

# Live Q&A 2 Transcript

## Responding to your feedback left in quizzes

### Struggling with von Neumann architecture

The detail will be covered much further down the line in the course.

### The key with binary conversions (and arithmetic)

The key to this kind of thing is **practice**.

### SGTs: links and preparation

These aren't working as intended, unfortunately. If you still don't have a link an hour, I recommend posting on the forum, asking for the link. If you know your TA, I recommend asking them on KEATS.

It's important you go through the exercise beforehand. You have to *attempt* it.

### Graphics tablet v.s. recording pen & paper

I've purchased a graphics tablet.

### I made a mistake in the quiz, can I retry?

You only have one chance. If you get  $\geq 40\%$ , you get full marks for that week's quiz. They're only worth 1% each!

If you make a mistake, you can identify an area where you had trouble. If you make a sloppy mistake...

### Where can I find answers to the tutorial questions?

Solutions will be made available on KEATS in the following week

Ask in your SGTs

### Errors in the lecture

There is a couple errors. In the video,  $0001\ 0000\ 1011 = 10B$ , not  $10D$

Also, in slide 15,  $0.3 = 0.01001$ , not  $0.01100$

**How can we tell unsigned, two's complement, one's complement and signed magnitude formats?**

There is no way to tell from a binary string. You need context. You need to be told what format you're using.

**Can we use repeated subtraction to convert fractional decimal components to any base?**

You can generalise the method for fractional components and other bases.

**How to round binary numbers?**

It depends on the convention. It's fine in this module to round up on a 1 and round down on a 0. Do it in the same way you would do it in decimal.

There are more complex ways to round binary numbers. You want to make sure you round in a very specific way.

**Live Q&A****Help me with my life**

Contact your personal tutor.

**Is there any way to convert directly between hexadecimal and decimal or do you have to go through binary each time?**

You open up the possibility to many more errors this way. The simplest way is to go through binary. At least through every way you're doing conversions that are natural.

**Will we use any software in this module?**

Well we're using Teams... so...

**I understood how to perform the division remainder method, but I would like to understand what the logic behind it is and why it works.**

Division remainder is unintuitive so it may seem like magic. I can give a demonstration on this next week on why this process works.

**Can we use a calculator in the exam?**

Yes. We're not testing your mathematical ability.

**How are you?**

I'm good, thank you. I'm enjoying these sessions a lot. I'm a little flustered because we started late so I apologise. There were problems with my internet connection.

**I don't know if this is just me, but A-Level Comp Sci did not allow calculators. Does uni work the same?**

In some modules it is important to do some calculations in your head, but that's not the focus of this module. Using calculators open up another place for errors

**josh I saw u vent in electrical**

Haha, thanks for this, this made me laugh

**What calculators are we allowed to use?**

Probably the same one

**Did you sleepover?**

There really was a technical problem. I was up since 6am. THERE'S LEGITIMATE PROOF (in KEATS)!!!!

**Repeated multiplication method for fractional component conversion**

If it works, go for it. Subtraction is just easier for me.

**In trhe tutorial questions, it asked for -145 in 8bits in signed binary, but would that cause an overflow?**

You are exactly right. This was a trick question

**What are we expected to bring to SGTs that happen on campus?**

A way to make notes and your student card. Nothing else in particular

**What's your favourite anime?**

I don't have one. I'm kind of ignorant, I haven't seen any.

**If we finished the tutorial for the week, where can we get extra material for practice?**

You can use the games I've linked in KEATS

**Will there be ambassadors to help us guide us to respective rooms?**

I'm not sure, I'm afraid. You can ask a receptionist to give you directions.

**Show dog**

Come next week and I'll show

**Please explain the logic behind the signed binary for a positive binary having the same binary for ones complement and twos complement**

If you plot all the binary values in a circle and alongside you write the corresponding value, you will see why all the positive values are represented in the same way

**Is the exam open book?**

Probably. The exam will probably be open book but don't expect to have an enormous advantage.

**Are we allowed to use a calculator that has the ability to convert between the main bases?**

I don't think we can allow you in person.

**When are base 8 and base 16 numbers used?**

Base 16 is a more readable representation for binary.

**Playosu! So you can get better with your tablet**

Thanks for the suggestion. I'll look into it.

**Give dog name**

Rella

**Do you need a laptop to take notes?**

You don't

**Why aren't balanced ternary computers popular? I read that ternary is the integer base with the best radix economy (as it's closest to e) and it seems easy to implement +1 as positive current, 0 as no current, and -1 negative current (going the other direction).**

We have transistors as the fundamental component. Theoretically, we can have a ternary computer to be more efficient, and ternary has some devices that have can accurately represent digits. It may be that these devices are sufficiently reliable. There may be specific niche devices.

But there will be a cost. Moving to a Base 3 system will be expensive for most computers. We use binary not because it's the best, but because we're in this sunken cost of having already used it.

**I notice that in books kB is used to refer to kilobytes and KB is used to refer to kibibytes, but in the lecture KB is used to refer to kilobytes. Which one is correct?**

Kibibytes aren't as standard as kilobytes. For this module, we will use kilobytes.

**When converting a negative to one's complement, and the most significant bit is already a one, won't it be lost?**

You have to be careful when you're converting an unsigned binary number to two's or one's complement. Unsigned binary only represents positive values so it can represent bigger numbers.

On pen and paper, you can just add in that extra bit, but in a computer system this might be a problem.