
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

Direct the strategy for system/solution/service designs

You must be able to:

- P1 Select and apply organisational standards relating to software development activities
- P2 Identify which development environments and programming languages are to be used for specific software development activities
- P3 Identify and implement the procedures, tools and techniques applicable to software development activities
- P4 Identify, use and apply best practice in software development assignments

Initiate software development activities

You must be able to:

- P5 Correctly identify sponsors of and stakeholders for any software development assignment
- P6 Identify information required during software development activities in order to specify the requirements for system development, testing and implementation activities as these relate to software development deliverables
- P7 Discuss, negotiate and agree how the software will function with sponsors and stakeholders during software development, escalating issues where appropriate
- P8 Document requirements for software development assignments to be allocated to colleagues
- P9 Document requirements for software development assignments in a manner appropriate for full, fair and considered review by potential suppliers and partners

Manage software development activities

You must be able to:

- P10 Ensure that all of the required software components are produced
- P11 Ensure that the software developed takes account of and uses, as appropriate, technologies, software and assets that are available and can be used by an information technology system supporting the organisation
- P12 Verify that the rules and controls required to ensure the integrity and security of the proposed information technology system have been incorporated into software
- P13 Ensure that the deliverables of software development activities meet the relevant designs
- P14 Ensure that the deliverables of software development activities are provided to others as required
- P15 Manage changes to business requirements through change control mechanisms during software development activities, escalating issues where appropriate

Contribute to the management of software development projects and programmes

You must be able to:

- P16 Integrate software development activities , where appropriate, into projects and programmes
- P17 Present the information contained within software development deliverables to a wide
- P18 range of sponsors, stakeholders and other individuals in order to confirm understanding and ensure business needs are being met
- P19 Update software development deliverables, where appropriate, as a result of projects, programmes and software design activities
- P20 Assist with securing sign off of final software development deliverables from sponsors and stakeholders
- P21 Assist with the handover of responsibility for software to service management/support functions
- P22 Communicate the need for testing, systems development and implementation activities to align with software development deliverables
- P23 Advise others, both internally and externally, on all aspects of software development activities
- P24 Effectively manage external providers of software development services

Monitor and review software development activities

You must be able to:

- P25 Monitor, review and report on the alignment of testing, system development and implementation activities with software development activities
- P26 Monitor, review and report on the compliance of software development activities with any relevant legislation, regulation and external standards, in line with organisational strategy, policies and standards
- P27 Monitor and critically analyse the effectiveness and quality of software development activities to identify opportunities for improvement

Knowledge and understanding

You need to know and understand:

Implement the infrastructure for software development activities

- K1 The range of approaches that may be used to undertake software development and their appropriateness in a range of business and organisational contexts
- K2 The range and types of software development deliverables that can be produced to enable the holistic, 'end to end' development of an information technology solution to meet specific business needs
- K3 External factors that may impact on software development and their implications
- K4 Legislation, regulations and external standards that may apply to software development activities
- K5 Benefits and disadvantages of using external suppliers of software development activities
- K6 Best practice in software development
- K7 Implement procedures and standards relating to software development activities
- K8 Use the available programming language(s) and development environment(s)
- K9 Select the most appropriate programming language(s) and development environment(s) from those available

Initiate software development activities

You need to know and understand:

- K10 The role of sponsors and stakeholders for software development activities
- K11 The information relating to the business required to inform software development activities
- K12 The content of software development assignment documentation
- K13 Identify and select where and how existing software can be reused
- K14 Identify and select any requirements for co-ordinating development, testing and implementation activities with others
- K15 Identify and select the rules and controls required to ensure the integrity and security of the proposed IT and/or other technology system

K16 Use information relating to the business in order to inform software development activities

K17 Manage relationships with sponsors, stakeholders and external bodies on matters relating to software development activities

Manage software development activities

You need to know and understand:

K18 Who need to be provided with the deliverables of software development activities and when this needs to happen

K19 Validate the rules and controls required to ensure the integrity and security of the proposed IT and/or other technology system

K20 Ensure the rules and controls required to ensure the integrity and security of the proposed information technology system are referenced by (or embedded in) the software

K21 Take action in the event of software development activities not supporting the business needs as reflected in software design deliverables

Contribute to the management of software development projects and programmes

You need to know and understand:

K22 Who are the external providers of software development services

K23 The importance of managing relationships with sponsors, stakeholders and external bodies on matters relating to software development

K24 The need to secure sign off prior to implementation activities commencing

K25 Manage a range of real life factors and constraints during software development

K26 Ensure that the deliverables produced by software development activities are used to inform software implementation, support and maintenance activities

K27 Secure sign off of the software prior to implementation activities commencing

K28 Handover responsibility for software to service management/support functions

K29 Communicate the deliverables produced by software development activities to others

K30 Advise on all aspects of software development activities

K31 Update and integrate software development deliverables

Monitor and review software development activities

You need to know and understand:

K32 That the impact of any relevant legislation, regulation and external standards needs to be reflected in software development activities

K33 That the alignment of software development activities with any relevant legislation, regulations and external standards needs to be monitored

- K34 The importance of maintaining integrity and the confidentiality and security of data and information during software development activities
- K35 The need for monitoring of the quality and effectiveness of software development activities
- K36 The procedures, tools and techniques that can be used to monitor the alignment of software development activities with any relevant legislation, regulation and external standards
- K37 Use and apply the procedures, tools and techniques to monitor:
 - K37.1 the alignment of software development work with service level requirements
 - K37.2 the alignment of software development activities and deliverables with testing activities
 - K37.3 the quality and effectiveness of software development activities
- K38 Report findings from:
 - K38.1 monitoring the quality and effectiveness of software development activities
 - K38.2 issues concerned with the alignment of software development activities with testing activities
 - K38.3 issues involving external providers of software development work
- K39 Manage the alignment of software development activities with all relevant legislation, regulation and external standards, in line with organisational strategy, policies and standards

ESKITP5025

Software Development Level 5 Role

Developed by e-skills UK

Version number 1

Date approved September 2009

Indicative review date March 2014

Validity Current

Status Original

Originating organisation e-skills UK

Original URN 5025

Relevant occupations Information and Communication Technology; Software Development

Suite IT and Telecoms

Key words Programming; Coding; Application development; Web development; Games development