## Computing Qualifications and Information

| HANDBOOK <br> COMPUTING L1-L2 | Level 1 <br> Certificate | Level 2 <br> Certificate | Key Stage 3 <br> Schemes of Works |
| :---: | :---: | :---: | :---: |

The Computing qualification, as with all AOs, was removed from DfE Performance Tables from 2017 onwards in order to support the GCSE Computer Science qualification.

## Level 1

## Level 1, Unit 1 - Computer Science (5 credits)

## 1. Design, use and evaluate computational abstractions

1.1 develop abstractions to represent physical objects [5]

1.2 use data patterns to represent physical objects [9]

1.3 follow instructions to produce a software abstraction [13]
1.4 use software abstractions that model real world systems [17]
1.5 identify strengths and weaknesses in computational
2.5 change variables in an algorithm and predict the effect

2. Understand algorithms

## 2.1 write algorithms for everyday tasks [6]

2.2 identify different algorithms that target the same task [10]

## 2.3 compare

algorithms [14]

## 3. Be able to use programing languages

3.1 originate useful code in a visual language [7]

3.2 originate useful code in a text based language [11]

$$
\begin{aligned}
& \begin{array}{l}
3.3 \text { identify } \\
\text { structure in } \\
\text { programs [15] }
\end{array}
\end{aligned}
$$

3.4 test code [19]
2.4 apply logic to efficiency and effectiveness of algorithms [18]

| 2.6 know how <br> instructions and | 3.6 choose <br> variable names that | 4.6 represent <br> numbers using |
| :--- | :--- | :--- |
| data are stored [25] | aid clarity [26] | binary patterns [27] |

2.7 identify
situations where
codes control
events [28]

## Level 1, Unit 2 - Using digital applications to support projects (5 credits)

## 1. Select use and combine applications

1.1 select suitable applications to support my work [30]

1.2 collect and record data [34]

1.3 find patterns in
data [38] data [38]
1.4 present data effectively [42]

## 2. Create original works using digital applications

## 2.1 originate

 digital information from my own imagination [31]2.2 use remix to create original digital information [35]
2.3 use specific design techniques [39]

## 3. Be able to manage projects

## 3.1 structure a

 plan for a project supported by digital tools [32]> 3.2 carry out projects by linking a sequence of steps [36]
3.3 evaluate a project in terms of its strengths and weaknesses [40]
2.4 match my work to a target audience [43]
3.4 apply e-safety principles to my projects [44]
4. Respect intellectual property
4.1 identify licenses that are restrictive [33]
4.2 identify
licenses that are liberal [37]
4.3 ensure my work contains only appropriately licensed content [41]
4.4 find open source equivalents for many proprietary software applications [45]

> 1.5 meet the needs of other people [46]
1.6 use more than one application to solve a problem [48]
3.5 show courage
in completing a
project [47]

## Level 1, Unit 3 - Computer hardware systems and networks (5 credits)

## 1. Understand computer hardware

## 2. Understand the role of network servers

## 2.1 identify a

 server in a network diagram [51]
## 3. Be able to identify factors affecting network performance

3.1 compare the performance of cable and wireless connections [52]
3.2 relate bandwidth to data transfer capacity [56]
3.3 explain the term "contention" [60]
3.4 identify potential bottlenecks in network designs [64]
3.5 distinguish between local and wide area networks [68]
4. Contribute to good network security
4.1 work to support an acceptable use policy [53]
4.2 choose a strong network password and keep it secure [57]
4.3 identify encryption as a way of making information secure [61]
4.4 identify ways of minimising spam and eliminating malware [65]
4.5 identify a firewall and explain its purpose [69]
3.6 identify
protocols used in networks [71]
1.6 identify cost as
an issue in
performance [70]
1.5 identify power consumption and performance as key limits on hardware [66]
1.4 compare
hardware
components on the basis of their properties [62]
1.3 classify hardware on the basis of purpose [58]
[59]
2.4 identify key factors that can affect server and network
performance [63]
2.5 know about permissions and basic server security [67]
2.3 identify key services provided by internet servers
2.2 identify a range of servers and services provided by servers to networks [55]

