



Qualification specification

**NCFE Level 2 Certificate in Understanding
Coding
QN: 603/5854/3**

Contents

Summary of changes	3
Section 1	4
About this qualification	5
Support Handbook	5
Qualification summary	6
Entry guidance	8
Achieving this qualification	9
Units	10
How the qualification is assessed	11
Internal assessment	12
Supervision of learners and your role as an Assessor	12
Section 2	13
Unit content and assessment guidance	14
Unit 01 Understand the principles of coding (M/618/1187)	15
Unit 02 Understand terminology used in coding (T/618/1188)	18
Unit 03 Understand coding design principles (A/618/1189)	21
Unit 04 Understand the processes and practice of coding (M/618/1190)	24
Unit 05 Understand the importance of communication and project management in coding (T/618/1191)	27
Section 3	30
Explanation of terms	31
Section 4	33
Additional information	34
Resource requirements	34
Support for learners	34
Learner's Evidence Tracking Log (LETL)	34
There are a number of documents available on the NCFE website that centres might find useful.	34
Learning resources	34
Contact us	35

Summary of changes

This document summarises the changes to this qualification specification since the last version (Version 1.0 June 2020). Please check the NCFE website for the most recent version.

Version	Publication date	Summary of amendments
v1.0	July 2020	First publication
v1.1	June 2022	<p>Further information added to the how the qualification is assessed section to confirm that unless otherwise stated in this specification, all learners taking this qualification must be assessed in English and all assessment evidence presented for external quality assurance must be in English.</p> <p>Information added to the entry guidance section to advise that registration is at the discretion of the centre, in accordance with equality legislation and should be made on the Portal.</p> <p>Information added to the support handbook section about how to access support handbooks.</p>

Section 1

About this qualification

About this qualification

This Qualification Specification contains details of all the units and assessments required to complete this qualification.

To ensure that you are using the most up-to-date version of this Qualification Specification, please check the version number and date in the page footer against that of the Qualification Specification on the NCFE website.

If you advertise this qualification using a different or shortened name, you must ensure that learners are aware that their final certificate will state the full regulated qualification title.

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- you may copy and paste any material from this document; however, we do not accept any liability for any incomplete or inaccurate copying and subsequent use of this information
- the use of PDF versions of our support materials on the NCFE website will ensure that correct and up-to-date information is provided to learners
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- the resources and materials used in the delivery of this qualification must be age-appropriate and due consideration should be given to the wellbeing and safeguarding of learners in line with your institute's safeguarding policy when developing or selecting delivery materials.

Support Handbook

This qualification specification must be used alongside the mandatory support handbook which can be found on the NCFE website. This contains additional supporting information to help with planning, delivery and assessment.

This qualification specification contains all the qualification-specific information you will need that is not covered in the support handbook.

Qualification summary	
Qualification title	NCFE Level 2 Certificate in Understanding Coding
Qualification number (QN)	603/5854/3
Aim reference	60358543
Total Qualification Time (TQT)	255
Guided Learning Hours (GLH)	155
Minimum age	16+
Qualification purpose	This qualification is designed for learners who want to gain knowledge of coding. The qualification may also support progression into further study in coding or other topics within the digital sector.
Aims and objectives	<p>This qualification aims to:</p> <ul style="list-style-type: none"> • focus on an introduction to coding within the digital sector. <p>The objectives of this qualification are to enable the learner to gain an understanding of:</p> <ul style="list-style-type: none"> • principles of coding • the stages of the software development cycle • coding terminology and the key principles of writing code • different coding types • best practices in coding • methods of testing and the DevOps process • effective communication and project management in coding.
Work/industry placement experience	Work/industry placement experience is not required.
Rules of combination	To be awarded the Level 2 Certificate in Understanding Coding, learners must successfully complete 5 mandatory units.
Grading	Achieved/Not Yet Achieved.
Assessment method	Internally assessed and externally quality assured portfolio of evidence.
Progression	<p>Learners who achieve this qualification could progress to:</p> <ul style="list-style-type: none"> • Level 3 Certificate in Coding Practices • Level 3 Certificate or Diploma in IT User Skills • Level 3 Certificate in Programming.

Regulation information	This is a regulated qualification. The regulated number for this qualification is 603/5854/3.
Funding	This qualification may be eligible for funding. For further guidance on funding, please contact your local funding provider.

Entry guidance

This qualification is designed for learners who are looking to gain an introduction to coding. It will support the learner to progress into further study and support those interested in progressing to employment in a coding or IT related role.

