Contents

RCX: The Robot's Brain

- The RCX is a microcomputer than interfaces with input and output devices. Programs can be written on a PC and then downloaded to the unit through the IR tower.
- The RCX uses two types of memory: read-only memory (ROM) and modifiable random access memory (RAM).
- The RCX can be expanded in two ways: using a different programming software like NQC or the Java APIs, or replacing the default firmware with a new one.

Serial Port Control and Status Signals

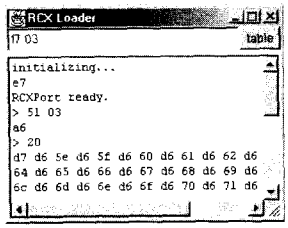
Abbreviation	Definition
RTS	Request To Send
CTS	Clear To Send
DTR	Data Terminal Ready
DSR	Data Set Ready
RI	Ring Indicate
CD	Carrier Detect
OE	Overrun Error
FE	Framing Error
PE	Parity Error
BI	Break Indicator
DA	Data Available
BE	Output Buffer Empty

Troubleshooting Problems with RCXPort

There are several things that could potentially go wrong when trying to run RCXPort. The more common mistakes are listed below:

- Make sure your RCX is turned on and within range of the IR tower.
- Make sure the IR tower is properly connected to the correct serial port.
- Make sure that another program (possibly running in the background) isn't using the serial port.
- Make sure you have named the correct serial port (COM1, for instance) in the command line.
- If you are downloading byte code from a file, make sure that file is in the same directory as RCXPort.
- Make sure you have downloaded the Java Communications API, and that it is correctly installed.
- Make sure that your classpath references both *rcxport.jar* and

RCXLoader



Create Custom Components

Q: What happens if more than ten programs are downloaded to the RCX at once?

A: The 11th (and further) programs will appear in the program list, represented using blanks.

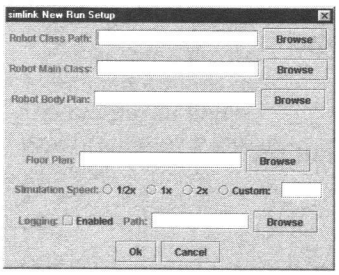
Q: What if I have a LEGO tower connected to the USB port?

A: Set the RCXTTY environment variable to the value USB, instead of to a serial port value.

Debugging leJOS Programs

- The best way to debug a leJOS program is to use the Sound and LCD classes in unison to provide you with feedback of the robot's state.
- Normal Java exception handling applies to leJOS, allowing you to separate code for normal operation and code for error situations.

Dialog to Create a New Simulator Run



Encoding of Java Types in Signatures

Java Type	Encoding
void	V
boolean	Z
char	C
byte	B
short	S
int	I
long	J
float	F
double	D
package..... package.Class	Lpackage/
.../package/	Class;
array	[(type of elements follows)

Overview of Jini

- Jini is a Java technology built on top of RMI, enabling clients and services to interact in a network with little administrative overhead.
- One feature of Jini is that it is vary applicable to embedded devices, including devices like the RCX.
- The Jini Technology Starter Kit (TSK) includes all of the required jar files as well as some service implementations such as reggie, an implementation of a lookup service.