2018 Computing Science Assignment

National 5

Finalised Marking Instructions

Marking instructions

Marking instructions are provided for this assessment task. In line with SQA's normal practice, they are addressed to the marker. They will also be helpful for those preparing candidates for course assessment.

Marking instructions will not be provided with annual assessment tasks, as candidate evidence will be submitted to SQA for external marking.

General marking principles

This information is provided to help you understand the general principles that must be applied when marking candidate responses in this assignment. These principles must be read in conjunction with the specific marking instructions, which identify the key features required in candidate responses.

a Marks for each candidate response must **always** be assigned in line with these general marking principles and the specific marking instructions for this assessment.

b Marking should always be positive. This means that, for each candidate response, marks are accumulated for the demonstration of relevant skills, knowledge and understanding: they are not deducted from a maximum on the basis of errors or omissions.

Specific marking instructions

Task	Expected response	Additional guidance	Marks available	
1	**Database design and development — part A**			
1a	**1 mark** for identifying all four: • Name (or forename/surname) • Address (or street, town) • Postcode • Telephone number **1 mark** for identifying: • Task **1 mark** for identifying all four: • Job ID • Staff ID • Date • Time	Attribute names need not match the form in analysis stage.	3	Analysis (3)
1b	**1 mark** for completion of each box: • staffID — Primary Key • staffID — Y • surname — text • topSkill — Lawn, Hedge, Weeds • custRating — ✓ >= 1 and <=10 ✓ >=1 <=10 ✓ 1-10 ✓ 1,2,3,4,5,6,7,8,9,10	Restricted choice must list every choice Range must include limits	5	Design (5)

Task	Expected response	Additional guidance	Marks available	
1	**Database design and development — part B**			
1c	**1 mark** each for printed evidence of each bullet point: • 9 fields created with correct ✓ primary key (jobID) ✓ data types ✓ sizes • presence checks correctly assigned • range check correctly implemented on jobTime (>=09:00 and <=18:00) • restricted choice on task, limited to correct three options • linked table enforcing referential integrity	• accept application specific field types staffID size either 5 or 255 • all required except phoneNo • validation rule may change according to field type implemented • implemented as either drop-down list or formula • diagram or relationship properties (one staff to many jobs)	5	Implementation (7)

<table>
<tr><th>Task</th><th>Expected response</th><th>Additional guidance</th><th>Marks available</th></tr>
<tr><td>1</td><td colspan="3">Database design and development — part B</td></tr>
<tr><td>1c</td><td colspan="2">
<table>
<tr><th colspan="6">Entity: Job</th></tr>
<tr><th>Attribute</th><th>Key</th><th>Type</th><th>Size</th><th>Required</th><th>Validation</th></tr>
<tr><td>jobID</td><td>PK</td><td>number</td><td></td><td>Y</td><td></td></tr>
<tr><td>jobDate</td><td></td><td>date</td><td></td><td>Y</td><td></td></tr>
<tr><td>jobTime</td><td></td><td>time</td><td></td><td>Y</td><td>Range >= 9:00 and <= 18:00</td></tr>
<tr><td>custName</td><td></td><td>text</td><td>40</td><td>Y</td><td></td></tr>
<tr><td>custAddress</td><td></td><td>text</td><td>50</td><td>Y</td><td></td></tr>
<tr><td>custPostcode</td><td></td><td>text</td><td>8</td><td>Y</td><td></td></tr>
<tr><td>phoneNo</td><td></td><td>text</td><td>11</td><td>N</td><td></td></tr>
<tr><td>task</td><td></td><td>text</td><td>12</td><td>Y</td><td>restricted choice: Lawn Mowed, Hedge Cut, Weeds Pulled</td></tr>
<tr><td>staffID</td><td>FK</td><td>text</td><td>5</td><td>Y</td><td>existing staffID from Staff table</td></tr>
</table>
</td><td></td></tr>
<tr><td>1d</td><td>1 mark each for implementing:

• UPDATE Staff
SET address = "99 Willow Way, Falkirk, FA87 6FE"
• WHERE StaffID = "DS021";</td><td>Do not award a mark if SQL created by application:

MS Access example
<code>UPDATE Staff SET Staff.address = "99 Willow Way, Falkirk, FA87 6FE"
WHERE
(((Staff.[staffID])="DS021"</code></td><td>2</td></tr>
</table>