Registration is at the discretion of the centre, in accordance with equality legislation, and should be made on the Portal. However, learners should be aged 16 or above to undertake this qualification.

There are no specific prior skills/knowledge a learner must have for this qualification. However, learners may find it helpful if they've already achieved a Level 1 Digital Skills or Information Technology related qualification.

Centres are responsible for ensuring that this qualification is appropriate for the age and ability of learners. They need to make sure that learners can fulfil the requirements of the learning outcomes and comply with the relevant literacy, numeracy and health and safety aspects of this qualification.

Learners registered on this qualification should not undertake another qualification at the same level with the same or a similar title, as duplication of learning may affect funding eligibility.

Achieving this qualification

To be awarded this qualification, learners are required to successfully achieve 5 mandatory units.

Please refer to the list of units below or the unit summaries in Section 2 for further information.

To achieve this qualification, learners must successfully demonstrate their achievement of all learning outcomes of the units as detailed in this Qualification Specification.

A partial certificate may be requested for learners who do not achieve their full qualification but have achieved at least one whole unit.

Units

To make cross-referencing assessment and quality assurance easier, we have used a sequential numbering system in this document for each unit.

The regulated unit number is indicated in brackets for each unit (eg M/100/7116) within Section 2.



Knowledge only units are indicated by a star. If a unit is not marked with a star, it is a skills unit or contains a mix of knowledge and skills.

Mandatory units

	Unit number	Regulated unit number	Unit title	Level	GLH
★	Unit 01	M/618/1187	Understand the principles of coding	2	30
★	Unit 02	T/618/1188	Understand terminology used in coding	2	30
★	Unit 03	A/618/1189	Understand coding design principles	2	20
★	Unit 04	M/618/1190	Understand the processes and practice of coding	2	35
★	Unit 05	T/618/1191	Understand the importance of communication and project management in coding	2	40

The units above may be available as stand-alone unit programmes. Please visit our website for further information.

How the qualification is assessed

Assessment is the process of measuring a learner's skill, knowledge and understanding against the standards set in a qualification.

The assessment consists of one component:

- an internally assessed portfolio of evidence which is assessed by centre staff and externally quality assured by NCFE.

Unless stated otherwise in this qualification specification, all learners taking this qualification must be assessed in English and all assessment evidence presented for external quality assurance must be in English.

Internal assessment

Each learner must create a portfolio of evidence generated from appropriate assessment tasks, which demonstrates achievement of all the learning outcomes associated with each unit. On completion of each unit, learners must declare that the work produced is their own and the Assessor must countersign this. Examples of suitable evidence for the portfolio for each unit are provided in Section 2.

Internally assessed work should be completed by the learner in accordance with the Qualification Specification.

The Tutor must be satisfied that the work produced is the learner's own.

A centre may choose to create their own internal assessment tasks, they should:

- be accessible and lead to objective assessment judgements
- permit and encourage authentic activities where the learner's own work can be clearly judged
- refer to Course File Documents on the NCFE website.

Supervision of learners and your role as an Assessor

Guidance on how to administer the internal assessment and the support you provide to learners can be found on the NCFE website.

Section 2

Unit content and assessment guidance

Unit content and assessment guidance

This section provides details of the structure and content of this qualification.

The types of evidence listed are for guidance purposes only. Within learners' portfolios, other types of evidence are acceptable if all learning outcomes are covered and if the evidence generated can be internally and externally quality assured. For approval of methods of internal assessment other than portfolio building, please contact our Customer Support team.

The Explanation of terms explains how the terms used in the unit content are applied to this qualification. This document can be found in Section 3.

For further information or guidance about this qualification please contact our Customer Support team.

Unit 01 Understand the principles of coding (M/618/1187)

Unit summary	In this unit learners will gain knowledge of coding languages and the software development lifecycle. The learner will also learn about the job roles, functions and key skills requirements of a coding professional.
Guided learning hours	30
Level	2
Mandatory/optional	Mandatory

Learning outcome 1**The learner will:**

- 1 Know about coding languages

The learner can:

- 1.1 Define the term 'coding'
- 1.2 Define what is meant by a coding language
- 1.3 Identify different coding languages available
- 1.4 State the difference between procedural and object oriented language
- 1.5 Define what is meant by syntax
- 1.6 Identify different technologies that use code to run

Learning outcome 2**The learner will:**

- 2 Understand job functions in coding

The learner can:

- 2.1 Identify the key job functions of a **coding professional**
- 2.2 Identify key skills requirements for a coding professional
- 2.3 Explain why project management skills are important in coding
- 2.4 Identify different roles within a coding team
- 2.5 Explain why team working is important in coding
- 2.6 Identify different careers and career progression available

