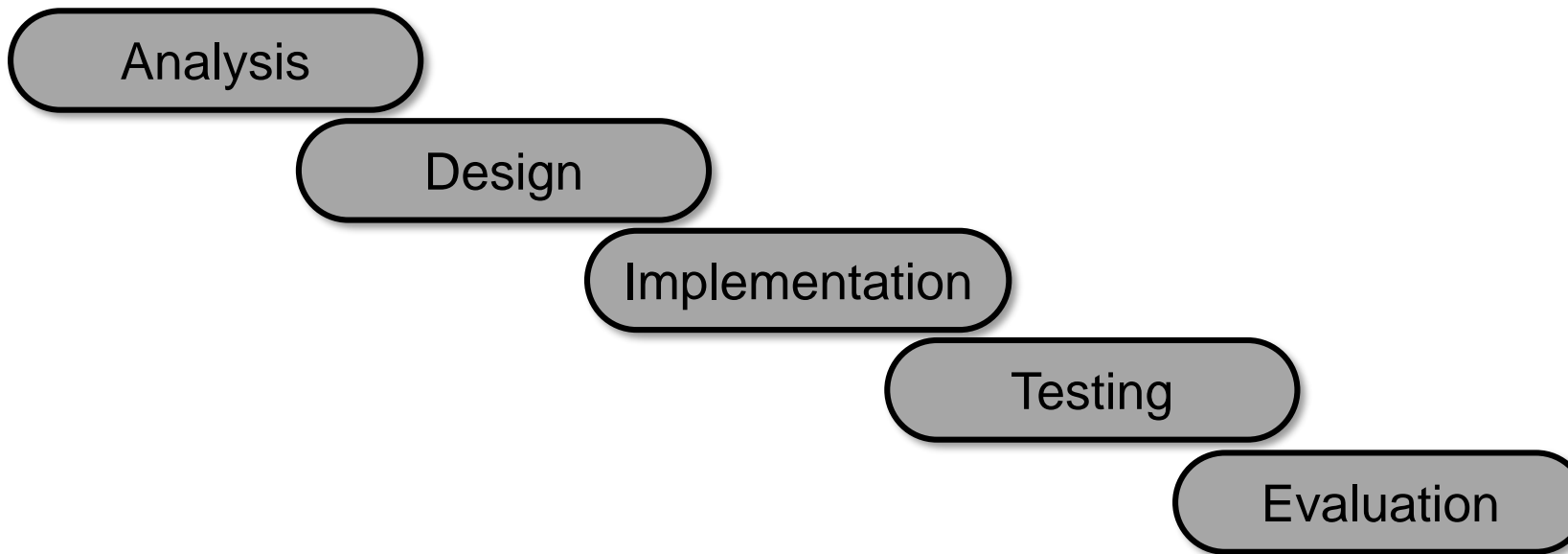


Development Methodologies

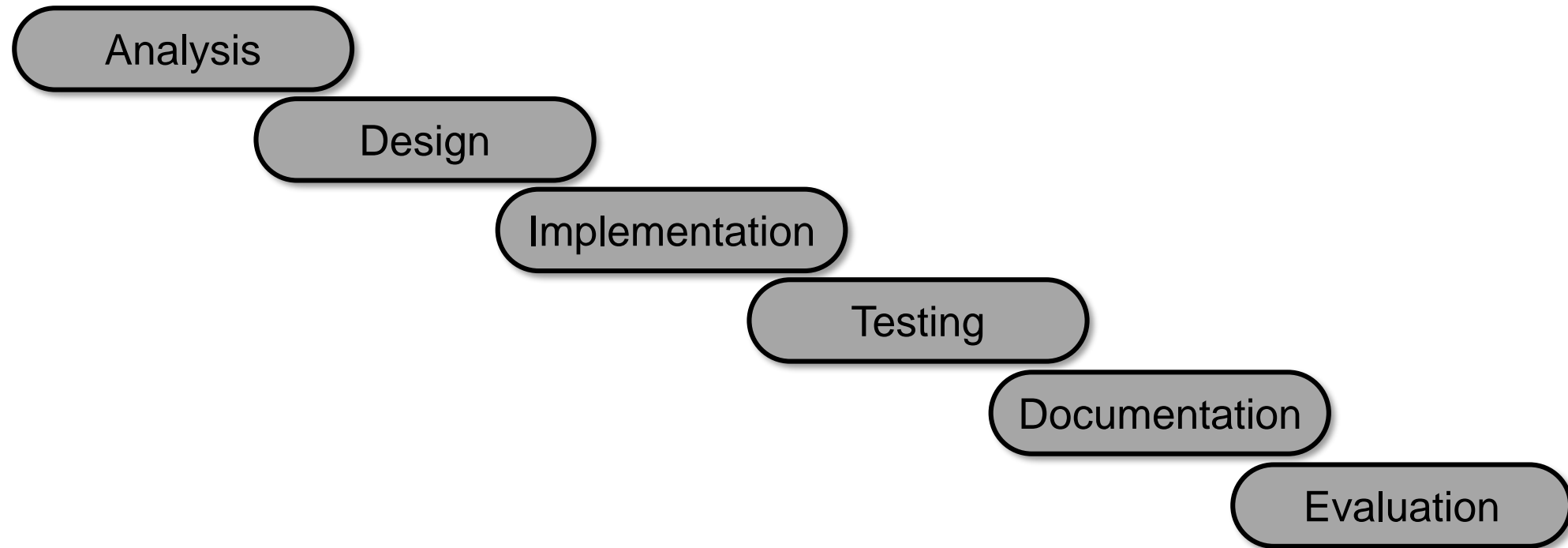
Development Process

As we've learned in previous units, when developing, software teams will work through different phases of development.



Development Process

There is one more step that we have to be aware of during Software development: Documentation.



Roles Within a Development Team

Development teams are usually made up of different people with different roles, and each of these roles is usually responsible for one of the development phases.

Client

the person/company
the software is being
built for

Analyst

the link between the
development team and
the client

Designer

Responsible for
designing the software
system

Developer

carries out the
implementation of
software

Tester

checks the completed
program against the
design

Analysis Phase

