APPENDIX E

AVR PRIMER FOR 8051 PROGRAMMERS

	AVR	8051
8-bit registers:	32 general-purpose registers (R0 to R31)	A, B, R0, R1, R2, R3, R4, R5, R6, R7
16-bit (data pointer):	X, Y, Z	DPTR
Program Counter:	PC (up to 22-bit)	PC (16-bit)
Input:	`IN Rn,PINx` (Use R0, R1, ..., R31.)	`MOV A,Pn ;(n = 0 - 3)`
Output:	`OUT PORTx,Rn`	`MOV Pn,A ;(n = 0 - 3)`
Loop:	`DEC Rn` `BRNE TARGET`	`DJNZ R3,TARGET` `(Using R0-R7)`
Stack pointer:	SP (16-bit) As we PUSH data onto the stack, it decrements the SP. As we POP data from the stack, it increments the SP.	SP (8-bit) As we PUSH data onto the stack, it increments the SP. As we POP data from the stack, it decrements the SP.
Data movement:		
From the code segment:	`LPM Rn,Z` (Use Z only.)	`MOVC A,@A+PC`
From RAM using indirect addressing:	`LD Rn,X` (Use X, Y, or Z.)	`MOV A,@R0` (Use R0 or R1 only.)
From RAM using direct addressing:	`LDS Rn,k`	`MOV A,RAM_addr`
To RAM using indirect addressing mode:	`ST X,Rn` (Use X, Y, or Z.)	`MOV @R0,A`
To RAM using direct addressing mode:	`STS k,X` (Use X, Y, or Z.)	`MOV RAM_addr,A`