

1. Determine the final contents of the register used in each code fragment.

a)

LDA #%00111010

AND #%00110100

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%00110000

b) LDA #%11110001

ORA #%01101101

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%11111101

c) LDA #%01111110

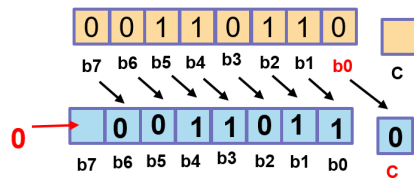
EOR #%10011001

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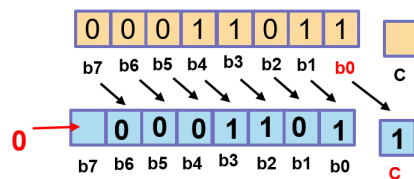
%11100111

d) LDA #%00110110

LSRA

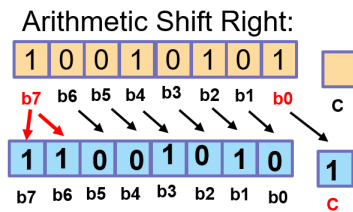


LSRA

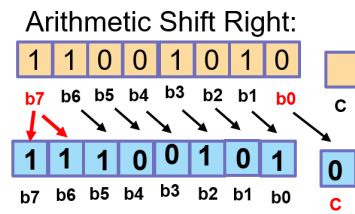


Answer: %00001101

e) LDAA #%10010101  
ASRA

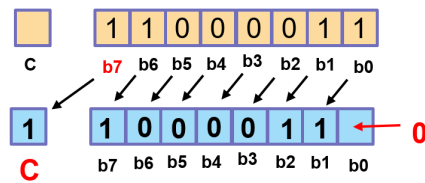


ASRA

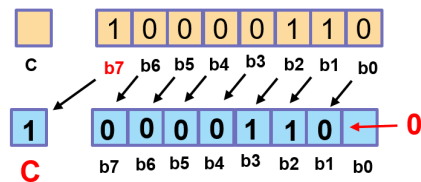


Answer: %11100101

f) LDAA #%11000011  
LSLA



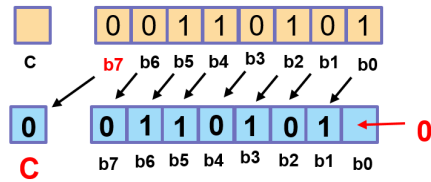
LSLA



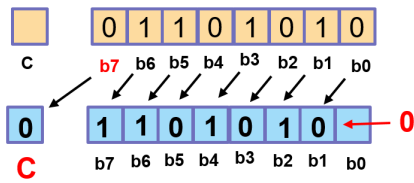
Answer: %00001100

g) LDAA #%00110101

ASLA



ASLA



Answer: %**11010100**

2. Perform the following functions using only a single line of assembly code.

a. Set bit 2 of \$1000 to 1.

**BSET** \$1000, %00000**100**

b. Set bits 4, 5, and 7 of \$1040 to 0.

**BCLR** \$1040, %**1011**0000

c. Set bits 1, 3, and 4 of \$0040 to 0.

**BCLR** \$0040, %000**1101**0

d. Set bits 0, 1, and 2 of \$10AA to 1.

**BSET** \$10AA, %00000**111**

e. Branch to NEXT if bit 4 of \$1040 is 1.

**BRSET** \$1040, %000**1**0000, NEXT

- f. Branch to NEXT if bits 3 and 4 of \$1016 are 0.

**BRCLR** \$1016, %000**11**000, NEXT

- g. Branch to NEXT if bits 0, 1, 2, 3, and 4 of \$1053 are 1.

**BRSET** \$1053, %000**11111**, NEXT

- h. Branch to NEXT if bits 6 and 7 of \$1005 are 0.

**BRCLR** \$1005, %**11**000000, NEXT

3. For the following programs, generate a stack diagram as done in class (values in memory used for the stack and the SP register) for each line that affects the stack items. For example, a new diagram should be drawn for a PSHA operation, but not a LDAA #\$AA operation. Also, list the final contents of the registers used once the programs have finished. Addresses are given in comments.

a)

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ORG $C000
1: LDAA #$AA
2: LDAB #$BB
3: LDX #$CCDD
4: LDS #$3600
5: PSHA
6: PSHB
7: PSHX
8: PULB
9: PULX
10: PULA
11: SWI

```

a:	After 4:	After 5:	After 6:	After 7:	After 8:	After 9:	After 10:
SP	3600	35FF	35FE	35FC	35FD	35FF	3600
35FC	XX	XX	XX	CC	XX	XX	XX
35FD	XX	XX	XX	DD	DD	XX	XX
35FE	XX	XX	BB	BB	BB	XX	XX
35FF	XX	AA	AA	AA	AA	AA	XX
3600	XX	XX	XX	XX	XX	XX	XX

A:\$AA B:\$CC X:\$DDBB

b)

ORG \$C000

1: LDS #\$3600 ; C000

2: LDAA #\$AA ; C003

3: LDAB #\$BB ; C005

4: JSR SUBRA ; C007

5: SWI ; C00A

6: SUBRB PSHB ; C00B

7: PULB ; C00C

8: RTS ; C00D

9: SUBRA PSHA ; C00E

10: JSR SUBRB ; C00F

11: PULA ; C012

12: RTS ; C013

b:	After 1:	After 4:	After 9:	After 10:	After 6:	After 7:	After 8:
SP	3600	35FE	35FD	35FB	35FA	35FB	35FD
35FA	XX	XX	XX	XX	BB	XX	XX
35FB	XX	XX	XX	C0	C0	C0	XX
35FC	XX	XX	XX	12	12	12	XX
35FD	XX	XX	AA	AA	AA	AA	AA
35FE	XX	C0	C0	C0	C0	C0	C0
35FF	XX	0A	0A	0A	0A	0A	0A
3600	XX	XX	XX	XX	XX	XX	XX

	After 11:	After 12:
SP	35FE	3600
35FA	XX	XX
35FB	XX	XX
35FC	XX	XX
35FD	XX	XX
35FE	C0	XX
35FF	0A	XX
3600	XX	XX

A:\$AA B:\$BB