CSE 534 Advanced Networking Homework Assignment 1 (100 Points)

Due Jan 17, 2005 No late submissions will be accepted. No plagiarism. For some of the questions, you should take a look at the intermediate C code generated by the NesC compiler (in the build/mica2 directory).

1. What does a TinyOS application consist of? (5 points)

2. What is the difference between an EVENT, a COMMAND, and a TASK? (5 points)

3. TinyOS code is translated into C code when it is compiled using the NesC compiler. So why write TinyOS applications in NesC? Why not simply write them in C to begin with? (5 points)

4. What structural programming features does a component interface translate to when NesC code is converted into C code? (5 points)

5. In the tutorial, TinyOS is called a multi-threaded operating system. Are there really multiple threads running in a TinyOS application? Explain. (10 points)

6. Considering your answer to the previous question, why is there an atomic declaration in NesC and how is it used? (10 points)

7. Consider three TinyOS components: X, Y, and Z. What happens when both X and Y use an interface provided by Z which signals an event? Which component(s) will handle the event? For example, both X and Y call Z's send_packet interface. When the packets are sent, Z notifies the sender, signaling a send_done event. Does Z notify X, Y, or both? (10 points)

8. Is it possible to create a blocking send operation in tinyos? If yes then how will you do it? (10 points)

9. The send interface of GenericComm component can be used to send messages to both the transceiver and the UART. How does it know which interface to use? (5 points)


11. Distinguish the requirements for sensor networking and Internetworking at various layers of communication protocol stack. (15 points)

12. Name three different wireless sensor networking applications and identify the various networking support required by these three applications. (10 points)