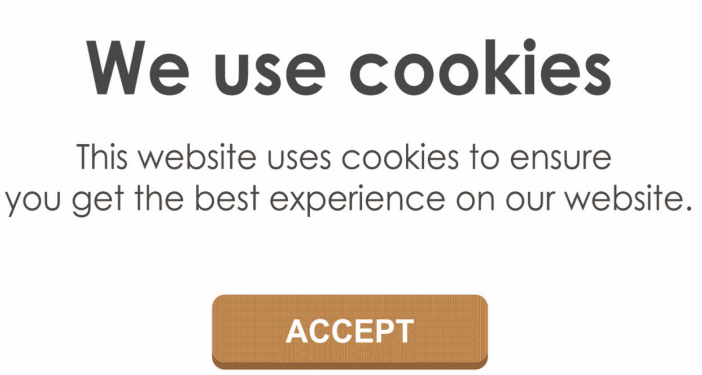
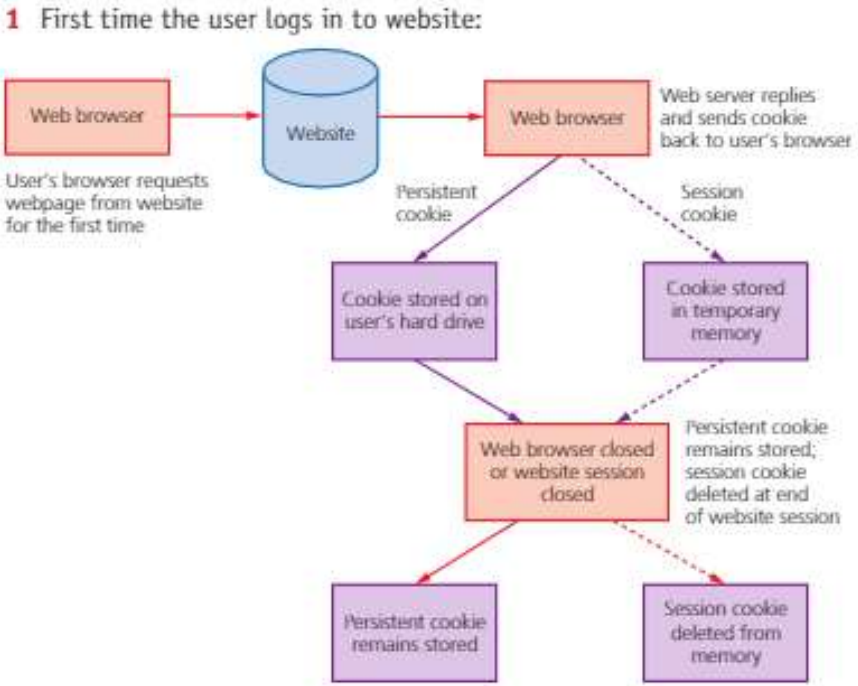
COOKIES

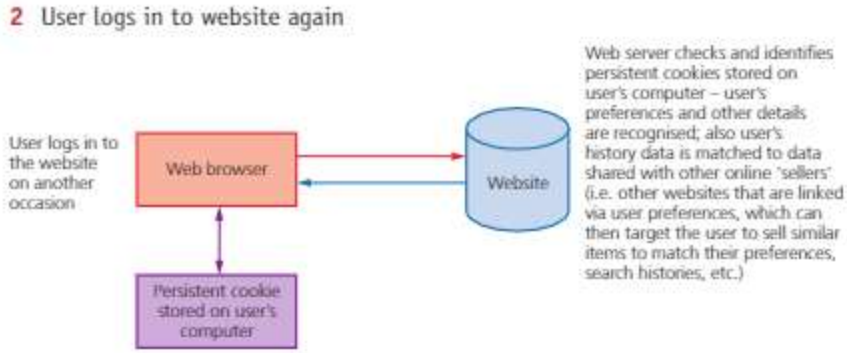
- Cookies are small files or code stored on a user's computer
- They are sent by a web server to a browser on a user's computer
- Each cookie is effectively a small look-up table containing pairs of (key, data) values, for example, (surname, Jones) (music, rock)
- Every time a user visits a website, it checks if it has set cookies on their browser before. If so, the browser reads the cookie which holds key information on the user's preferences such as language, currency and previous browsing activity.
- Cookies allow user tracking and maintain user preferences.
- Collected data can also be used to customise the web page for each individual user. For example, recommended video in Youtube and items in shopping cart





