SP22 Assignment 6 key

(#1) See zoom class video
'0111' for subtraction and slt input.

(#2)

MD	AC	MQ	
0101	0000	1110	— init
	0000	1110	+0
	0000	0111	>>1
	0101		
	0101	0111	+MD
	0010	1011	>>1
	0101		
	0111	1011	+MD
	0011	1101	>>1
	0101		
	1000	1101	+MD
	0100	0110	>>1
	product		

(#3)
(a) 10100 1110 | 0 — (-355)
11111 1111
11101001 1 — (-355)

(b)

MD	AC	MQ	MQ-1	
1010	0000	0101	0	— init
2's 0110				
	0110			
	0110	0101	0	-MD
	0011	0010	1	>>1
	1010			
	1101	0010	1	+MD
	1110	1001	0	>>1
	0110			
	0100	1001	0	-MD
	0010	0100	1	>>1
	1010			
	1100	0100	1	+MD
	1110	0010	0	>>1
	product (-30)			

(-6) * 5 = -30

(#6) Instead of doing a separate restore operation in each iteration, it performs either +/-MD in each iteration for that....

(#4) restoring 1011/0100 → (Q: 0010, R: 0011)

MD	AC	MQ	
0100	0000	1011	— init
2's 1100			
	0001	011□	— 1
	1101	011□	— 2
	1101	011[0]	— 3
	0001	0110	— 4
	0010	110□	— 1
	1110	110□	— 2
	1110	110[0]	— 3
	0010	1100	— 4
	0101	100□	— 1
	0001	100□	— 2
	0001	100[1]	— 3
	0011	001□	— 1
	1111	001□	— 2
	1111	001[0]	— 3
	0011 R	0010 Q	— 4

(#5) non-restoring

MD	AC	MQ	
0100	0000	1011	— init
2's 1100			
	0001	011□	— 1'
	1101	011□	— 2'
	1101	011[0]	— 3
	1010	110□	— 1
	1110	110□	— 2
	1110	110[0]	— 3
	1101	100□	— 1
	0001	100□	— 2
	0001	100[1]	— 3
	0011	001□	— 1'
	1111	001□	— 2'
	1111	001[0]	— 3
	0011 R	0010 Q	— 4