NAMA : WIDHAR DWIATMOKO
NIM : L200160179
KELAS : C
TUGAS : LATIHAN PERKALIAN (2) – ORGANISASI ARSIEKTUR KOMPUTER

1. Hitung angka berikut menggunakan algoritma Booth
   a) 12 x 10
   b) (-12) x 10
   c) 12 x (-10)
   d) (-12) x (-10)

JAWABAN

1. 12 = 0000 1100
   10 = 0000 1010
   a) 12 x 10

A	$Q_{(10)}$	Q_{-1}	$M_{(12)}$	Count
0000 0000	0000 1010 $Q_0 = 0$	0 $Q_{-1} = 0$	0000 1110	8 (Inisialisasi)
0000 0000	0000 0101 $Q_0 = 1$	0 $Q_{-1} = 0$	0000 1100	7 (Shift)
1111 0100 1111 1010	0000 0101 0000 0010 $Q_0 = 0$	0 1 $Q_{-1} = 1$	0000 1100 0000 1100	7 (A = A - M) 6 (Shift)
0000 0110 0000 0011	0000 0010 0000 0001 $Q_0 = 1$	1 0 $Q_{-1} = 0$	0000 1100 0000 1100	6 (A = A + M) 5 (Shift)
1111 0111 1111 1011	0000 0001 1000 0000 $Q_0 = 0$	0 1 $Q_{-1} = 1$	0000 1100 0000 1100	5 (A = A - M) 4 (Shift)
0000 0111 0000 0011	1000 0000 1100 0000 $Q_0 = 0$	1 0 $Q_{-1} = 0$	0000 1100 0000 1100	4 (A = A + M) 3 (Shift)
0000 0001	1110 0000 $Q_0 = 0$	0 $Q_{-1} = 0$	0000 1100	2 (Shift)
0000 0000	1111 0000 $Q_0 = 0$	0 $Q_{-1} = 0$	0000 1100	1 (Shift)
0000 0000	0111 1000	0	0000 1100	0 – (END)

Hasil = Øb 0000 0000 0111 1000

= 120

b) (-12) x 10

12 = 0000 1100
-12 = 1111 0011
1+
1111 0100

A	$Q_{(10)}$	Q_{-1}	$M_{(-12)}$	Count
0000 0000	0000 1010 $Q_0 = 0$	0 $Q_{-1} = 0$	1111 0100	8 (Inisialisasi)
0000 0000	0000 0101 $Q_0 = 1$	0 $Q_{-1} = 0$	1111 0100	7 (Shift)
0000 1100 0000 0110	0000 0101 0000 0010 $Q_0 = 0$	0 1 $Q_{-1} = 1$	1111 0100 1111 0100	7 (A = A - M) 6 (Shift)
1111 1010 1111 1101	0000 0010 0000 0001 $Q_0 = 1$	1 0 $Q_{-1} = 0$	1111 0100 1111 0100	6 (A = A + M) 5 (Shift)
0000 1001 0000 0100	0000 0001 1000 0000 $Q_0 = 0$	0 1 $Q_{-1} = 1$	1111 0100 1111 0100	5 (A = A - M) 4 (Shift)
1111 1000 1111 1100	1000 0000 0100 0000 $Q_0 = 0$	1 0 $Q_{-1} = 0$	1111 0100 1111 0100	4 (A = A + M) 3 (Shift)
1111 1110	0010 0000 $Q_0 = 0$	0 $Q_{-1} = 0$	1111 0100	2 (Shift)
1111 1111	0001 0000 $Q_0 = 0$	0 $Q_{-1} = 0$	1111 0100	1 (Shift)
1111 1111	1000 1000	0	1111 0100	0 – (END)

Hasil = Øb 1111 1111 1000 1000

= - 120

c) 12 x (-10)

10 = 0000 1010
-10 = 1111 0101
1+
1111 0110

A	$Q_{(-10)}$	Q_{-1}	$M_{(12)}$	Count
0000 0000	1111 0110 $Q_0 = 0$	0 $Q_{-1} = 0$	0000 1100	8 (Inisialisasi)
0000 0000	0111 1011 $Q_0 = 1$	0 $Q_{-1} = 0$	0000 1100	7 (Shift)
1111 0100 1111 1010	0111 1011 0011 1101 $Q_0 = 1$	0 1 $Q_{-1} = 1$	0000 1100 0000 1100	7 (A = A - M) 6 (Shift)
1111 1101	0001 1110 $Q_0 = 0$	1 $Q_{-1} = 1$	0000 1100	5 (Shift)
0000 1001 0000 0100	0001 1110 1000 1111 $Q_0 = 1$	1 0 $Q_{-1} = 0$	0000 1100 0000 1100	5 (A = A + M) 4 (Shift)
1111 1000 1111 1100	1000 1111 0100 0111 $Q_0 = 1$	0 1 $Q_{-1} = 1$	0000 1100 0000 1100	4 (A = A - M) 3 (Shift)
1111 1110	0010 0011 $Q_0 = 1$	1 $Q_{-1} = 1$	0000 1100	2 (Shift)
1111 1111	0001 0001 $Q_0 = 1$	1 $Q_{-1} = 1$	0000 1100	1 (Shift)
1111 1111	1000 1000	1	0000 1100	0 – (END)

Hasil = Øb 1111 1111 1000 1000

= -120

d) (-12) x (-10)

12 = 0000 1100
-12 = 1111 0011
1+
1111 0100

10 = 0000 1010
-10 = 1111 0101
1+
1111 0110

A	$Q_{(-10)}$	Q_{-1}	$M_{(-12)}$	Count
0000 0000	1111 0110 $Q_0 = 0$	0 $Q_{-1} = 0$	1111 0100	8 (Inisialisasi)
0000 0000	0111 1011 $Q_0 = 1$	0 $Q_{-1} = 0$	1111 0100	7 (Shift)
0000 1100 0000 0110	0111 1011 0011 1101 $Q_0 = 1$	0 1 $Q_{-1} = 1$	1111 0100 1111 0100	7 (A = A - M) 6 (Shift)
0000 0011	0001 1110 $Q_0 = 0$	1 $Q_{-1} = 1$	1111 0100	5 (Shift)
1111 0111 1111 1011	0001 1110 1000 1111 $Q_0 = 1$	1 0 $Q_{-1} = 0$	1111 0100 1111 0100	5 (A = A + M) 4 (Shift)
0000 0111 0000 0011	1000 1111 1100 0111 $Q_0 = 1$	0 1 $Q_{-1} = 1$	1111 0100 1111 0100	4 (A = A - M) 3 (Shift)
0000 0001	1110 0011 $Q_0 = 1$	1 $Q_{-1} = 1$	1111 0100	2 (Shift)
0000 0000	1111 0001 $Q_0 = 0$	1 $Q_{-1} = 0$	1111 0100	1 (Shift)
0000 0000	0111 1000	1	1111 0100	0 – (END)

Hasil = Øb 0000 0000 0111 1000

= 120