



Data capture

Data capture is the process of getting data into a computer system. This can be done manually (typing into a form) or automatically (using a barcode scanner). It is vital that data is accurate for it to be of value. Automatic input methods are generally less prone to errors than manual input, as machines are often more reliable than humans.

Validation

Validation is a check performed by the computer system to ensure that data meets specific rules that have been set. This helps prevent errors before data is processed.

Different types of validation checks include:

- **Range check:** Sets a high and low limit for a numerical value (for example a number must be between 1 and 10).
- **Format check:** Ensures data matches a specific pattern or type of characters (for example a UK national insurance number must follow the pattern LL NN NN NN L).
- **Type check:** Restricts data entry to a particular data type (for example a quantity field can only accept numerical input).
- **Length check:** Ensures the data entered is a specific length (for example UK bank account numbers are eight digits long, and this check would ensure the correct number of digits).
- **Presence check:** Guarantees that data has been entered into a required field (for example a date of birth field must contain data).
- **Lookup check:** Restricts the data to a list of set items (for example selecting a clothes size from a list like XXS, XS, S, M, L, XL, XXL).

Verification

Verification is a method of double-checking manual data entry to help ensure accuracy. There are two methods of verification:

- **Double data entry:** The user inputs the data twice. If both entries are identical, it is highly likely to be correct. For example, when setting up an account, you might be asked to enter your password twice.
- **Proofreading:** A less reliable method where the computer asks the user to review the input data and confirm its accuracy.

Possible sources of error and techniques used to overcome them

Even with verification and validation, errors can still occur, often due to human error. For instance, a postcode might be entered in the correct format but still be the wrong postcode for the address.

Here are common sources of error and the techniques used to prevent them:

Possible source of error	Techniques used to overcome these errors
Entering incorrect data	Verification (double data entry) or various validation techniques
Entering the correct data in an incorrect format	Validation techniques, particularly a format check
Making a mistake when entering the data	Verification