Learning outcome 3**The learner will:**

- 3 Understand the **software development lifecycle**

The learner can:

- 3.1 Identify the key stages of the software development lifecycle

- 3.2 Explain the different stages of the software development lifecycle
 - 3.3 Describe the importance of the **planning stage**
 - 3.4 Identify actions that may take place during the implementation stage
 - 3.5 Explain the importance of the testing stage
 - 3.6 Describe actions that may take place during the deployment stage
 - 3.7 Explain the importance of the maintenance stage
-

Key words

Coding professional – Industry terms are often “Software Engineering professional” or “Software Development professional”. Coding is a term used to refer to writing software.

Software development lifecycle – This may also be known as the software development lifecycle process or stages of software development. A range of terminology is used and a range of different approaches may be available. We have used the following for this qualification:

- requirement gathering and analysis
- design
- implementation or coding
- testing
- deployment
- maintenance.

Planning stage – This covers the requirements gathering and analysis and design stages.

Assessment guidance

Delivery and assessment
<p>1.3 Learners must identify two or more languages.</p> <p>2.3 Learners will need to explain why project management skills are important in coding, including how it contributes to how work is planned.</p> <p>2.2–2.6 Learners should research a variety of key skills, job roles and career opportunities in coding.</p> <p>The Explanation of terms (Section 3) explains how the terms used in the unit content are applied to this qualification.</p>
Types of evidence
<p>Evidence could include:</p> <ul style="list-style-type: none">• research• reports• learner written statement• written or oral question and answer• discussion• assignment• presentation.

Unit 02 Understand terminology used in coding (T/618/1188)

Unit summary	In this unit, the learner will understand basic computer terminology in relation to coding. They will also learn about coding acronyms, terminology and the key principles of writing code.
Guided learning hours	30
Level	2
Mandatory/optional	Mandatory

Learning outcome 1**The learner will:**

- 1 Understand basic computer terminology

The learner can:

- 1.1 Define what is meant by Central Processing Unit (CPU)
- 1.2 Explain the function of Random-Access Memory (RAM)
- 1.3 Define the term 'data'
- 1.4 Identify the key purpose of data types used in coding
- 1.5 Identify ways that data can be stored

Learning outcome 2**The learner will:**

- 2 Understand coding acronyms and terminology

The learner can:

- 2.1 Describe what is meant by a unit of code
- 2.2 Identify the key characteristics of DRY code
- 2.3 Identify the key characteristics of WET code
- 2.4 Explain the key differences between DRY and WET code
- 2.5 Describe what is meant by open source code
- 2.6 Describe what is meant by closed source code

Learning outcome 3**The learner will:**

- 3 Understand key principles when writing code

The learner can:

- 3.1 Explain what is meant by the term 'collection'
- 3.2 Explain what is meant by control flow

- 3.3** Define what is meant by iterations
 - 3.4** Define what is meant by recursions
 - 3.5** Explain the use of queues, stacks and lists
 - 3.6** Explain the use of variables
 - 3.7** Describe the principles of functions
 - 3.8** Define operands/operations
-

Assessment guidance

Delivery and assessment
Learners should understand basic computer terminology used in coding. Learners should be aware of coding acronyms and terminology used and key principles in coding. The Explanation of terms (Section 3) explains how the terms used in the unit content are applied to this qualification.
Types of evidence
Evidence could include: <ul style="list-style-type: none">• research• case studies• learner written statement• written or oral question and answer• discussion• assignment• presentation.

Unit 03 Understand coding design principles (A/618/1189)

Unit summary	In this unit the learner will gain knowledge of different coding types and the advantages and disadvantages of their use. The learner will also understand the use of pure functions.
Guided learning hours	20
Level	2
Mandatory/optional	Mandatory

Learning outcome 1**The learner will:**

- 1 Know about different coding types

The learner can

- 1.1 Define what is meant by imperative coding
- 1.2 Define what is meant by declarative coding
- 1.3 Define what is meant by functional coding
- 1.4 Define what is meant by object-orientated coding
- 1.5 Identify **other coding types**
- 1.6 State the advantages and disadvantages of functional, object-orientated and other coding types

Learning outcome 2**The learner will:**

- 2 Understand what is meant by compiled and interpreted code

The learner can:

- 2.1 Define the term compiled code
- 2.2 Define the term interpreted code
- 2.3 Explain the principles of
 - compiled code
 - interpreted code
- 2.4 Explain the advantages and disadvantages of:
 - compiled code
 - interpreted code

Learning outcome 3**The learner will:**

- 3 Understand what is meant by a pure function

The learner can:

- 3.1 Define the term 'pure function'
 - 3.2 Define the term 'impure function'
 - 3.3 Identify potential dependencies/needs in pure function
 - 3.4 Explain the benefits of pure function
 - 3.5 Explain the term parallelisation
 - 3.6 Describe how parallelisation is managed
-

Key word

Other coding types – Should include procedural, event-driven and multi-paradigm.

