

# 2.1.2

## THINKING AHEAD

### TOPIC WISE EXAM QUESTIONS

#### ANSWERS

**A-LEVEL**

**OCR**

4	(c)	<p>1 mark each to max 2:</p> <ul style="list-style-type: none"> <li>• One piece of code can be used many times / in multiple places / makes code more efficient</li> <li>• No need to write the same code multiple times</li> <li>• Takes less time to plan/design/code the program</li> <li>• Easier error detection as fix once and it corrects in each place // less likely to have errors as code is not written multiple times</li> <li>• Makes it easier to maintain the program</li> </ul>	2
8	(a)	<p>1 mark for each input to max 2</p> <ul style="list-style-type: none"> <li>• Username</li> <li>• Password</li> </ul> <p>1 mark for output e.g.</p> <ul style="list-style-type: none"> <li>• Message to request input</li> <li>• Message to state login successful</li> <li>• Message to say login unsuccessful</li> </ul>	3

### AS - Level

2	b i	<p>1 mark per bullet e.g.</p> <ul style="list-style-type: none"> <li>• stage (e.g. stage 1, stage 2, stage 3)</li> <li>• city name (e.g. London)</li> <li>• speed (e.g. slow, normal, fast)</li> </ul>	2
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## 2022

1e		<p>1 mark per bullet to max 2</p> <ul style="list-style-type: none"> <li>• Saves time from having to write the same algorithm repeatedly</li> <li>• Reduced testing requirements</li> <li>• Can be taken and used in different programs as well as the program they are written in // can be used in a program library</li> </ul>	2	Allow other suitable answers
4b		<p>1 mark per bullet e.g.</p> <ul style="list-style-type: none"> <li>• Store data that has been used in cache/RAM in case needed again</li> <li>• e.g. store design of the weather/a cloud/external environment</li> </ul>	2	Allow 2 valid examples for 2 m
1	(f)	<p>1 mark per bullet up to a maximum of 2 marks for each advantage (4 marks in total), e.g.:</p> <ul style="list-style-type: none"> <li>• Saves times (1) as code does not need to be rewritten (1)</li> <li>• Code may already be tested (1) which will therefore save development//debugging time (1)</li> <li>• More efficient code (1) which will use less memory//be easier to maintain (1)</li> <li>• May require less technical knowledge (1) as code can be used rather than written (1)</li> </ul>	4	<p>Award a maximum of two marks for each advantage.</p> <p>A01.1 (2)</p> <p>A01.2 (2)</p> <p>Allow other suitable examples.</p>