Task	Expected response		Additional guidance	Marks available	
2	**Software design and development**				
2a	Array used to store readings			1	Implementation (15)
	Fixed loop repeating 5 times (to enter readings)			1	
	Input Validation	conditional loop used		1	
		correct condition for valid data	Until: reading >= 0 AND reading <= 100 or While: reading < 0 OR reading > 100	1	
		input of reading	Award 1 mark if not implemented within input validation loop	1	
		error message		1	
	Round reading to 0 decimal places			1	
	1 mark for correct conditions **1 mark** for using rounded reading		Strong: Reading > 80 Poor: Reading < 30 (Medium: Reading>=30 and <=80)	2	
	Single variable used to store signal pattern		Variable names may differ in code	1	
	Pattern concatenated			1	
	Suitable message and signal pattern output			1	
	Five (rounded) readings displayed as output with suitable messages within a loop		For example: For loop = 1 to 5 Print “Reading”, loop, “is”, reading(loop) End loop	1	
	Matches design: • same top level sequence (loop 5, display, loop 5) • nested if statements (or elseif) with correct structure used to determine signal strength letter			2	

Task	Expected response	Additional guidance	Marks available	
2	**Software design and development**			
2b	The test table completed to produce the required signal pattern output (MPSPS) for **1 mark**	Test table should contain real or integer values within the following ranges: Reading 1: >=30 and <=80 Reading 2: <30 Reading 3: >80 Reading 4: <30 Reading 5: >80 Input must be numeric. Do not accept % symbols.	1	Testing (5)
	Printed evidence of one successful run of the test table data		1	

2c	Completion of extreme test data for upper and lower limits of each signal strength **1 mark** for each pair:
	• poor:
	  ○ 0
	  ○ 29
	• medium:
	  ○ 30
	  ○ 80
	• strong:
	  ○ 81
	  ○ 100
		Candidates may write values in any order.
		
		Accept any values that round to the values given.
		
		Check rounding according to language used.
			3	

Task	Expected response	Additional guidance	Marks available	
2	**Software design and development**			
2d	Evaluation of the following: Fitness for purpose **(1 mark)** • comparison of their solution (code and testing) with program analysis and expected output Efficiency **(1 mark)** • efficient use of at least one coding constructs Robustness **(1 mark)** • how robust the program is, including if it copes with unexpected inputs Readability **(2 marks)** • two comments on the readability of the candidate's own code	All evaluations must contain an element of evaluation rather than simple statements of terms. For example "I have used white space to highlight structures in my program" not "I have used white space". Efficiency answers may refer to: • loops used instead of five individual inputs or outputs • single variable only required for signal pattern rather than array of characters • complex selection structure could have been used in place of separate "ifs" • array used instead of five variables for readings	5	Evaluation (5)

Task	Expected response	Additional guidance	Marks available	
3	**Web design and development**			
3a	Functional requirements could include the following for **1 mark** each: • display text about Grieve Crafts • display the product graphics (photographs) • display text about the product being built • link takes user to external information (about source wood)		2	Analysis (2)

