KHALIFA UNIVERSITY

Module Name: Microprocessor Systems Laboratory
Module Code: ELCE333

Laboratory Experiment No. 6

Experiment Title:

HSCI12 Interrupts

Pre-lab Report

Group Members

Name: Afra Bin Fares ,ID#:100033139

Name: Alya AlAlili ,ID#100037087

Name: Anoud AlShamsi ,ID#100035514

Instructor

Mohammed Ali Saif Al Zaabi

Mahmoud khounji

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Introduction

An embedded system uses its input/output devices to interact with the external world. Input devices allow the computer to gather information, and output devices can display information. Output devices also allow the computer to manipulate its environment. The relationship between the computer and external world distinguishes an embedded system from a regular computer system. The challenge is under most situations the software executes much faster than the hardware.Therefore, the synchronization between the executing software and its external environment is critical for the success of an embedded system. Using interrupts allows the software to respond quickly to changes in the external environment. Interrupt is an event external to the currently executing process that causes a change in the normal flow of instruction execution; usually generated by hardware devices external to the CPU. Give each device a wire (interrupt line) that it can use to signal the processor so when interrupt signaled, processor executes a routine called an interrupt handler to deal with the interrupt shown in the figure below.

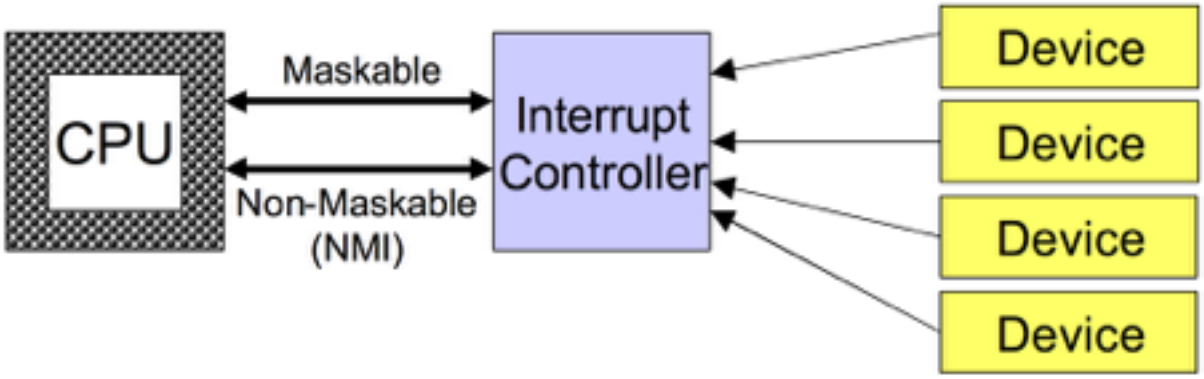

Figure1 : overview of handling interrupts

Pre-Lab Questions

Before coming to lab, write the answers to the following questions in your initial lab report.

1. What is the address of the IRQ and the PTH interrupt in the HCS12 interrupt vector table?

IRQ: FFF2

PTH: FFCC

2. Upon Reset, IRQ and XIRQ hardware interrupts are _____ (edge, level) triggered.

level triggered

3. True or False. An interrupt is assigned to each bit of PTH, instead of a single interrupt to the entire PTH.

True

4. True or False. Upon Reset, the PTH interrupt is masked

True

5. In HCS12, indicate how you enable the peripheral interrupts globally.

In order to globally enable interrupts the assembly command clear global interrupt flag has to be called "`__asm CLI;`

6. Which register is used to make PTH interrupt level- or edge- triggered?

Moreover the interrupt polarity has to be set through the Port Polarity Select Register.