

## CS1022 Tutorial #0 Recap on CS1021

This tutorial has two aims: to see how much ARM assembly you remember and to refresh the content of CS1021. It is not marked and does not count towards grading in anyway. Rather than gathering and marking the tutorials, we will try using [DirectPoll](#) to collect answers. Each question has a link to its answer page.

1) Which of the following is the largest?

[Link:Poll](#)

- a) 70 Kib
- b) 70 kB
- c) 70 kb
- d) 70 KiB
- e) Apollo 11's guidance computer's memory

2) Which of the following code snippets will store the the sequence of integers [17,256] in memory. R0 is the address of some space, R1 is 17 and R2 is 256.

[Link:Poll](#)

a)

```
1 START
2   CMP R2, R1
3   BLT stop
4   STR R1, [R0]
5   ADD R0, R0, #1
6   ADD R1, R1, #1
7   B   START
```

b)

```
1 START
2   CMP R2, R1
3   BLT stop
4   STR R1, [R0]
5   ADD R0, R0, #4
6   ADD R1, R1, #1
7   B   START
```

c)

```
1 START
2   CMP R2, R1
3   BLT stop
4   STRB R1, [R0]
5   ADD R0, R0, #1
6   ADD R1, R1, #1
7   B   START
```

d)

```
1 START
2   LDR R3, =1
3   CMP R1, R2
4   BGT stop
5   STRH R1, [R0]
6   ADD R0, R0, R3, LSL #1
7   ADD R1, R1, #1
8   B   START
```

3) Which of the following code snippets will leave R0 with the highest value. R0 starts at -100 (0xFFFFF9F) for each snippet.

Highest unsigned value

[Link:Poll](#)

Highest signed value

[Link:Poll](#)

a)

```
1   ASR R0, R0, #4
2   EOR R0, R0, #0xFF
```

b)

```
1   LSR R0, R0, #4
2   EOR R0, R0, #0xFF
```

- c)
- |   |                     |
|---|---------------------|
| 1 | LSL R0, R0, #3      |
| 2 | AND R0, R0, #0xFF00 |
- d)
- |   |                     |
|---|---------------------|
| 1 | LSL R0, R0, #3      |
| 2 | ORR R0, R0, #0xFF00 |
- e)
- |   |                              |
|---|------------------------------|
| 1 | MUL R0, R0, R0 ;pretend that |
| 2 | MUL R0, R0, R0 ;this works   |
- f)
- |   |            |
|---|------------|
| 1 | LDR R0, =0 |
|---|------------|

- 4) Which of the following makes the condition code flags as  $Z = 0$ ,  $V = 0$ ,  $C = 0$ ,  $N = 0$  using SUBS and ADDS as appropriate? [Link:Poll](#)
- a)  $0x80000000 + 0x80000000$
  - b)  $0x80000000 + 0x7FFFFFFF$
  - c)  $0xFFFFCFC7 + 0x00003039$
  - d)  $0x6E0074F2 + 0x211D6000$
  - e)  $0x00003039 - 0xFFFFCFC7$
- 5) Write a program to convert some ASCII text stored in memory to uppercase. It should ignore whitespace and punctuation and leave uppercase letters alone.