## Level 2

## Level 2, Unit 1 - Computer Science (5 credits)

## 1. Design, use and evaluate computational abstractions

1.1 develop abstractions to make efficient code [73]
1.2 use computational techniques to store patterns more efficiently [77]
1.3 modify a software abstraction to serve a new purpose [81]
1.4 describe software abstractions that model real world systems [85]
1.5 describe strengths and weaknesses in computational models [89]

## 2. Understand algorithms

2.1 write complex algorithms that include conditional loops [74]
2.2 describe different algorithms that target the same task [78]

## 3. Be able to use programing languages

3.1 modify an existing program to extend the scope of its use [75]
3.2 distinguish between a markup language and a programming language [79]
2.3 compare algorithms on the basis of efficiency [82]
2.4 explain the relationship between instructions and data in an algorithm [86]
2.5 explain the words iteration and recursion [90]
3.3 originate code to solve a problem [83]
3.4 test code using systematic methods [87]
3.5 explain the difference between source code and executable code [91]

## 4. Understand boolean logic, binary and hexadecimal numbers

4.1 show how NOT AND and OR gates can be made from NAND gates only [76]
4.2 add and subtract binary numbers [80]
4.3 relate 4 bit binary to hexadecimal numbers [84]
4.4 relate binary numbers to the voltage state of a connector [88]
4.5 explain analogue to digital conversion [92]

## Level 2, Unit 2 - Using digital applications to support projects (5 credits)

\author{

1. Select, combine and <br> evaluate <br> applications
}
2. Create original works using digital applications

## 3. Be able to <br> manage projects

## Computing Qualifications and Information

-->

| 1.1 compare <br> suitable applications | 2.1 originate <br> original digital | 3.1 devise a <br> project plan to |
| :--- | :--- | :--- |
| to support my work | information from my <br> [94] | explain my <br> own imagination |
| intentions [96] |  |  |

1.2 organise and classify data and information [98]
2.2 use remix to create original digital information [99]
1.3 format data for different applications [102]
1.4 explain interoperability [106]
1.5 use
collaborative
technologies safely
[110]
2.3 consider digital technology issues to inform my design techniques [103]
2.4 match my work to a target audience [107]
2.5 compare my work to acknowledged good practice [111]
3.1 devise a project plan to explain my intentions [96]
3.2 set deadlines on the way to reaching my project goal [100]
3.3 meet deadlines on the way to reaching my project goal [104]
3.4 apply e-safety principles to my projects [108]
4.1 describe my prefered license for my project [97]
4.2 compare liberal and restrictive licenses [101]
4.3 describe the 4 freedoms of Free and Open Source Software [105]
4.4 explain the difference between copyright and license [109]
4.5 explain the terms Creative Commons and DRM [113]
3.6 evaluate a project in terms of its strengths and weaknesses [114]

## Level 2, Unit 3 - Computer hardware systems and networks (5 credits)

## 1. Understand computer hardware

1.1 describe the function of the main hardware components in computing devices [116]

## 2. Understand the role of network servers

2.1 describe a server in terms of its functions [117]

## 3. Understand network design related to performance

3.1 describe network design features [118]

## 4. Contribute to good network safety and security

## 4.1 describe

 features of a good acceptable use policy [119]| 1.2 explain <br> performance criteria | 2.2 explain the <br> performance criteria | 3.2 explain <br> for key componenent choice | 4.2 describe the <br> features of a strong |
| :--- | :--- | :--- | :--- |
| for servers [121] | based on cost and | password [123] |  |

[^0] 'pageview');

## Computing Qualifications and Information

-->
[120]

1.3 relate computer hardware to computational thinking [124]

performance [122]
3.3 explain how $\quad 4.3$ describe a networks communicate to transfer data [126]
method of data encryption [127]

## 4.4 identify

 examples of unsafe practice on networks [128]Source URL: https://theingots.org/community/Computing_qualification_info_units