During the **Analysis** phase, the **Analyst** will gather requirements from the **Client**. It can be difficult for clients to communicate what they need systems to be able to do, so the Analyst will use different techniques to gather requirements to make sure these are as accurate as possible.

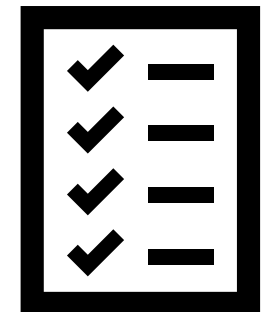
In the Analysis phase the team should produce the program purpose and the functional requirements (inputs, processes and outputs).



Design Phase

During the **Design** phase the **Designer** will take the user requirements and functional requirements and turn this into a program plan.

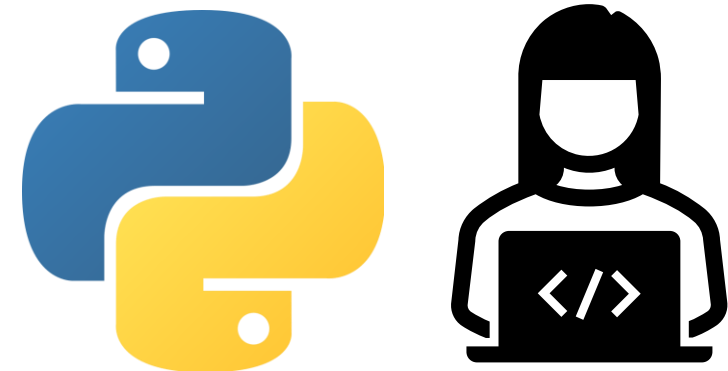
In the Design phase the team should produce a list of **variables** and **data types**, a **user interface design** and a program plan, showing the algorithms that make up the program (this could be a **flowchart**, a **structure diagram** or **pseudocode**).



