Internet of Things (IoT) comprises things that have unique identities and are connected to the Internet. While many existing devices, such as networked computers or 4G-enabled mobile phones, already have some form of unique identities and are also connected to the Internet, the focus on IoT is in the configuration, control and networking via the Internet of devices or "things" that are traditionally not associated with the Internet. These include devices such as thermostats, utility meters, a bluetooth-connected headset, irrigation pumps and sensors, or control circuits for an electric car's engine. Internet of Things is a new revolution in the capabilities of the endpoints that are connected to the Internet and is being driven by the advancements in capabilities in combination with lower costs) in sensor networks, mobile devices, wireless communications, networking and cloud technologies. Experts forecast that by the year 2020 there will be a total of 50 billion devices/things connected to the Internet. Therefore, the major industry players are excited by the prospects of new markets for their products. The products include hardware and software components for IoT endpoints, hubs, or control centers of the loT universe. The scope of IoT is not limited to just connecting things (devices, appliances, machines) to the Internet. IoT allows these things to communicate and exchange data (control & information, that could include data associated with users) while executing meaningful applications towards a common user or machine goal. Data itself does not have a meaning until it is contextualized processed into useful information. Applications on IoT networks extract and create information from lower level data by filtering, processing, categorizing, condensing and contextualizing the data. This information obtained is then organized and structured to infer knowledge about the system and/or its users, its environment, and its operations and progress towards its objectives, allowing a smarter performance, as shown in Figure 1.1. For example, consider a series of raw sensor measurements ((72,45): (84, 56)) generated by a weather monitoring station, which by themselves do not have any meaning or context. To give meaning to the data, a context is added, which in this example can be that each tuple in data represents the temperature and humidity measured every minute. With this context added we know the meaning (or information) of the measured data tuples. Further information is obtained by categorizing, condensing or processing this data. For example, the average temperature and humidity readings for last five minutes is obtained by averaging the last five data tuples. The next step is to organize the information and understand the relationships between pieces of information to infer knowledge which can be put into action. For example, an alert is raised if the average temperature in last five minutes exceeds 120F, and this alert may be conditioned on the user's geographical position as well. The applications of Internet of Things span a wide range of domains including (but not limited to) homes, cities, environment, energy systems, retail, logistics, industry, agriculture and health as listed in Figure 1.2. For homes, IoT has several applications such as smart lighting that adapt the lighting to suit the ambient conditions, smart appliances that can be remotely monitored and controlled, intrusion detection systems, smart smoke detectors, etc. For cities, IoT has applications such as smart parking systems that provide status updates on available slots, smart lighting that helps in saving energy, smart roads that provide information on driving conditions and structural health monitoring systems. For environment, IoT has applications such as weather monitoring, air and noise pollution, forest fire detection and river flood detection systems. For energy systems, IoT has applications such as including smart grids, grid integration of renewable energy sources and prognostic health management systems. For retail domain, IoT has applications such as inventory management, smart payments and smart vending machines. For agriculture domain, IoT has applications such as smart irrigation systems that help in saving water while enhancing productivity and green house control systems. Industrial applications of IoT include machine diagnosis and prognosis systems that help in predicting faults and determining the cause of faults and indoor air quality systems. For health and lifestyle, IoT has applications such as health and fitness monitoring systems and wearable electronics.