8aiii	<p>1 mark for input, 1 for process 1 for output e.g. Input:</p> <ul style="list-style-type: none"> <li>Clicking a box</li> </ul> <p>Process:</p> <ul style="list-style-type: none"> <li>Generating new puzzle</li> <li>Checking if block is black</li> <li>Changing block to white</li> </ul> <p>Output:</p> <ul style="list-style-type: none"> <li>Grid with coloured squares</li> </ul>	3 AO2.2 (3)	
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7aiii	<p>1 mark per example e.g.</p> <ul style="list-style-type: none"> <li>Garden dimensions/width/length</li> <li>Number of items in the garden</li> <li>Name of items in the garden</li> <li>Location of items in the garden</li> </ul>	3 AO2.1 (3)	
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7c	<p><b>Mark Band 3 – High level (7-9 marks)</b> The candidate demonstrates a thorough knowledge and understanding of caching and reusable components; the material is generally accurate and detailed. The candidate is able to apply their knowledge and understanding directly and consistently to the context provided. Evidence/examples will be explicitly relevant to the explanation. The candidate is able to weigh up the use of both caching and reusable components which results in a supported and realistic judgment as to whether it is possible to use them in this context. <i>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</i></p> <p><b>Mark Band 2 – Mid level (4-6 marks)</b> The candidate demonstrates reasonable knowledge and understanding of caching and reusable components; the material is generally accurate but at times underdeveloped. The candidate is able to apply their knowledge and understanding directly to the context provided although one or two opportunities are missed. Evidence/examples are for the most part implicitly relevant to the explanation. The candidate makes a reasonable attempt to come to a conclusion showing some recognition of influencing factors that would determine whether it is possible to use caching and reusable components in this context. <i>There is a line of reasoning presented with some structure. The information presented is in the most part relevant and supported by some evidence</i></p> <p><b>Mark Band 1 – Low Level (1-3 marks)</b> The candidate demonstrates a basic knowledge of caching and reusable components with limited understanding shown; the material is basic and contains some inaccuracies. The candidates makes a limited attempt to apply acquired knowledge and understanding to the context provided. The candidate provides nothing more than an unsupported assertion. <i>The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.</i></p>	9 AO1.1 (2) AO1.2 (2) AO2.1 (2) AO3.3 (3)	<p><b>AO1: Knowledge and Understanding Indicative content</b></p> <p>Caching:</p> <ul style="list-style-type: none"> <li>Data that has been used is stored in cache/RAM in case it is needed again</li> </ul> <p>Reusable components</p> <ul style="list-style-type: none"> <li>One piece of code can be used in multiple places / called many times</li> <li>Use of subroutines / procedures / functions</li> <li>Use of classes</li> <li>Use of external libraries</li> </ul> <p><b>AO2: Application</b></p> <ul style="list-style-type: none"> <li>Store items in cache</li> <li>Store requirements in cache</li> <li>Store garden layout in cache</li> <li>Reuse shapes / designs</li> <li>The use of a class allows replication</li> </ul> <p><b>AO3: Evaluation</b> e.g.</p> <ul style="list-style-type: none"> <li>Faster development</li> <li>Faster/easier future adaptation</li> <li>Better performance of program</li> <li>Takes more time to plan/design to make use of both</li> </ul>
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1	b	i	1 mark per bullet to max 2 e.g. <ul style="list-style-type: none"> <li>Room size (width / length / height)</li> <li>Room shape</li> <li>Position of items in room (windows / door)</li> <li>Furniture items required</li> </ul>	2 AO2.1 (1) AO2.2 (1)	Allow width / length / height as separate mark points  Allow position of windows / door as separate mark points
1	b	ii	1 mark per bullet to max 2 e.g. <ul style="list-style-type: none"> <li>3D image of the room</li> <li>Image of the furniture items</li> <li>Furniture to choose from / menu of library items</li> <li>Error messages</li> </ul>	2 AO2.1 (1) AO2.2 (1)	Do not allow angles / perspective of room as well as image of room
1	c		1 mark per bullet to max 4 <ul style="list-style-type: none"> <li>Efficiency</li> <li>Small sub-programs are easier to read / understand / modify</li> <li>Write once and call repeated times</li> <li>Avoids repeated code</li> <li>Subroutines can be tested individually then added to the main program.</li> <li>Can reuse in other programs</li> <li>Can give procedures to different programmers to build</li> </ul>	4 AO1.1 (1) AO1.2 (1) AO2.1 (1) AO2.2 (1)	
1	d		1 mark per bullet to max 2 e.g. <ul style="list-style-type: none"> <li>Room dimensions must be greater than 0</li> <li>Furniture must fit in room</li> <li>Width, length and height of room must have been entered</li> </ul>	2 AO2.2 (2)	The precondition must refer specifically to a condition that can be tested

### 2018

2	(d)	1 mark per bullet to max 2 e.g. <ul style="list-style-type: none"> <li>the components can be used in a future program...</li> <li>they do not need to be rewritten / saves time</li> </ul>	2 AO1.1 (1) AO2.1 (1)	
		<ul style="list-style-type: none"> <li>they have already been tested...</li> <li>...it will save time</li> </ul>		