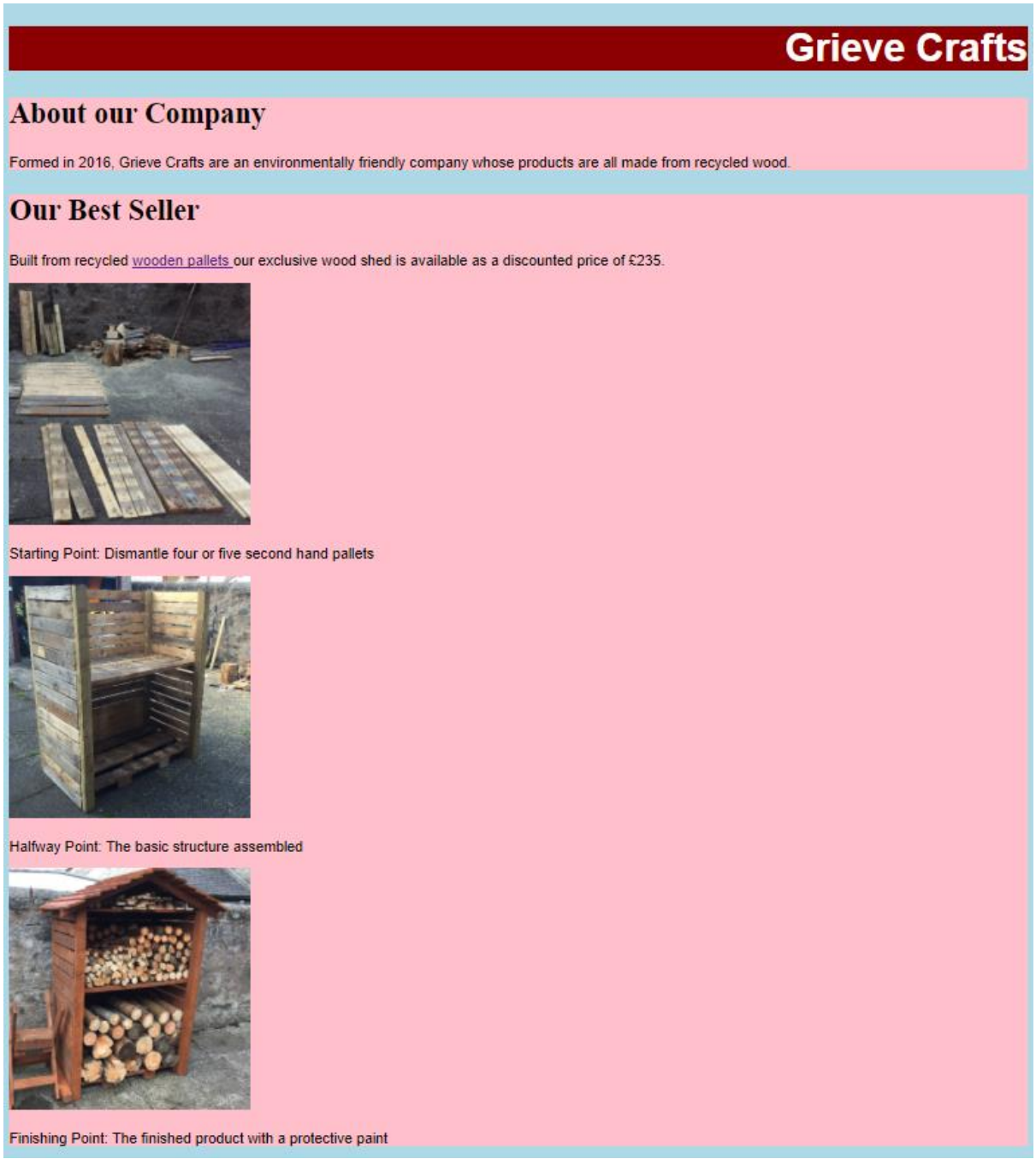
Task	Expected response	Additional guidance	Marks available	
3	**Web design and development**			
3b	Using the printout of the HTML file, confirm the following for **1 mark** each: • all text and graphics content added, in the correct order, within structural head, title, body, elements: p, h1, h2, div etc and organised into three sections • link from words "wooden pallets", in Our Best Seller section, to external Wikipedia page about pallets • link to external CSS file added in <head> section Using the printout of the CSS file and associated HTML elements to confirm the following for **1 mark** each: • Company Name styled correctly (alignment may be in CSS or HTML) • Both sub-headings styled correctly using the same CSS rules • Paragraphs and photo descriptions styled correctly using a single rule, applied four (or five) times • Three graphic sizes correct (CSS or HTML)	Text and graphics checklist: • Company Name • About Our Company, heading & paragraph • Our Best Seller, heading & paragraph • Three photos • Three descriptions for photos Helvetica, 24pt (24px), white, align right Helvetica, 18pt (18px) (black not required as default) Helvetica, 12pt (12px) (black not required as default) Width 200px, height 200px	8	Implementation (8)

Task	Expected response	Additional guidance	Marks available	
3	**Web design and development**			
3b	• Syntactically correct colours applied in CSS to: three page sections page background	Page background • lightblue • #ADD8E6 • Any other light blue colour Top section • Darkred • #8B0000 • Any other dark red colour Middle and bottom sections • Pink • #FFC0CB • Any other pink colour		

Appendix 1

WDD Solution

Browser screenshot of completed page



HTML Code

```
<!DOCTYPE html>
<html>
<head>
<title>Grieve Crafts</title>
<link rel="stylesheet" href="styles.css">
</head>

<body>

<div ID="topSection">
<h1>Grieve Crafts</h1>
</div>

<div>
<h2>About our Company</h2>
<p>Formed in 2016, Grieve Crafts are an environmentally friendly
company whose products are all made from recycled wood.</p>
</div>

<div>
<h2>Our Best Seller</h2>
<p>Built from recycled <a
href="https://en.wikipedia.org/wiki/Pallet"> wooden pallets </a> our
exclusive wood shed is available as a discounted price of £235.</p>

<img src="firstStage.jpg">
<p>Starting Point: Dismantle four or five second hand pallets.</p>

<img src="middleStage.jpg">
<p>Halfway Point: The basic structure assembled.</p>

<img src="finishedStage.jpg">
<p>Finishing Point: The finished painted product.</p>
</div>

</body>
</html>
```

CSS Code

```
body{background-color:LightBlue}

h1 {font-family:Helvetica;
font-size:24pt;
text-align:right;
color:White}

h2 { font-family:Helvetica;
font-size:18pt }

div {background-color:Pink}

p {font-family:Helvetica;
font-size:12px;
color:Black}

img {width:200px;height:200px}

#topSection {background-color:DarkRed}
```

[END OF MARKING INSTRUCTIONS]