## Links

[1] https://theingots.org/community/sites/default/files/uploads/common/Handbooks/Computing/Specif ication for L1 L2 Opensystems Computingr5.pdf
[2] http://register.ofqual.gov.uk/Detail/Index/30217?category=qualifications\&query=tlm\ co mputing
[3] http://register.ofqual.gov.uk/Detail/Index/30218?category=qualifications\&query=tlm\ co mputing
[4] http://www.computingresources.info/?page_id=305
[5] https://theingots.org/community/cpl1u1x\#1.1
[6] https://theingots.org/community/cpl1u1x\#2.1
[7] https://theingots.org/community/cpl1u1x\#3.1
[8] https://theingots.org/community/cpl1u1x\#4.1
[9] https://theingots.org/community/cpl1u1x\#1.2
[10] https://theingots.org/community/cpl1u1x\#2.2
[11] https://theingots.org/community/cpl1u1x\#3.2
[12] https://theingots.org/community/cpl1u1x\#4.2
[13] https://theingots.org/community/cpl1u1x\#1.3
[14] https://theingots.org/community/cpl1u1x\#2.3
[15] https://theingots.org/community/cpl1u1x\#3.3
[16] https://theingots.org/community/cpl1u1x\#4.3
[17] https://theingots.org/community/cpl1u1x\#1.4
[18] https://theingots.org/community/cpl1u1x\#2.4
[19] https://theingots.org/community/cpl1u1x\#3.4
[20] https://theingots.org/community/cpl1u1x\#4.4
[21] https://theingots.org/community/cpllulx\#1.5
[22] https://theingots.org/community/cpl1u1x\#2.5
[23] https://theingots.org/community/cpl1u1x\#3.5
[24] https://theingots.org/community/cpl1u1x\#4.5
[25] https://theingots.org/community/cpl1u1x\#2.6
[26] https://theingots.org/community/cpl1u1x\#3.6
[27] https://theingots.org/community/cpl1u1x\#4.6
[28] https://theingots.org/community/cpl1u1x\#2.7
[29] https://theingots.org/community/cpl1uli
[30] https://theingots.org/community/cpl1u2x\#1.1
[31] https://theingots.org/community/cpl1u2x\#2.1
[32] https://theingots.org/community/cpl1u2x\#3.1
[33] https://theingots.org/community/cpl1u2x\#4.1
[34] https://theingots.org/community/cpl1u2x\#1.2

## Computing Qualifications and Information

[35] https://theingots.org/community/cpl1u2x\#2.2
[36] https://theingots.org/community/cpl1u2x\#3.2
[37] https://theingots.org/community/cpl1u2x\#4.2
[38] https://theingots.org/community/cpl1u2x\#1.3
[39] https://theingots.org/community/cpl1u2x\#2.3
[40] https://theingots.org/community/cpl1u2x\#3.3
[41] https://theingots.org/community/cpl1u2x\#4.3
[42] https://theingots.org/community/cpl1u2x\#1.4
[43] https://theingots.org/community/cpl1u2x\#2.4
[44] https://theingots.org/community/cpl1u2x\#3.4
[45] https://theingots.org/community/cpl1u2x\#4.4
[46] https://theingots.org/community/cpl1u2x\#1.5
[47] https://theingots.org/community/cpl1u2x\#3.5
[48] https://theingots.org/community/cpl1u2x\#1.6
[49] https://theingots.org/community/cpl1u2i
[50] https://theingots.org/community/cpl1u3x\#1.1
[51] https://theingots.org/community/cpl1u3x\#2.1
[52] https://theingots.org/community/cpl1u3x\#3.1
[53] https://theingots.org/community/cpl1u3x\#4.1
[54] https://theingots.org/community/cpl1u3x\#1.2
[55] https://theingots.org/community/cpl1u3x\#2.2
[56] https://theingots.org/community/cpl1u3x\#3.2
[57] https://theingots.org/community/cpl1u3x\#4.2
[58] https://theingots.org/community/cpl1u3x\#1.3
[59] https://theingots.org/community/cpl1u3x\#2.3
[60] https://theingots.org/community/cpl1u3x\#3.3
[61] https://theingots.org/community/cpl1u3x\#4.3
[62] https://theingots.org/community/cpl1u3x\#1.4
[63] https://theingots.org/community/cpl1u3x\#2.4
[64] https://theingots.org/community/cpl1u3x\#3.4
[65] https://theingots.org/community/cpl1u3x\#4.4
[66] https://theingots.org/community/cpl1u3x\#1.5
[67] https://theingots.org/community/cpl1u3x\#2.5
[68] https://theingots.org/community/cpl1u3x\#3.5
[69] https://theingots.org/community/cpl1u3x\#4.5
[70] https://theingots.org/community/cpl1u3x\#1.6
[71] https://theingots.org/community/cpl1u3x\#3.6
[72] https://theingots.org/community/cpl1u3i
[73] https://theingots.org/community/cpl2u1x\#1.1
[74] https://theingots.org/community/cpl2u1x\#2.1
[75] https://theingots.org/community/cpl2u1x\#3.1
[76] https://theingots.org/community/cpl2u1x\#4.1
[77] https://theingots.org/community/cpl2u1x\#1.2
[78] https://theingots.org/community/cpl2u1x\#2.2
[79] https://theingots.org/community/cpl2u1x\#3.2
[80] https://theingots.org/community/cpl2u1x\#4.2
[81] https://theingots.org/community/cpl2u1x\#1.3
[82] https://theingots.org/community/cpl2u1x\#2.3
[83] https://theingots.org/community/cpl2u1x\#3.3
[84] https://theingots.org/community/cpl2u1x\#4.3
[85] https://theingots.org/community/cpl2u1x\#1.4
[86] https://theingots.org/community/cpl2u1x\#2.4
[87] https://theingots.org/community/cpl2u1x\#3.4
[88] https://theingots.org/community/cpl2u1x\#4.4
[89] https://theingots.org/community/cpl2u1x\#1.5
[90] https://theingots.org/community/cpl2u1x\#2.5
[91] https://theingots.org/community/cpl2u1x\#3.5
[92] https://theingots.org/community/cpl2u1x\#4.5
[93] https://theingots.org/community/cpl2uli

