BBC Bitesize

Binary shift – GCSE Computer Science video for binary shift

GAME VOICE: Binary Shift Bash.

TAI-PO: Binary is just ones and zeros. This is gonna be easy.

GAME VOICE: Load binary number.

NARRATOR: Eight digits.

TAI-PO: That's a byte.

GAME VOICE: Binary to denary calculation. A 2. An 8. A 16.

NARRATOR: The rest are zeros.

GAME VOICE: The number in denary is …

NARRATOR: 26.

GAME VOICE: Level one: Binary shift multiply.

NARRATOR: Binary numbers can be multiplied through a process called shifting. How much do you want to multiply by? Multiply by 16?

TAI-PO: Hmm, actually by 8.

NARRATOR: To multiply a number, a binary shift moves all the digits in the binary number along to the left.

GAME VOICE: Shift left to multiply.

NARRATOR: To multiply by 8 requires three shifts.

GAME VOICE: Shift + 3.

NARRATOR: Ready?

TAI-PO: Ready! Times 2. Times 4. Times 8. Shift over.

NARRATOR: You shifted three places. Fill the empties.

GAME VOICE: Convert binary to denary.

TAI-PO: Let's see what we've got.

GAME VOICE: A 16. A 64. A 128.

NARRATOR: The rest are zeros.

GAME VOICE: Binary to denary calculation complete.

NARRATOR: So ... 26 x 8 equals?

TAI-PO: 208. Told you it was easy. Ha ha!

GAME VOICE: Level two: Binary shift divide.

NARRATOR: To divide a number, a binary shift moves all the digits in the binary number along to the right.

GAME VOICE: Shift right to divide.

NARRATOR: How much do you want to divide by? Divide 208 by ...

TAI-PO: 16.

NARRATOR: That's four shifts in the opposite direction.

GAME VOICE: Shift -4.

TAI-PO: Got to flip sides to divide.

NARRATOR: Ready?

TAI-PO: Ready! Divide by 2. Divide by 4. Divide by 8. Divide by 16. (PANTING) Shift over.

NARRATOR: Fill the empties. Under one, then they're done. Get rid.

GAME VOICE: Convert binary to denary. A 1. A 4. An 8.

NARRATOR: The rest are zeros.

GAME VOICE: Binary to denary calculation complete.

NARRATOR: 208 divided by 16 equals ...

TAI-PO: 13.

NARRATOR: I can see that you've truly got di-vision. Get it? Ha ha!

TAI-PO: Er ... Hold on.

NARRATOR: What?

TAI-PO: What if we give it one more shift over?

NARRATOR: Divide 208 by 32?

TAI-PO: Yeah.

NARRATOR: That's -five shifts. You crazy cat, let's try it.

TAI-PO: Rock 'n' roll.

GAME VOICE: Reset binary number.

TAI-PO: Back to 208.

NARRATOR: Ready?

TAI-PO: Ready! Divide by 2. By 4. By 8. By 16. By 32. Shift over.

NARRATOR: Fill the empties. Under one, then they're done. Get rid.

TAI-PO: Wait. You're getting rid of a 1.

NARRATOR: That's known as losing precision. It can happen with too much shifting.

TAI-PO: Oh, right.

GAME VOICE: Convert binary to denary. A 2. A 4.

NARRATOR: The rest are zeros.

GAME VOICE: Binary to denary calculation complete. 208 divided by 32 equals?

TAI-PO: 6.5.

NARRATOR: 6.

TAI-PO: We lost the .5.

NARRATOR: Too much division means losing precision.

TAI-PO: You're the one losing it.