

## Systems Development

*Understand how computer-based systems are developed. Know about the process of analysis, design, programming and testing often used in developing computer-based systems.*

### Program development life cycle

The development of computer programs is a highly developed and structure process involving a number of distinct stages as shown in the table below. The stages of development are known as the **program development life cycle**.

Stage	Description
<b>Analysis</b>	The problem or task is analysed and clarified. This involves analysis of the way the task is currently being done and consultation with end users. The project is set out in broad outline. The work of this stage is performed by systems analysts.
<b>Design</b>	The project is broken down into smaller sections. These too may be further broken down until there are units. The method of programming each unit is then specified in great detail. The most suitable programming language for each unit is then chosen. The complete specification is the final design. The work of this stage is also performed by systems analysts.
<b>Programming</b>	The design is handed over to programmers who code the design into programming languages such as C or Java. The work of

	this stage is carried out by computer programmers.
<b>Testing</b>	Since programs are long and complex, they may contain errors called bugs. These may be syntactical errors, in which the programmer made a mistake in the structure of the command, or logical errors. In these the program appears to work, but works incorrectly. The process of testing is designed to find and eliminate bugs. This stage involves end users to try out the program, programmers to fix syntactical mistakes and systems analysts to fix errors in the logic of the program.

The following are often also included as part of the development cycle.

<b>Implementation</b>	Once the systems analysts are satisfied that the system is operating correctly, it is installed and implemented. Usually this is done using a <b>pilot group</b> . In this implementation, the system is implemented on a limited scale to start with. If any further bugs are found, these can be eliminated before full scale implementation.
<b>Further development</b>	Once the system has been in use for a while, further problems, limitations or performance problems may become apparent. The system will then be modified and new versions released with the changes.