### 2017

6	a	1 mark per input to max 3 <ul style="list-style-type: none"> <li>Choice of pet</li> <li>Pet name</li> <li>Feed</li> <li>Play</li> <li>Read</li> </ul>	3 AO2.1 (3)	Allow any reasonable system
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1	a	<ul style="list-style-type: none"> <li>• Target temperature (1 – AO 2.1) integer / floating point (1 – AO 3.1).</li> <li>• Wheel movement (1 – AO 2.1) Boolean (1 – AO 3.1).</li> <li>• Engine running (1 – AO 2.1) Boolean (1 – AO 3.1).</li> <li>• Internal temperature (1 – AO 2.1) integer / floating point (1 – AO 3.1).</li> <li>• External temperature (1 – AO 2.1) integer / floating point (1 – AO 3.1).</li> <li>• External light level (1 – AO 2.1) integer / floating point (1 – AO 3.1).</li> <li>• Heating on (1 – AO 2.1) Boolean (1 – AO 3.1).</li> <li>• Air conditioning on (1 – AO 2.1) Boolean (1 – AO 3.1).</li> <li>• Gears engaged (1 – AO 2.1) Boolean (1 – AO 3.1).</li> </ul>	8	<p>Up to 4 marks (AO 2.1) one mark for each correct identification of input.</p> <p>Up to 4 marks (AO 3.1) one mark for identifying the correct data type.</p> <p>Any example of driver choices / settings related to something switched on (1 – AO 2.1) Boolean (1 – AO 3.1).</p> <p>Any example of driver choices / settings related to a level being set (1 – AO 2.1) integer / floating point (1 – AO 3.1).</p>
	b	<ul style="list-style-type: none"> <li>• Start engine (1), stop engine (1), signal to dashboard display (1).</li> </ul>	2	1 mark for each correct identification up to a maximum of two identifications.
<b>Total</b>			<b>10</b>	
2		<ul style="list-style-type: none"> <li>• Popularity data (1).</li> <li>• Platforms available (1).</li> <li>• Sales of existing similar apps (1).</li> <li>• Prices charged (1).</li> <li>• Does it exist already? (1).</li> </ul>	4	1 mark for each correct identification up to a maximum of four identifications.

4		<ul style="list-style-type: none"> <li><input type="checkbox"/> Questionnaire... [1]</li> <li><input type="checkbox"/> ...set of questions given out to potential users to fill in and return [1]</li> <li><input type="checkbox"/> Interview... [1]</li> <li><input type="checkbox"/> ...face to face discussions where potential users are asked questions. [1]</li> <li><input type="checkbox"/> Observation... [1]</li> <li><input type="checkbox"/> ...Where users of the existing system are observed using it. [1]</li> <li><input type="checkbox"/> Meeting... [1]</li> <li><input type="checkbox"/> ...Group of users sit down with analyst to discuss current system [1]</li> <li><input type="checkbox"/> Existing documentation... [1]</li> <li><input type="checkbox"/> ...used in the system is examined [1]</li> </ul> <p><i>(Max 3 for methods named, Max 3 for their descriptions)</i></p>	6	<p><b>Examiner's Comments</b></p> <p>Most candidates could state three methods for gathering requirements but in some cases descriptions lacked clarity.</p>
<b>Total</b>			<b>6</b>	
5		<p>e.g.</p> <ul style="list-style-type: none"> <li>• Track name</li> <li>• Car type</li> <li>• Driver name</li> </ul>	3	<p>Allow any reasonable alternative</p> <p><b>Examiner's Comments</b></p> <p>Many candidates answered well, but some misread the question and identified input devices that could be used within the simulation, rather than initial starting parameters as required.</p>

6		<p>2 marks for definition, max 2 for application</p> <p>Caching:</p> <ul style="list-style-type: none"><li>• Data that has been used is stored in cache/ram in case it is needed again</li><li>• Allows faster access for future use</li></ul> <p>Application: e.g.</p> <ul style="list-style-type: none"><li>• Store patients' details/conditions/appearance</li><li>• Design of people in the simulation</li><li>• Design of specific rooms</li></ul>	4	<p>Allow any reasonable example A well-developed example can gain two marks</p>
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**If you found this  
useful, drop a follow  
to help me out!**

**THANK YOU!**

**GCST**