PERSISTENT COOKIES

- Persistent (permanent) cookies
  - They have a longer lifespan and remain on the user's device even after they close their web browser
  - They are stored on the hard drive of a user's computer until the expiry date is reached, or the user deletes it
  - Their advantage is that they remove the need to type in login details every time a certain website is visited

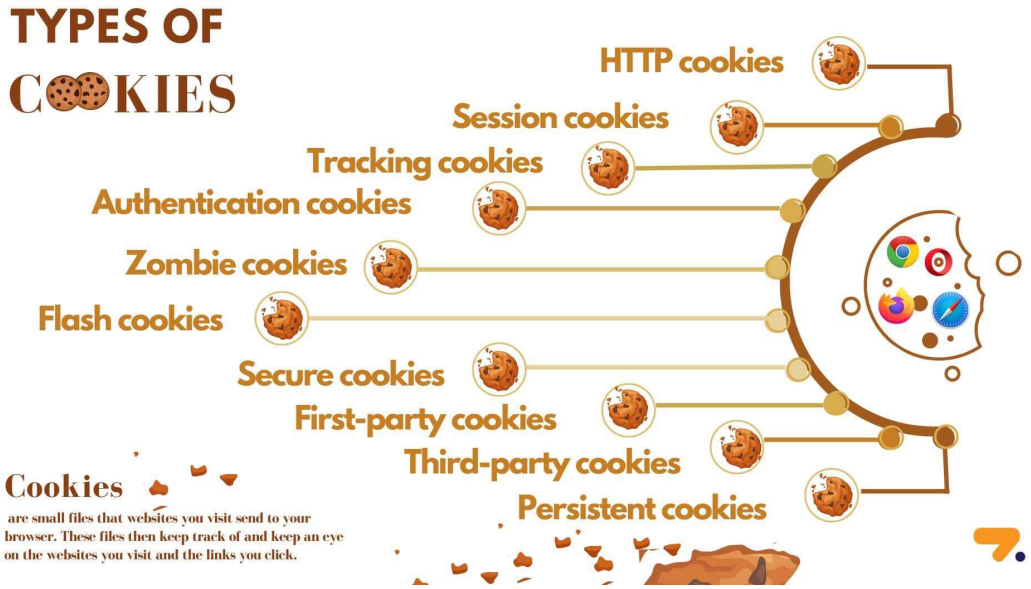


▲ **Figure 5.5** Cookies (subsequent logins)

SESSION COOKIES

- Session cookies
  - This type of cookie is stored in temporary memory on the computer
  - When the computer is turned off, the session cookies are also removed

Note: in the real world, there are not just persistent and session cookies. They are evolved and developed through the technology changes



Aspect	Persistent Cookies	Session Cookies	Usernames and Passwords
Persistence	Remain on the device after browser is closed, with an expiration date set.	Stored in browser's memory and deleted when the browser is closed.	Not directly stored in cookies for security reasons.
Usage	Remember user preferences and settings for future visits.	Used for session management within a single browsing session.	Stored securely on the server, while a session ID is stored in the cookie.
Storage Location	Stored on the user's device as small text files.	Stored in the browser's memory.	Stored securely on the server-side database.
Expiry	Have an expiration date set, automatically deleted when expired.	No specific expiry, deleted when the browser is closed.	Not applicable to cookies.
Security Concerns	May pose security risks due to storing sensitive data.	Lower risk as data is temporary and limited to the session.	Not stored in cookies to enhance security.

DIGITAL CURRENCY

- Digital currency
  - currency (a system of money) that exists only in electronic form; it has no physical form
- Digital currency relies on a central banking system (Centralised system)
  - Centralised system has issues with confidentiality and security
  - Confidentiality : some people might want to remain anonymous but online transferring keeps transaction information
  - Security : hacking, phising, pharming