Assessment guidance

Delivery and assessment
<p>The learner should know about coding types and their advantages and disadvantages.</p> <p>Learners should also understand pure function identifying the dependencies and explaining the benefits of this function.</p> <p>The Explanation of terms (Section 3) explains how the terms used in the unit content are applied to this qualification.</p>
Types of evidence
<p>Evidence could include:</p> <ul style="list-style-type: none">• research• reports• learner written statement• written or oral question and answer• discussion• assignment• presentation.

Unit 04 Understand the processes and practice of coding (M/618/1190)

Unit summary	In this unit the learner will understand best practice in coding, methods of testing used and DevOps processes.
Guided learning hours	35
Level	2
Mandatory/optional	Mandatory

Learning outcome 1**The learner will:**

- 1 Understand the principles of best practice in coding

The learner can:

- 1.1 Describe what is meant by the **KISS** principle
- 1.2 Give examples of the disadvantages of writing complicated code
- 1.3 Define what is meant by the single responsibility principle
- 1.4 Describe what is meant by separation of concerns
- 1.5 Define what is meant by abstraction
- 1.6 Describe what is meant by solid principles

Learning outcome 2**The learner will:**

- 2 Understand the methods of testing code

The learner can:

- 2.1 Explain what is meant by testing code
- 2.2 Explain why it is important to test code
- 2.3 Identify methods of testing code
- 2.4 Describe the characteristics of a test driven development
- 2.5 Explain the benefits of a test driven development
- 2.6 Identify what is meant by a **bug** in relation to code
- 2.7 Describe what is meant by debugging

Learning outcome 3

The learner will:

3 Understand DevOps processes

The learner can:

- 3.1 Define what is meant by continuous integration
 - 3.2 Define what is meant by continuous delivery
 - 3.3 Define what is meant by continuous deployment
 - 3.4 Identify the steps required for:
 - continuous integration
 - continuous delivery
 - continuous deployment
 - 3.5 Identify the differences between:
 - continuous integration
 - continuous delivery
 - continuous deployment
-

Learning outcome 4

The learner will:

4 Understand the importance of robust coding

The learner can:

- 4.1 Explain what is meant by exception handling
 - 4.2 Explain what is meant by defensive programming
-

Key words

KISS – Keep It Simple Stupid.

Bug – Is also known as an error, defect or issue.

Assessment guidance

Delivery and assessment

Learners should be able to understand the best practices in coding by researching a variety of sources of information.

Learners will need to know about the DevOps process, methods and importance of testing code, and of robust coding.

The Explanation of terms (Section 3) explains how the terms used in the unit content are applied to this qualification.

Types of evidence

Evidence could include:

- research
- reports
- learner written statement
- written or oral question and answer
- discussion
- assignment
- presentation.

Unit 05 Understand the importance of communication and project management in coding (T/618/1191)



Unit summary	In this unit, the learner will understand the importance of communication for those working in a coding environment. They will also learn about project management principles and Agile developments.
Guided learning hours	40
Level	2
Mandatory/optional	Mandatory

Learning outcome 1

The learner will:

- 1 Understand the importance of communication

The learner can:

- 1.1 Explain the importance of communication
- 1.2 Describe different **methods** of communication
- 1.3 Identify when to use different methods of communication
- 1.4 Explain the importance of adapting communication for different audiences
- 1.5 Define what is meant by active listening
- 1.6 Describe methods of active listening
- 1.7 Describe ways of verbally presenting information and ideas clearly
- 1.8 Explain how release notes are used to communicate information to others

Learning outcome 2

The learner will:

- 2 Understand the purpose of feedback in developing communication skills

The learner can:

- 2.1 Describe ways of seeking feedback on communications
- 2.2 Explain the purpose of using feedback to develop communication skills
- 2.3 Explain what is meant by productive feedback

Learning outcome 3

The learner will:

- 3 Understand the principles of project management

The learner can:

- 3.1 Define what is meant by project management
 - 3.2 Define the role of a Project Manager
 - 3.3 Identify the principles of Lean project management
 - 3.4 Identify the principles of Waterfall project management
 - 3.5 Explain what is meant by the **triple constraint**
-

Learning outcome 4

The learner will:

- 4 Understand Agile developments

The learner can:

- 4.1 Define what is meant by an Agile development
 - 4.2 Identify the key characteristics of an Agile development
 - 4.3 Identify the advantages and disadvantages of an Agile development
 - 4.4 Describe what is meant by Scrum
 - 4.5 Explain the role of a:
 - Product Owner
 - Scrum Master
 - Scrum team
 - 4.6 Describe different **Scrum events**
-

Key words

Methods – Could include, but are not limited to, interpersonal communication, verbal and non-verbal communication and written communication.

Triple constraint – Must include project scope, time, and cost.

Scrum events – Must include the Sprint, Sprint Planning, Daily Scrum, Sprint Review and Sprint Retrospective.

Assessment guidance

Delivery and assessment
<p>The learner will need to understand the importance of communication when working in a coding environment, including the purpose of communication and the different requirements of the audience.</p> <p>The learner will know about the key principles of project management, Agile developments and Scrum.</p> <p>3.5 The triple constraint is sometimes referred to as the project management triangle or the iron triangle.</p> <p>The Explanation of terms (Section 3) explains how the terms used in the unit content are applied to this qualification.</p>
Types of evidence
<p>Evidence could include:</p> <ul style="list-style-type: none">• research• reports• learner written statement• written or oral question and answer• discussion• assignment• presentation.

Section 3

Explanation of terms

Explanation of terms

This table explains how the terms used at Level 2 in the unit content are applied to this qualification (not all verbs are used in this qualification).

Apply	Link existing knowledge to new or different situations.
Assess	Consider information in order to make decisions.
Classify	Organise according to specific criteria.
Compare	Examine the subjects in detail looking at similarities and differences.
Define	State the meaning of a word or phrase.
Demonstrate	Show an understanding of the subject or how to apply skills in a practical situation.
Describe	Write about the subject giving detailed information.
Differentiate	Give the differences between two or more things.
Discuss	Write an account giving more than one view or opinion.
Distinguish	Show or recognise the difference between items/ideas/information.
Estimate	Give an approximate decision or opinion using previous knowledge.
Explain	Provide details about the subject with reasons showing how or why. Some responses could include examples.
Give (positive and negative points...)	Provide information showing the advantages and disadvantages of the subject.
Identify	List or name the main points. (Some description may also be necessary to gain higher marks when using compensatory marking).
Illustrate	Give clear information using written examples, pictures or diagrams.
List	Make a list of key words, sentences or comments that focus on the subject.
Plan	Think about and organise information in a logical way. This could be presented as written information, a diagram, an illustration or other suitable formats.
Perform	Do something (take an action/follow an instruction) which the question or task asks or requires.
Provide	Give relevant information about a subject.
Reflect	Learners should look back on their actions, experiences or learning and think about how this could inform their future practice.

Select	Choose for a specific purpose.
Show	Supply sufficient evidence to demonstrate knowledge and understanding.
State	Give the main points clearly in sentences.
Use	Take or apply an item, resource or piece of information as asked in the question or task.

Section 4

Additional information

Additional information

Resource requirements

To assist in the delivery of this qualification, learners should have access to the following:

- a digital device (eg a desktop PC, laptop or tablet)
- access to a storage medium
- web browser software/applications
- internet connectivity
- programming software.*

*This is a knowledge only qualification and there is no requirement for the learner to demonstrate any coding skills. However, should centres wish to give learners access to software to illustrate code and coding concepts, there is no requirement to use any specific software/applications. Centres are able to use any free or paid-for software/applications.

Support for learners

Learner's Evidence Tracking Log (LETL)

The LETL can help learners keep track of their work. This blank document can be downloaded free of charge from the NCFE website. You don't have to use the LETL – you can devise your own evidence tracking document instead.

Support for centres

There are a number of documents available on the NCFE website that centres might find useful.

Useful websites

Centres may find the following websites helpful for information, materials and resources to assist with the delivery of this qualification:

- Computer Hope www.computerhope.com/jargon.htm
 - Institute of Coding www.instituteofcoding.org/
 - National Cyber Security Centre (secure development and deployment guidance) www.ncsc.gov.uk/collection/developers-collection
-

Learning resources

We offer a wide range of learning resources and materials to support the delivery of our qualifications. Please check the qualifications page on the NCFE website for more information and to see what is available for this qualification.

Contact us

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