

Illustrations slide 39

MAP before instruction		Program memory	MAP after	
Data	Address		Data	Address
R0	0x00			0x00
00000000	0x01		00000011	0x01
00000000	0x02			0x02
...				
R13	0x0D			0x0D
R14	0x0E	lds r1,0x1010		0x0E
R15	0x0F	sts 0x1011,r2		0x0F
R16	0x10			0x10
R17	0x11			0x11
...			...	
R26	0x1A XL			0x1A XL
R27	0x1B XH			0x1B XH
R28	0x1C YL			0x1C YL
R29	0x1D YH			0x1D YH
R30	0x1E ZL			0x1E ZL
R31	0x1F ZH			0x1F ZH
...
00000011	0x1010		00000011	0x1010
11000000	0x1011		00000000	0x1011

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MAP		Program memory	MAP	
Data	Address		Data	Address
00000000	0x00		00001111	0x00
11111111	0x01			0x01
R2	0x02			0x02
...				
R13	0x0D			0x0D
R14	0x0E			0x0E
R15	0x0F	ldd r0,Z+10		0x0F
R16	0x10	std Z+20,r1		0x10
R17	0x11			0x11
...			...	
R26	0x1A XL			0x1A XL
R27	0x1B XH			0x1B XH
R28	0x1C YL			0x1C YL
R29	0x1D YH			0x1D YH
00010000	0x1E ZL		00010000	0x1E ZL
00010000	0x1F ZH		00010000	0x1F ZH
		
		
00000011	0x1010			0x1010
...
00001111	0x101A			0x101A

00001100	0x1024		11111111	0x1024

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MAP		Program memory	MAP	
Data	Address		Data	Address
00000000	0x00		00000011	0x00
11111111	0x01			0x01
R2	0x02			0x02
...				
R13	0x0D			0x0D
R14	0x0E			0x0E
R15	0x0F	ld r0,Z		0x0F
R16	0x10	st Z,r1		0x10
R17	0x11			0x11
...			...	
R26	0x1A XL			0x1A XL
R27	0x1B XH			0x1B XH
R28	0x1C YL			0x1C YL
R29	0x1D YH			0x1D YH
00010000	0x1E ZL		00010000	0x1E ZL
00010000	0x1F ZH		00010000	0x1F ZH
			...	
			...	
00000011	0x1010		11111111	0x1010
...
00001111	0x101A			0x101A

00001100	0x1024			0x1024

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MAP		Program memory	MAP	
Data	Address		Data	Address
00000000	0x00		00000011	0x00
11111111	0x01			0x01
R2	0x02			0x02
...				
R13	0x0D			0x0D
R14	0x0E			0x0E
R15	0x0F	ld r0,-Z		0x0F
R16	0x10	st -Y,r1		0x10
R17	0x11			0x11
...			...	
R26	0x1A XL			0x1A XL
R27	0x1B XH			0x1B XH
00011011	0x1C YL		00011010	0x1C YL
00010000	0x1D YH		00010000	0x1D YH
00010001	0x1E ZL		00010000	0x1E ZL
00010000	0x1F ZH		00010000	0x1F ZH
		
00011111	0x100F			0x100F
00000011	0x1010			0x1010
...
00001111	0x101A		11111111	0x101A

00001100	0x1024			0x1024

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MAP		Program memory	MAP	
Data	Address		Data	Address
00000000	0x00		00000011	0x00
11111111	0x01			0x01
R2	0x02			0x02
...				
R13	0x0D			0x0D
R14	0x0E			0x0E
R15	0x0F	ld r0,Z+		0x0F
R16	0x10	st X+,r1		0x10
R17	0x11			0x11
...			...	
00011010	0x1A XL		00011011	0x1A XL
00010000	0x1B XH		00010000	0x1B XH
R28	0x1C YL			0x1C YL
R29	0x1D YH			0x1D YH
00010000	0x1E ZL		00010001	0x1E ZL
00010000	0x1F ZH		00010000	0x1F ZH
		