Implementation Phase

During the **Implementation** phase, the **Developer** will turn the program plan into code.

Developers will also test their code to make sure that it runs. Developers are usually responsible for resolving **syntax errors** and **runtime errors** as part of the Implementation phase.



Testing Phase

During the **Testing** phase the **Tester** will run the program multiple times to check that it works, comparing the code to the program plan created during the **Design** phase.

Testers will use normal, extreme and exceptional test data to find **logic errors**.

In the Testing phase, the team should produce a **testing table** with all the tests that have been run and whether they passed.



Documentation Phase

During the **Documentation** phase, documentation is created to help IT teams to install the software (technical guides) or to help users to use the software (user guides or tutorials).

In the Documentation phase, the **team** should produce **technical guides, user guides and tutorials**.

Internal commentary is another type of documentation, but that is completed by the **Developer** during the **Implementation** phase.



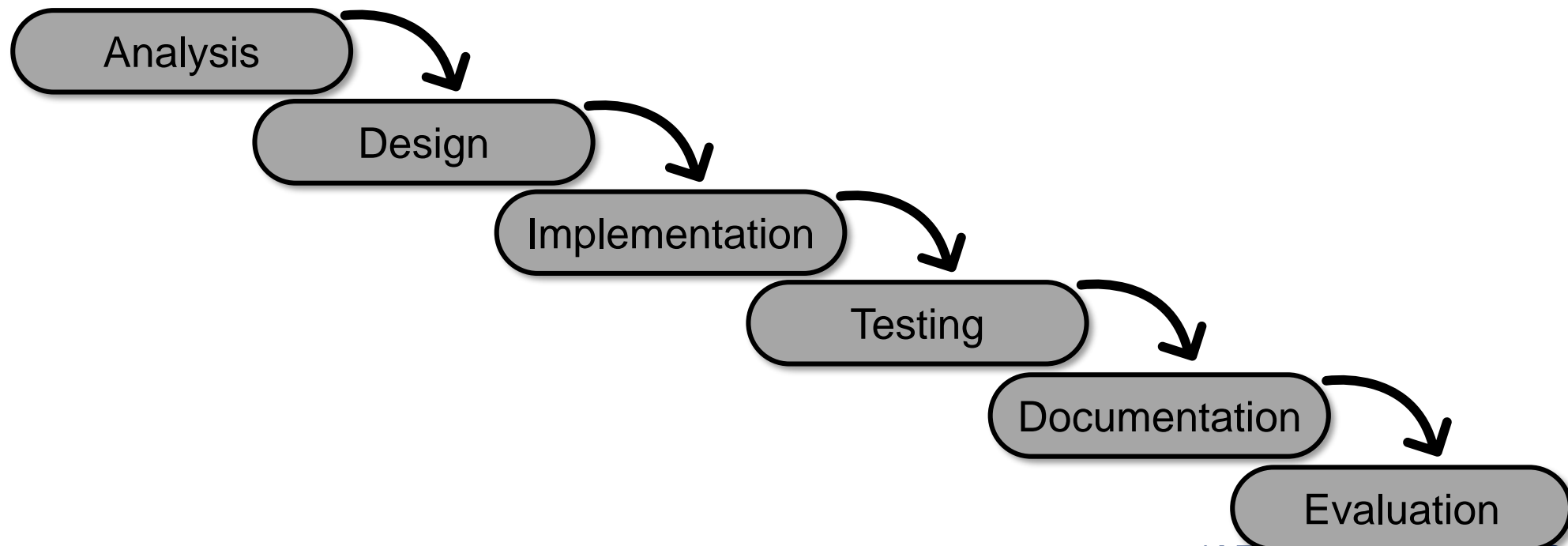
Evaluation Phase

During the **Evaluation** phase, several areas are checked.

