ALBERT-LUDWIGS-
UNIVERSITÄT FREIBURG

INSTITUT FÜR INFORMATIK

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Mobiles Hardware-Praktikum
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Lab 1
Microprocessor Programming

Exercise 1

Start by downloading the sample program "Lauflicht" from the courses Web Site. Use this program to familiarize yourself with the MPLAB simulator and development environment.

Once you are comfortable with the board and programming tools use the MPLAB tool to develop an assembler "Run Light" program that lights up the 8 LEDs (RB0 to RB7) on the PICee computer board. The program should successively light up all the diodes (Jumper S8 is used to activate the LEDs on the board). Lastly slow the speed at which the running lights run so that is clearly visible to the human eye. To do this you might want to create a "Delay Function" which adds a certain delay to each iteration of the main loop.

Simulate your implementation with the MPLAB simulator before you program and test the PIC16F84 on the PICee board with the IC Programmer.

Exercise 2

Expand the functionality of the running lights program from task 1 by adding two further functions:

- Use Pushbutton S5 to stop and start the running light.
- Use Pushbutton S6 to change the direction of the running light.

Pushbuttons S5 and S6 are attached to ports RA0 and RA1. Since this port has no interrupt capability you must query the port every now and then to see if the buttons are pressed (called polling). Once you are satisfied with the MPLAB simulated results, test your program by programming the PIC16F84 on the PICee board.

When you are finished with the lab, please compress all appropriate assembler files into one ZIP file and then submit it through the courses Web Site Portal.