## Computing Qualifications and Information

[94] https://theingots.org/community/cpl2u2x\#1.1
[95] https://theingots.org/community/cpl2u2x\#2.1
[96] https://theingots.org/community/cpl2u2x\#3.1
[97] https://theingots.org/community/cpl2u2x\#4.1
[98] https://theingots.org/community/cpl2u2x\#1.2
[99] https://theingots.org/community/cpl2u2x\#2.2
[100] https://theingots.org/community/cpl2u2x\#3.2
[101] https://theingots.org/community/cpl2u2x\#4.2
[102] https://theingots.org/community/cpl2u2x\#1.3
[103] https://theingots.org/community/cpl2u2x\#2.3
[104] https://theingots.org/community/cpl2u2x\#3.3
[105] https://theingots.org/community/cpl2u2x\#4.3
[106] https://theingots.org/community/cpl2u2x\#1.4
[107] https://theingots.org/community/cpl2u2x\#2.4
[108] https://theingots.org/community/cpl2u2x\#3.4
[109] https://theingots.org/community/cpl2u2x\#4.4
[110] https://theingots.org/community/cpl2u2x\#1.5
[111] https://theingots.org/community/cpl2u2x\#2.5
[112] https://theingots.org/community/cpl2u2x\#3.5
[113] https://theingots.org/community/cpl2u2x\#4.5
[114] https://theingots.org/community/cpl2u2x\#3.6
[115] https://theingots.org/community/cpl2u2i
[116] https://theingots.org/community/cpl2u3x\#1.1
[117] https://theingots.org/community/cpl2u3x\#2.1
[118] https://theingots.org/community/cpl2u3x\#3.1
[119] https://theingots.org/community/cpl2u3x\#4.1
[120] https://theingots.org/community/cpl2u3x\#1.2
[121] https://theingots.org/community/cpl2u3x\#2.2
[122] https://theingots.org/community/cpl2u3x\#3.2
[123] https://theingots.org/community/cpl2u3x\#4.2
[124] https://theingots.org/community/cpl2u3x\#1.3
[125] https://theingots.org/community/cpl2u3x\#2.3
[126] https://theingots.org/community/cpl2u3x\#3.3
[127] https://theingots.org/community/cpl2u3x\#4.3
[128] https://theingots.org/community/cpl2u3x\#4.4
[129] https://theingots.org/community/cpl2u3i


[^0]:    (function(i,s,o,g,r,a,m)\{i['GoogleAnalyticsObject']=r;i[r]=i[r]||function()\{ (i[r].q=i[r].q||[]).push(arguments)\},i[r].I=1*new Date();a=s.createElement(o), m=s.getElementsByTagName(o)[0];a.async=1;a.src=g;m.parentNode.insertBef(geekaf \})(window,document,'script','//www.google-analytics.com/analytics.js','ga'); ga('create', 'UA-46896377-2', 'auto'); ga('send',