- **Fitness for purpose:** the **client** checks if the program meets the requirements identified during the Analysis phase
- **Efficiency:** efficient programs use appropriate constructs that reduce the demand on RAM.
- **Robustness:** robust programs can cope with unexpected values without crashing.
- **Readability:** Describes how easy it is to read and edit code, particularly by a different developer. Readable code uses meaningful variable names, white space and internal commentary.

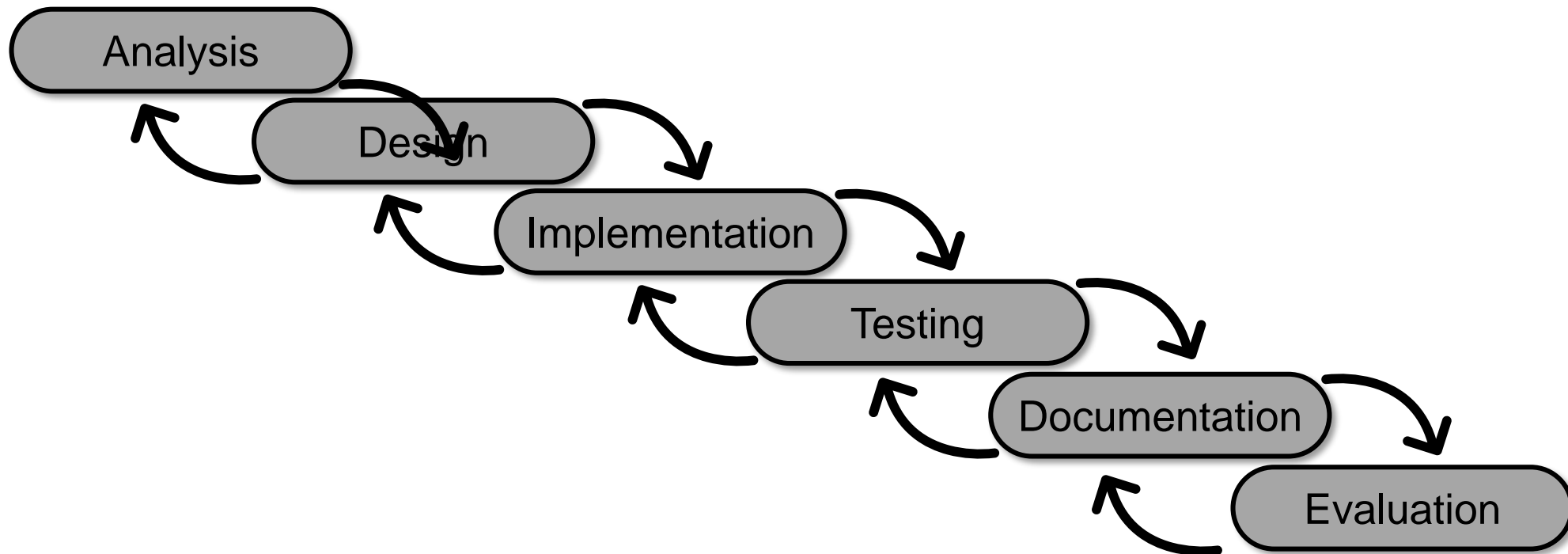
Development Process

These steps are carried out in a deliberate order, called a **process**. The most traditional process is called the **waterfall process**, as it resembles a waterfall when visualised:



Iterative Development Process

This development process is referred to as **iterative** as teams can repeat steps if a problem is found. For example, if the testers find a bug, the team can return to and repeat the Implementation phase.



Iterative Development Process

Iteration, or repeating phases, can be very time consuming and expensive. If the client identifies a problem in the Evaluation then the team may have to go right back to the Analysis phase.

It's important that each phase is completed carefully during the first iteration so that the teams can minimise how many times the teams have to iterate.