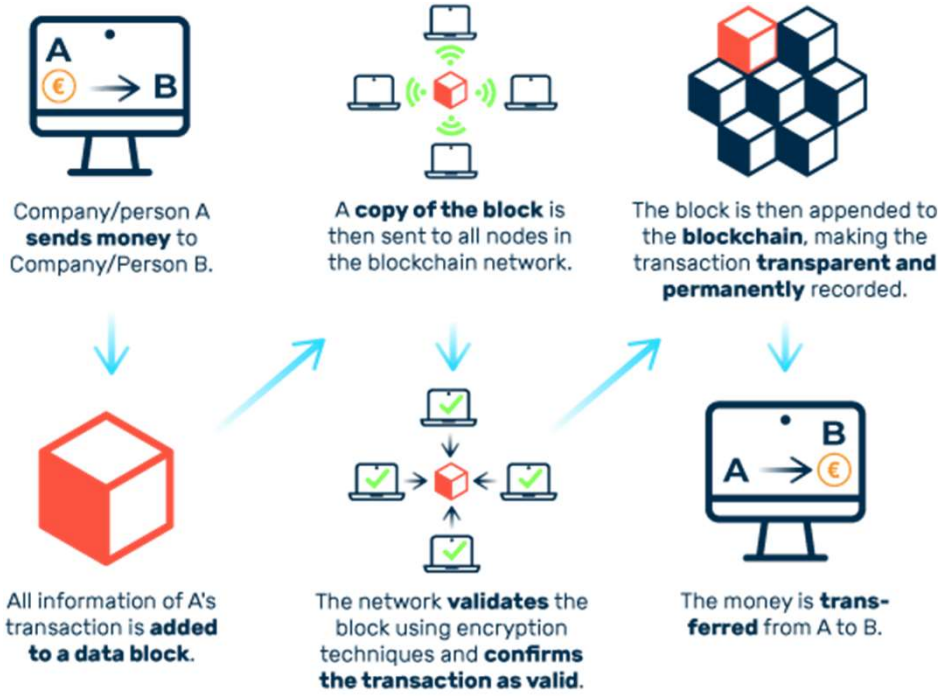
▲ **Figure 5.6** Digital currency

CRYPTOCURRENCY

- Cryptocurrency
  - a form of digital currency that uses Blockchain technology to keep a record of all transactions
- Traditional digital currencies are regulated by central banks and governments, but cryptocurrencies has no governments control and it is rules by the cryptocurrency community itself. E.g. Bitcoin has it own rules which might different with Dogecoin

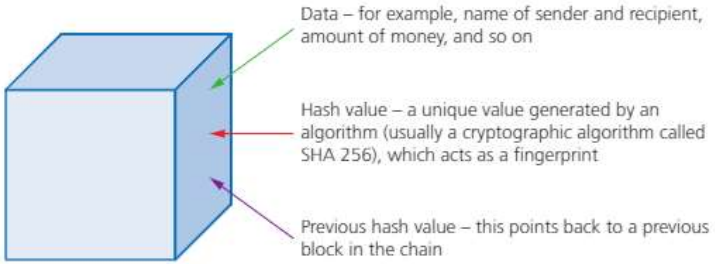
BLOCKCHAIN

- Blockchain : Blockchain is a special kind of technology that acts like a digital ledger or record-keeping system. Imagine it as a big, secure, and transparent notebook that stores information about transactions or events.
- When there is a transaction happens, it will create a new block and append to the blockchain.
- The unique thing about this notebook is that it is not owned by any single person or organization; instead, it is distributed across a network of computers all around the world. Information in the blockchain is difficult to be altered

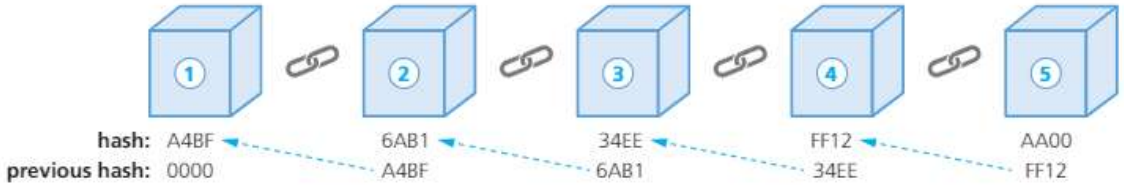


BLOCKCHAIN

- When there is a transaction happens, it will create a new block and append to the blockchain
  - A block contains data, hash value and link to previous block
- Whenever a new transaction takes place, all the networked computers get a copy of the transaction; therefore it cannot be changed without the consent of all the network members
- If a hacker tries to modify a block, the hash value will change which is not the same value to the next block so the system can detect the hacking and will recover the blocks



▲ **Figure 5.8** Block description



QUESTION

Term	Description
	the language used to create a web page
	the type of software application used to display a web page
	an address given to a computer, by a network, to allow the computer to be uniquely identified
	a text file sent by a web server to collect data about a user's browsing habits
	the company that provides a connection to the Internet

QUESTION

- Digital currency can be used to buy products from the world wide web
- State what is meant by a digital currency

- Describe the process of blockchain in digital currency