Texas Instruments Robotics System Learning Kit
Module 6
Quiz: General Purpose Input Output
Quiz: General Purpose Input Output

Q1 Arrays and Indexing
Write C code to find the minimum of 32 numbers. Assume the 32 numbers are in a 16-bit unsigned array, passed by reference into your function. The prototype is:

```c
uint16_t Min(int16_t buffer[32]);
```

Q2 Direction Register
What is a direction register? Why does the microcontroller have direction registers?

Q3 Select Registers
What are the P1->SEL1 and P1->SEL0 registers? Why do we clear these bits during initialization?

Q4 Initialization
Write software that initializes MSP432 Port 7, so pins 5,4 are output and the rest are input. The code need not be friendly because you are initializing all 8 bits of Port 7.

Q5 Initialization
Write software that initializes MSP432 Port 6, so pins 3, 2 are output and pin 0 is input. The code must be friendly, meaning you should leave the other 5 bits as is.

Q6 Initialization
Write software that initializes MSP432 Port 4, so pin 7 is output and pins 6,5 are input. The code must be friendly, meaning you should leave the other 5 bits as is.

Q7 Input/Output
The overall objective is to create a 4-bit counter. The system has one digital input and four digital outputs. The counter is incremented each time the input goes from low to high. Once the counter reaches 15 roll it back over to 0 on the next press/release. Connect the output to Port 7 bits 3 – 0 and connect the input to Port 7 bit 4. Show the initialization code and the main loop that performs the input/output over and over. Make the code friendly (does not affect bits 5, 6, and 7 of Port 7).
IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI’s products are provided subject to TI’s Terms of Sale (www.ti.com/legal/termsofsale.html) or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI’s provision of these resources does not expand or otherwise alter TI’s applicable warranties or warranty disclaimers for TI products.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2019, Texas Instruments Incorporated