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Level 3

Level 3, Unit 1 - Computational Thinking (10 credits)

1. understand the computational problem solving process.	2. be able to apply number systems and logic to computing problems.	3. analyse problems to create computational solutions.
[1.1 demonstrate how abstractions represent complex data structures and instructions.](#) [1]	[2.1 use mathematical functions in practical algorithms.](#) [2]	[3.1 work collaboratively and persistently to achieve a good computational solution.](#) [3]
[1.2 consult with relevant industry professionals and academics to improve solutions.](#) [4]	[2.2 explain how digital computers can work with a full range of real numbers.](#) [5]	[3.2 explain computational solutions in terms of sequential automated steps.](#) [6]
[1.3 iteratively refine solutions to improve efficiency and effectiveness.](#) [7]	[2.3 analyse expressions in boolean logic to simplify them.](#) [8]	[3.3 identify practical problems suitable for a computational solution.](#) [9]
[1.4 organise data in terms of logical patterns.](#) [10]	[2.4 explain the difference between packed and unpacked binary coded decimal.](#) [11]	[3.4 find ways of making computational solutions more efficient.](#) [12]
[1.5 use multiple algorithms to solve complex problems.](#) [13]	[2.5 explain the relationship between binary and hexadecimal numbers.](#) [14]	[3.5 analyse complex problems into simpler related components.](#) [15]

Level 3, Unit 2 - Principles of Software Engineering (10 credits)

1. understand the role of the target audience.	2. understand strategies for maintaining quality.	3. adopt suitable methods to match circumstances.

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[1.1 explain principles of user interface design.](#) [17]

[2.1 explain and demonstrate the importance of courage and persistence in solving problems.](#) [18]

[3.1 explain the different demands of large scale and small scale projects.](#) [19]

[1.2 describe methods for providing feedback to users from errors in the code.](#) [20]

[2.2 explain a sound testing strategy.](#) [21]

[3.2 specify a documentation strategy.](#) [22]

[1.3 receive user feedback and act positively.](#) [23]

[2.3 demonstrate quality strategies through small scale projects.](#) [24]

[3.3 compare procedural and object oriented programming.](#) [25]

[1.4 describe the rationale for release early, release often.](#) [26]

[2.4 establish clear communication channels with critical reviewers.](#) [27]

[3.4 describe an open source community project and its methods.](#) [28]

[1.5 compare the user role in a range of software development models.](#) [29]

[2.5 identify design techniques to reduce risk.](#) [30]

[3.5 compare formal and agile methods.](#) [31]

Level 3, Unit 3 - Delivering a Software Project (10 credits)

1. plan a suitable project.

2. carry out a significant practical software project.

3. communicate project outcomes to others.

[1.1 agree and adopt the software development method.](#) [33]

[2.1 show courage and determination to overcome problems.](#) [34]

[3.1 make a final presentation to a critical audience.](#) [35]

[1.2 meet deadlines.](#) [36]

[2.2 produce source code that has effective embedded documentation.](#) [37]

[3.2 gather opinions through peer review.](#) [38]

[1.3 present the proposal to critical experts.](#) [39]

[2.3 test code regularly involving third parties.](#) [40]

[3.3 provide regular updates on progress to a mentor.](#) [41]

[1.4 identify an area of interest and scope the project.](#) [42]

[2.4 use logical techniques to debug code.](#) [43]

[3.4 use IT tools to enhance communication.](#) [44]

[1.5 make modifications as a result of feedback.](#) [45]

[2.5 produce substantial code that works effectively.](#) [46]

[3.5 analyse issues arising and establish priorities for resolution.](#) [47]

Level 3, Unit 4 - Open Systems and Community Development (10 credits)

1. understand the process of community development.

[1.1 explain the principles of the Open Source Way.](#) [49]

[1.2 explain the importance of distributed revision control systems in community software development.](#) [52]

[1.3 explain the relationships between commercial and volunteer interests in a software development community.](#) [55]

[1.4 compare and contrast the processes of software development communities.](#) [58]

[1.5 describe Sourceforge and its role in community development.](#) [61]

2. understand licensing and intellectual property.

[2.1 describe the advantages and disadvantages of software patents.](#) [50]

[2.2 describe and explain the freedoms associated with free and open source software.](#) [53]

[2.3 explain the terms trademark, copyleft, creative commons, and public domain.](#) [56]

[2.4 analyse the effects of digital technologies on the enforcement of intellectual property rights.](#) [59]

[2.5 explain the relationship between copyright and licensing.](#) [62]

3. understand commercial models for software development.

[3.1 describe an advertising model to support software development.](#) [51]

[3.2 describe the perpetual license model for software development.](#) [54]

[3.3 describe the dual licensing model for software development.](#) [57]

[3.4 describe the fremium model for software development.](#) [60]

[3.5 describe the software as a service model.](#) [63]

Level 3, Unit 5 - Computer Systems Management (10 credits)

1. set up systems.

2. support system storage and security.

3. maintain systems.

4. understand key internet systems.

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[1.1 set and customise boot sequence and options.](#) [65]

[2.1 write a risk assessment for system security including passwords and malware.](#) [66]

[3.1 provide effective support for system users.](#) [67]

[4.1 explain the function of a web server.](#) [68]

[1.2 solve problems in systems setup and configuration.](#) [69]

[2.2 devise and implement a backup strategy.](#) [70]

[3.2 set up a secure virtual connection to manage a system from a remote location.](#) [71]

[4.2 explain the role of an internet service provider.](#) [72]

[1.3 customise the display to personal preference.](#) [73]

[2.3 describe a range of storage methods and their strengths and weaknesses.](#) [74]

[3.3 install software updates and dependencies.](#) [75]

[4.3 explain the importance of TCP/IP.](#) [76]

[1.4 install and set up an operating system.](#) [77]

[2.4 set up and understand how to customise a firewall for network connection.](#) [78]

[3.4 install and remove applications.](#) [79]

[4.4 describe the terms HTML, W3C and HTTP.](#) [80]

[1.5 set up network connections.](#) [81]

[2.5 format and partition storage devices.](#) [82]

[3.5 set up cron jobs to automate regular procedures.](#) [83]

[4.5 explain the effects of proprietary standards and lock-in.](#) [84]

Source URL: https://theingots.org/community/CP_Computing

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