

To prepare for this homework session, see if you can answer the following questions. The answers will be provided during the presentation.

Use a calculator for these questions

1. State the minimum number of bits needed to represent the range of positive whole numbers from 0 to 16777215

Hints:

$$2^x \times 2 = 2^{x+1}$$

$$2^{10} = 1024$$

$$2^{20} = 1048576$$

2. State the largest whole number that can be stored as a 10-bit positive integer.

Hints:

| | | | | | | | | | | |
|----|---|---|------|-----|-----|-----|----|----|----|-------|
| 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | | | 128s | 64s | 32s | 16s | 8s | 4s | 2s | Units |

3. State the number of bits requires to store 16777216 colours
4. Early versions of Turbo Pascal ran on 16 bit machines and had a built in constant called MaxInt. Its value was 32767. What does this tell you about the system it used to store integers?

Hint: try adding 1