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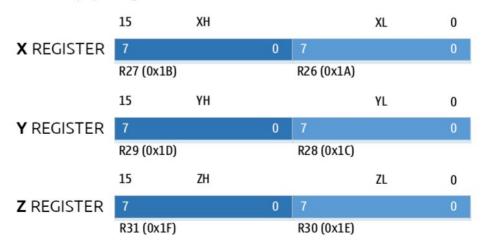
	R0	0x00	
	R1	0x01	
	R2	0x02	
	...		
	R13	0x0D	
	R14	0x0E	
	R15	0x0F	
	R16	0x10	
	R17	0x11	
	...		
	R26	0x1A	X Register Low Byte
	R27	0x1B	X Register High Byte
	R28	0x1C	Y Register Low Byte
	R29	0x1D	Y Register High Byte
	R30	0x1E	Z Register Low Byte
	R31	0x1F	Z Register High Byte

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:

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

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

Z REGISTER	15	ZH		ZL	0
	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.