Embedded networked sensors have the potential of advancing knowledge by observing and manipulating the physical world at unprecedented scales and resolutions. By harnessing the collective computing, communication, sensing, and actuation capabilities of a large number of resource-constrained devices, sensor networks make possible an exciting range of useful applications. I will discuss the software development challenges that are unique to sensor networks and examine recent programming models, languages, and development tools. I will focus on the problems that stem from the limited memory on commonly used sensor nodes and describe new approaches to language design, compilation, simulation, and deployment analysis. Such tools can help improve programmer productivity and lower the bar for entry into the rapidly expanding field of sensor network programming.