
Overview

This sub discipline covers the core competencies required to create software to address the needs of business problems and opportunities, resulting in a variety of software solutions, ranging from operating and control software to web based or specialist applications, such as accounting software and games software.

Development activities produce software that translates the design deliverables from HCI design, data design and software design, into working software. These designs will include, at a detailed level, functions and processing, interfaces, data handling and storage needs and how the system will be used by and interact with people, as appropriate. Development involves the translation of the designs into working software solutions that meet the business needs.

There is a wide range of software development activities that may be undertaken in a variety of environments appropriate to both the business and technical contexts in which they will be used, the software development environments used will be selected and specified during the design phase when the physical models are produced.

In some organisations, software development may be undertaken as part of a holistic life cycle approach where one individual or team may complete all stages; whereas in other organisations, each stage of development may be undertaken by individuals or teams or as part of projects and/or programmes.

**Performance
criteria**

Assist with the management of software development activities

You must be able to:

- P1 Follow organisational standards for the systems development lifecycle
- P2 Assist with the collation and use of information relating to IT architecture models together with business, data and HCI design deliverables in order to inform software development and testing activities
- P3 Assist in specifying precisely how the software that has been developed functions
- P4 Assist with the documentation of software development activities

Carry out software development activities under direction

You must be able to:

- P5 Correctly use software development procedures, tools and techniques, as directed by superiors
- P6 Comply with any relevant legislation, regulation and external standards relating to software development activities
- P7 Create software that incorporates the full range of design specifications, for example those relating to data and HCI, in order to produce effective software
- P8 Functionally test that the processing and functional needs specified within logical and physical software design deliverables have been met
- P9 Use naming conventions and standards in line with organisational standards
- P10 Use appropriate programming constructs to produce effective software
- P11 Optimize the use of system resources in software

Knowledge and understanding

You need to know and understand:

Assist with the management of software development activities

- K1 The importance of the systems development lifecycle as it relates to software development activities
- K2 What is meant by software development and the stages of activity that constitute it
- K3 The fact that many developers may work together to develop differing elements of a total software solution and these individual software elements need to work coherently together
- K4 The importance of verifying the accuracy, currency, completeness and relevance of information used during software development activities
- K5 The relationship between physical software design, data and HCI design and software development
- K6 The importance of accurately translating design deliverables in software development work
- K7 The importance of and value of software development activities being informed and directed by the deliverables from software design
- K8 the relationship between software development and other solution development and implementation activities
- K9 the value and role of software development in addressing business problems and opportunities
- K10 The fact that new software may need to be developed or existing software enhanced or adapted to take account of changing business needs
- K11 The fact that external providers of software development services exist
- K12 The importance of documenting software development and testing activities in a clear and understandable manner that will allow further development, amendments and updates to be made to solutions
- K13 Use and apply the systems development lifecycle as appropriate to software development activities
- K14 Collate information from data and HCI design deliverables in order to inform software development and testing activities
- K15 Verify functional requirements for individual software components
- K16 Document software development and testing activities accurately and clearly to allow further development, amendments and updates to be made to solutions

Carry out software development activities under direction

You need to know and understand:

- K17 The fact that software solutions must combine data and the commands to manipulate it in the most effective manner to meet the business

- requirements
- K18 What is meant by the syntax (grammar) of a programming language
- K19 The relationship between programming languages and development environments
- K20 The relationship between programming languages and file/database structures
- K21 What is involved in translating physical designs into working software
- K22 Data types that can be used and how they can be represented and manipulated
- K23 Programming constructs available and the uses they can be put to
- K24 The inputs to and required outputs from any piece of software development
- K25 The activities and tasks involved in software development
- K26 Why naming conventions and standards are used during software development work
- K27 The importance of optimising the use of system resources in software development work
- K28 The importance of ensuring that any software development uses all relevant inputs to it
- K29 and provides all necessary outputs from it
- K30 The fact that software development deliverables must meet design requirements
- K31 Interpret physical and logical designs to Identify and select:
 - K31.1 the processing and functional needs specified within logical and physical software design deliverables
 - K31.2 the functional requirements for individual software components
 - K31.3 what inputs need to be incorporated into software and what required outputs need to be produced from it
 - K31.4 information required to perform functional testing
 - K31.5 functional and unit testing which will be required as an integral part of development work
 - K31.6 appropriate programming constructs to produce effective software
- K32 Use and apply:
 - K32.1 specified software development procedures, tools and techniques
 - K32.2 naming conventions and standards in line with organisational standards
 - K32.3 appropriate programming constructs to produce effective software
 - K32.4 information relating to data and HCI design deliverables in order to inform software development activities
 - K32.5 the procedures, tools and techniques to undertake functional testing
- K33 Operate with reference to:
 - K33.1 organisational standards for software development activities
 - K33.2 professional and ethical standards in software development activities
 - K33.3 integrity and confidentiality during software development activities

- K33.4 design requirements and operating environments
- K34 Comply with all relevant and applicable legislation and regulations relating to software development activities
- K35 Optimise the use of system resources in software

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