

<b>Lesson: 2. Wisdom and IT/Computing</b>	<b>Comic: 3</b>
<b>Overview of Key Skills</b> Concepts – understand key vocabulary relating to computer ethics, understand IP addresses and how they work Skills and process – be able to use IT skills to query IP addresses	<b>Cross-curricular links</b>  English: reading and writing PSHE: <b>Health and Wellbeing</b> RE: Morality and Ethics
<b>Learning Objectives:</b>	<ul style="list-style-type: none"> <li>• To understand key vocabulary relating to computer ethics</li> <li>• To understand some of the key concepts relating to computer ethics and security</li> <li>• To understand how IP addresses work</li> <li>• To be able to use IT skills to query IP addresses</li> </ul>
<b>Key Teaching Points / Research Opportunities</b>	<p>Revise the key concepts and vocabulary from lesson 1.</p> <p><b>Computer law and ethics</b>          There are laws in place to govern the use of computers and the internet. However, legal issues are not always straightforward. Technology and the internet are evolving rapidly and this throws up new ethical and legal dilemmas.          Legal and ethical questions affect many areas of computing including privacy, sharing, hacking and the environment.</p> <p><b>Privacy</b>          What information can we consider to be private and who owns data? For example, photographs that are uploaded to social networks often legally become the property of the website.           At what stage can private information like this be used and for what purposes?</p> <p><b>Sharing</b>          There are piracy laws protecting the distribution of films and other media. It is illegal to rip a copyrighted DVD or CD and distribute it online. However, peer-to-peer (P2P) file-sharing networks and hosting websites mean it is easy to share files with anyone in the world.          At which point does sharing a film with others become piracy?</p> <p><b>Hacking</b>          The term 'hacking' can have a positive or negative meaning. It refers to any activity which makes unusual use of, or attempts to break, a computer system. Hacking can be used for negative purposes such as looking for weaknesses in systems to access and steal private data, but it can also be used for positive purposes such as:</p> <ul style="list-style-type: none"> <li>• creatively exploring new ways of using a program or computer</li> <li>• working around bugs in code</li> <li>• exposing security risks in software and websites, and warning the general public</li> </ul>

- testing the security of a system
- a 'hack day' - where people get together to explore new technologies

Hackers who attempt to do good through hacking are called 'white hats' but those that carry out criminal activity are called 'black hats'.

### **Data protection**

Computer systems store lots of personal details, and personal data can be very valuable. This data needs to be protected and only used in the right way. The Data Protection Act (DPA) sets out principles that govern:

- who can access data
- the accuracy and validity of data
- selling data
- removal of data

Breaches of data protection are often in the news. For example, NHS Surrey was fined £200,000 for selling a computer that contained patients' personal records without first destroying the data on the hard drive.

### **Sharing data online**

Whilst using the internet, users often upload information such as birthdays, passwords and banking details. As we use browsers and web applications, we create a record about our interests. When we use personalised websites requiring logins, such as social media sites, we often add data about ourselves. Whenever we sign up to these sites we are agreeing to share a certain amount of personal data with the provider. Information like this can be valuable to companies, eg advertising companies spend a lot of money seeking better ways to target adverts at the right users. Being able to see information such as your gender, date of birth and buying habits can be very useful for marketing purposes.

### **Tracking online activity**

#### **IP addresses**

A person's online activity can be tracked through their IP address. Like a postal address, an IP address identifies a computer and its physical location on the network. The IP address is allocated to the network card of a machine by an internet service provider (ISP). An IP address does not always give a geographic location. A mobile phone might be anywhere in the world, but its IP address on a 3G or 4G network will still be traceable.



All online activity can be tracked using an IP address. This is a method used to detect criminals on the internet and can be used to trace malicious comments made online.

**Proxy servers**

IP addresses can be masked by using a proxy server. Anyone can use a proxy server. Many are set up by criminal gangs to entice people to download software with viruses, or to enter personal details about themselves.

They can also be used legitimately, eg by businesses to mask their internal company network.

**Activity 1:** Try the lesson 2 quiz!

Discuss TCP/IP (teacher-led), how does it work?

**Activity 2:** Use Mr Irvine’s Accessible CMD program to check the IP address of your computer using the “IPconfig” command. Now use it to ping the computers of your classmates. Try pinging a well-known website!

**Independent Work**

Activities 1 and 2.

**Plenary**

- How would you define wisdom?
- How would you define ethics?
- How would you define computer ethics?
- Let’s revise some of the key vocabulary?
- So what do you know now that you didn’t know before?

Now let’s try the End-Of-Lesson Assessment.

<b>Resources, including ICT</b>	<p>PC computers with screen magnification/speech</p> <p>Microsoft Office</p> <p>Accessible CMD program</p> <p>Quiz</p> <p>End-Of-Lesson Assessment</p> <p>Online quiz</p>
<b>Key Questions</b>	<p>What are some of the key legal and ethical questions that affect areas of computing such as privacy, sharing, hacking and the environment?</p> <p>What is an IP address?</p> <p>How do IP addresses work?</p>
<b>Vocabulary</b>	<p>Morality, Ethics, Privacy, sharing, Hacking, Environment, Data protection, Sharing Data Online, IP addresses, Internet Protocol, Transmission Control Protocol.</p>
<b>Success Criteria</b>	<ul style="list-style-type: none"> <li>• Ability to understand key vocabulary relating to computer ethics</li> <li>• Ability to understand some of the key concepts relating to computer ethics and security</li> <li>• Ability to understand how IP addresses work</li> <li>• Ability to be able to use IT skills to query IP addresses</li> </ul>
<b>Assessment Opportunities</b>	<ul style="list-style-type: none"> <li>• Post-Lesson Assessment sheet and online quiz</li> </ul>