00011111	0x100F			0x100F
00000011	0x1010			0x1010
...
00001111	0x101A		11111111	0x101A

00001100	0x1024			0x1024

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MAP		Program memory		MAP	
Data	Address			Data	Address
00000000	0x00			00001111	0x00
11111111	0x01				0x01
R2	0x02				0x02
...					
R13	0x0D				0x0D
R14	0x0E				0x0E
R15	0x0F		lpm r0,Z		0x0F
R16	0x10		spm Z+		0x10
R17	0x11				0x11
...				...	
R26	0x1A XL				0x1A XL
R27	0x1B XH				0x1B XH
R28	0x1C YL				0x1C YL
R29	0x1D YH				0x1D YH
00010000	0x1E ZL				0x1E ZL
00010000	0x1F ZH				0x1F ZH
			
00011111	0x100F				0x100F
00000011	0x1010	11110000	00001111	0x1010	0x1010
...
00001111	0x101A				0x101A
...
00001100	0x1024				0x1024

For SPM 1111111100000000 will be stored at 0x1010, assume RAMPD is 0

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MAP		Program memory		MAP	
Data	Address			Data	Address
00000000	0x00				0x00
11111111	0x01				0x01
R2	0x02				0x02
...					
R13	0x0D				0x0D
R14	0x0E				0x0E
R15	0x0F				0x0F
R16	0x10				0x10
R17	0x11				0x11
...				...	
R26	0x1A XL	Spm Z+			0x1A XL
R27	0x1B XH				0x1B XH
R28	0x1C YL				0x1C YL
R29	0x1D YH				0x1D YH
00010000	0x1E ZL			00010010	0x1E ZL
00010000	0x1F ZH			00010000	0x1F ZH
...			
000001010	0x5B				
00011111	0x100F				0x100F
00000011	0x1010	1111000000001111	0x1010		0x1010
...
00001111	0x101A	1111111100000000	0x101A		0x101A

00001100	0x1024				0x1024

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MAP		Program memory	MAP	
Data	Address		Data	Address
00000000	0x00			0x00
11111111	0x01			0x01
R2	0x02			0x02
...				
00000001	0x0D		00000011	0x0D
00000010	0x0E		00000010	0x0E
00000100	0x0F		00001101	0x0F
00001000	0x10	ADD R13,R14		0x10
R17	0x11	ADC R15,R16		0x11
...		ADIW R26, 10	...	
00000000	0x1A XL		00001010	0x1A XL
00000001	0x1B XH		00000001	0x1B XH
R28	0x1C YL			0x1C YL
R29	0x1D YH			0x1D YH
00010000	0x1E ZL			0x1E ZL
00010000	0x1F ZH			0x1F ZH
...		
000001010	0x5B			
....				
00000001	0x5F			
00011111	0x100F			0x100F
00000011	0x1010	1111000000001111		0x1010
...
00001111	0x101A			0x101A

00001100	0x1024			0x1024

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MAP		Program memory	MAP	
Data	Address		Data	Address
00000000	0x00			0x00
11111111	0x01			0x01
R2	0x02			0x02
...				
00001001	0x0D		00000111	0x0D
00000010	0x0E		00000010	0x0E
00001100	0x0F		00000011	0x0F
00001000	0x10	SUB R13,R14	00001000	0x10
R17	0x11	SBC R15,R16		0x11
...		SBIW R26, 10	...	
00001000	0x1A XL		00000110	0x1A XL
00000001	0x1B XH		00000001	0x1B XH
R28	0x1C YL			0x1C YL
R29	0x1D YH			0x1D YH
00010000	0x1E ZL			0x1E ZL
00010000	0x1F ZH			0x1F ZH
...		
000001010	0x3B			
00000001	0x5F			
00011111	0x100F			0x100F
00000011	0x1010	1111000000001111		0x1010
...
00001111	0x101A			0x101A

00001100	0x1024			0x1024

