Homework7

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8.1

Last in first out.

8.7

```
; R4 is the address of output
; R3 is the number of elements needed to pop
POP     ST R2, Save2
        ST R1, Save1
        ST R0, Save0
        LD R1, BASE
        ADD R2, R6, R1
        BRz fail_exit
        ADD R0, R4, #0
        ADD R1, R3, #0
        ADD R5, R6, R3
        ADD R5, R5, #-1
        ADD R6, R6, R3
poloop  LDR R2, R5, #0
        STR R2, R0, #0
        ADD R0, R0, #1
        ADD R5, R5, #-1
        ADD R1, R1, #-1
        BRp pop_loop
        BRnzp success_exit
; R4 is the address of input
; R3 is the number of elements needed to push
PUSH    ST R2, Save2
        ST R1, Save1
        ST R0, Save0
        LD R1,MAX
        ADD R2,R6,R1
```
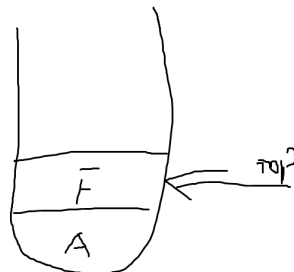
```
        BRz fail_exit
        ADD R0, R4, #0
        ADD R1, R3, #0
        ADD R5, R6, #-1
        NOT R2, R3
        ADD R2, R2, #1
        ADD R6, R6, R2
puloop  LDR R2, R0, #0
        STR R2, R5, #0
        ADD R0, R0, #1
        ADD R5, R5, #-1
        ADD R1, R1, #-1
        BRp push_loop
success_exit   LD R0, Save0
        LD R1, Save1
        LD R2, Save2
        AND R5, R5, #0
        RET
fail_exit   LD R0, Save0
        LD R1, Save1
        LD R2, Save2
        AND R5, R5, #0
        ADD R5, R5, #1
        RET
BASE    .FILL xC000
        MAX .FILL xC005
        Save0 .FILL x0000
        Save1 .FILL x0000
        Save2 .FILL x0000
```

8.8

(a)

(b) After PUSH J and PUSH K operations.

(c) A F M

8.12

```
        .ORIG   x3050
A   .FILL   x41 ; ASCII A
        .FILL   B
        .FILL   B ; connected areas
        .FILL   D
        .FILL   E
        .FILL   E
        .FILL   x0


B   .FILL   x42 ; ASCII B
        .FILL   C
        .FILL   A ; connected areas
        .FILL   D
        .FILL   C
        .FILL   C
        .FILL   x0


C   .FILL   x43 ; ASCII C
        .FILL   B
        .FILL   B ; connected areas
        .FILL   B
        .FILL   D
        .FILL   x0


D   .FILL   x44 ; ASCII D
        .FILL   E
        .FILL   A ; connected areas
        .FILL   B
        .FILL   C
        .FILL   E
        .FILL   x0


E   .FILL   x45 ; ASCII E
        .FILL   A
        .FILL   A ; connected areas
        .FILL   A
        .FILL   D
        .FILL   x0
```

8.14

(a) JSR X

(b) R1, R3, #1

(c) R2, R4, #1

(d) R1, R2

(e) ADD R0, R0, R1

(f) R5, #1

(g) LABEL

(h) ADDING

(i) ADDING