Homework

# Background information

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| How are binary digits **stored** and **processed** in digital devices? |  |
| Electronic components |  |
| Examples: processors (CPU, GPU), main memory (RAM), some storage devices (flash drives, SD cards, solid state disks).    In electronic components, 0s and 1s are represented by the **flow of electricity**, controlled by **interconnected switches**. |  |
| The past |  |
| Perforated paper Perforated paper (in long strips or cards) was used for storing programs and data.  0s and 1s were represented by the presence or lack of **holes in paper**. |  |
| Magnetic core memory The cores were metal rings, connected with wires. Each ring (core) stored one bit. **Electricity** was used for writing and reading the information in the cores.  0s and 1s were represented by the way in which each core was **magnetised**. |  |

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| Hard disks | Hard disk: 1TB = 8 trillion binary digits |
| The material on the surface of hard disks is **magnetic**. 0s and 1s are represented as changes in the **magnetic orientation** (N-S or S-N) of individual regions on the surface. |  |
| Optical disks | CD: 700MB = 5.6 billion binary digits |
| Examples: CDs, DVDs, and Blu-ray Discs. The surface of optical disks is **reflective**. 0s and 1s are represented by **pits** (microscopic holes) or **lands** (regions without holes). **Light** is used to read the binary digits off the surface of the disk. |  |

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| How are binary digits **transmitted** between digital devices? |  |
| Wired connections Binary digits are transferred through **wires** using **electricity**.  Binary digits are transferred through **fibre-optic cables** using **light**. |  |
| Wireless connections In all **wireless** communications, binary digits are transferred using **electromagnetic waves**, transmitted and received by antennae. |  |

Study the background information provided on these pages and answer the questions on the **Microsoft Form on Bourne to Code**.

If required, you could investigate further, searching for relevant resources on the internet.