due to its popularity and availability. The Intel® 8086 is the first x86 microprocessor, it is no longer suitable to introduce students to the modern x86 architecture. A new microprocessor that featured modern architecture design is needed to maintain the competency of university students to keep pace with the fast advancing computer technology. Intel® Galileo is a single board computer board that equipped with Intel® QuarkTM X1000 SoC. We successfully developed new approach for programming the device using assembly language. Supporting lab materials, example codes, macros, and procedures are developed to incorporate the Intel® Galileo board into the laboratory experiments design for microprocessor course. The proposed laboratory experiments allow undergraduate students to learn IA-32 instruction sets and protected mode programming. The results from prepost-test and quantitative survey shows that Intel® Galileo board is effective to support the learning of the IA-32 assembly language and computer architecture.

Keywords: Assembly language programming; Intel® Galileo; Intel® QuarkTM; SoC X1000; x86; IA-32; Computer architecture