

Burak Yesil

"I pledge my honor that I have abided by the Stevens Honor System."

Question 1:

```
user@box:~/shared/CS382/Lab2$ aarch64-linux-gnu-as Q1.s -o Q1.o
user@box:~/shared/CS382/Lab2$ aarch64-linux-gnu-ld Q1.o -lc
user@box:~/shared/CS382/Lab2$ qemu-aarch64 -L /usr/aarch64-linux-gnu/ a.out
7
```

```
1  .text
2  .global _start
3  .extern printf
4
5  _start:
6
7      ADR X0, msg
8      ADR X2, I
9      ADR X1, F
10     ADR X3, G
11
12     LDUR X1, [X1]
13     LDUR X2, [X2]
14     LDUR X3, [X3]
15
16     SUBS X4, X2, 4
17     CBNZ X4, L1
18     ADD X1, X3, 1
19     B L2
20
21     L1: SUB X1, X3, 2
22     L2: BL printf
23         MOV X0, #0
24         MOV W8, #93
25         SVC #0
26
27  .data
28
29  I: .quad 4
30  F: .quad 5
31  G: .quad 6
32  msg: .ascii "%d\n"
33
34
35
36  .end
37
```

Question 2:

```
user@box:~/shared/CS382/Lab2$ aarch64-linux-gnu-as Q2.s -o Q2.o
user@box:~/shared/CS382/Lab2$ aarch64-linux-gnu-ld Q2.o -lc
user@box:~/shared/CS382/Lab2$ qemu-aarch64 -L /usr/aarch64-linux-gnu/ a.out
3
```

```

1  .text
2  .global _start
3  .extern printf
4
5  _start:
6
7      ADR X0, msg
8      ADR X2, A
9      ADR X1, B
10
11     LDUR X1, [X1]
12     LDUR X2, [X2]
13
14
15
16     ADD X3, X2, X1
17     SUBS X3, X3, 14
18     CBNZ X3, L1
19     MOV X1, 3
20     B L2
21     L1: MOV X1, -2
22     L2: BL printf
23         MOV X0, #0
24         MOV W8, #93
25         SVC #0
26
27     .data
28
29     A: .quad 9
30     B: .quad 5
31     msg: .ascii "%d\n"
32
33
34
35     .end
36

```

Question 3:

```
user@box:~/shared/CS382/Lab2$ aarch64-linux-gnu-as Q3.s -o Q3.o
user@box:~/shared/CS382/Lab2$ aarch64-linux-gnu-ld Q3.o -lc
user@box:~/shared/CS382/Lab2$ qemu-aarch64 -L /usr/aarch64-linux-gnu/ a.out
55
```

```
1  .text
2  .global _start
3  .extern printf
4
5  _start:
6
7      ADR X0, msg
8      ADR X2, Temp
9      ADR X1, Result
10
11     LDUR X1, [X1]
12     LDUR X2, [X2]
13
14
15
16     L1:
17     ADD X2, X2, 1
18     ADD X1, X2, X1
19
20     SUBS X3, X1, 55
21     CBNZ X3, L1
22
23     BL printf
24     MOV X0, #0
25     MOV W8, #93
26     SVC #0
27
28
29
30  .data
31
32  msg: .ascii "%d\n"
33  Temp: .quad 0
34  Result: .quad 0
35
36
37  .end
38
```

Question 4:

```
user@box:~/shared/CS382/Lab2$ aarch64-linux-gnu-as Q4.s -o Q4.o
user@box:~/shared/CS382/Lab2$ aarch64-linux-gnu-ld Q4.o -lc
user@box:~/shared/CS382/Lab2$ qemu-aarch64 -L /usr/aarch64-linux-gnu/ a.out
32
```

```
1  .text
2  .global _start
3  .extern printf
4
5  _start:
6
7      ADR X0, msg
8      ADR X1, Result
9      ADR X2, CWID
10
11     LDUR X1, [X1]
12     MOV X3, 0
13
14     L1:
15     CMP X3, 8
16     B.gt exit
17     LSL X4, X3, 3      //Store offset in X4
18     ADD X5, X2, X4    //Get index of new element
19     LDR X10, [X5]     //arr[i]
20     ADD X1, X10, X1
21     ADD X3, X3, 1
22     B L1
23
24     exit:
25     BL printf
26     MOV X0, #0
27     MOV W8, #93
28     SVC #0
29
30
31
32  .data
33  msg: .ascii "%d\n"
34  CWID: .quad 1, 0, 4, 6, 8, 9, 1, 3
35  Result: .quad 0
36
37  .end
38
```