General Purpose Register (Cont.)
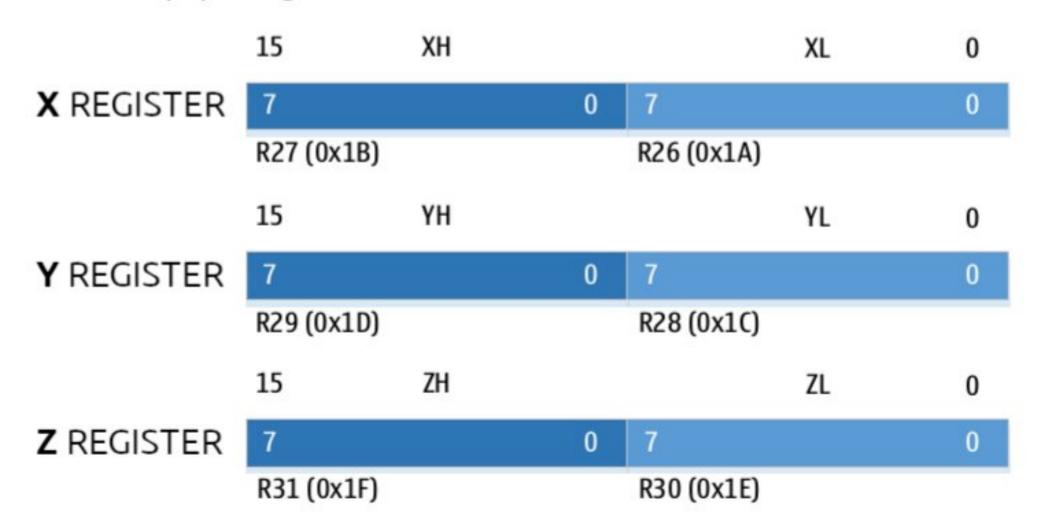
7	0	Address	
R0		0x00	
R1		0x01	
R2		0x02	
...			
R13		0x0D	
R14		0x0E	
R15		0x0F	
R16		0x10	
R17		0x11	
...			
R26		0x1A	X Register Low Byte
R27		0x1B	X Register High Byte
R28		0x1C	Y Register Low Byte
R29		0x1D	Y Register High Byte
R30		0x1E	Z Register Low Byte
R31		0x1F	Z Register High Byte

(Left vertical label: GENERAL WORKING REGISTER)

Figure 3. General Purpose Register

Most of the instructions operating on the Register File have direct access to all registers, and most of them are single cycle instructions. As shown in the figure above, each register is also assigned a data memory address, mapping them directly into the first 32 locations of the user Data Space. Although not being physically implemented as SRAM locations, this memory organization provides great flexibility in access of the registers, as the X-, Y- and Z-Pointer registers can be set to index any register in the file.

X / Y / Z Register

Registers R26...R31 can be combined in pairs to form three 16-bit registers. These three 16-bit registers are mainly used as address pointers for indirect addr--essing access. The X/Y/Z registers are structured as follows:

	15	XH		XL	0
X REGISTER	7	0	7		0
	R27 (0x1B)		R26 (0x1A)		

	15	YH		YL	0
Y REGISTER	7	0	7		0
	R29 (0x1D)		R28 (0x1C)		

	15	ZH		ZL	0
Z REGISTER	7	0	7		0
	R31 (0x1F)		R30 (0x1E)		

These registers are used as fixed offset, auto-increment, and auto-decrement address pointers in different addressing modes. See the Inst--ruction Description section for details.