National 5
Coursework
Assessment Task

National 5 Computing Science
Assignment
Assessment task

This document provides information for teachers and lecturers about the coursework component of this course in terms of the skills, knowledge and understanding that are assessed. It must be read in conjunction with the course specification.

Valid for session 2019-20 only.

This assessment is given to centres in strictest confidence. You must keep it in a secure place until it is used.

This edition: January 2020 (version 1.0)

Computing Science assessment task: evidence checklist

Task 1	Evidence	
Part A		
1a	Completed task 1 sheet showing analysis of database inputs	☐
Part B		
1b	Printout or screenshot showing correct validation has been set up on the two identified fields in the database	☐
1c (i)	SQL statement to change customer's order	☐
	Printout of the updated FlowerOrder table	☐
1c (ii)	SQL statement to add the new customer	☐
	Printout of the updated Customer table	☐
1d	Completed task 1 sheet showing two reasons why the SQL statement failed	☐
Task 2	**Evidence**	
Part A		
2a	Completed task 2 sheet showing design for 'calculate final bill using random value'	☐
Part B		
2b	Printout of your program code	☐
2c (i)	Completed task 2 sheet showing possible values for final bill	☐
	Printout evidence of one test run showing inputs and outputs	☐
2c (ii)	Completed task 2 sheet showing completed test table	☐
	Printout evidence of test run of exceptional test data	☐
2d	Completed task 2 sheet showing completed evaluation	☐
Task 3	**Evidence**	
3a	Completed task 3 sheet showing the end-user and functional requirements	☐
3b	Completed task 3 sheet showing wireframe design for 'Orders' page	☐
3c and 3d	Printouts of HTML and CSS code: ♦ orders.html ♦ styles.css	☐
3e	Completed task 3 sheet showing completed evaluation	☐

Please follow the steps below before handing your evidence to your teacher or lecturer:

- Check you have completed all parts of tasks 1, 2 and 3.
- Label any printouts and/or screenshots with the task number (for example 1c, 2a).
- Clearly display your name and candidate number on each printout.

Task 1: database design and development (part A)

Anytime Flowers is a florist that tailor-makes bunches of flowers for customers.

When a customer comes into the shop, an employee notes down the customer's details, their order information and the price of the order. They give each order an order code.

Customers select one type of flower (rose, lily, tulip or daffodil), the size of the bunch of flowers (small, medium or large) and whether or not they would like chocolates with the flowers. They also select a date for collecting their order. Customers can include a message with their flowers.

1a Anytime Flowers wants to create a database to store customer and order details.

Complete the order details in the analysis of inputs table below:

(2 marks)

Customer details:	**Order details:**
Customer ID Name Address Telephone number	

- Check your answers carefully, as you cannot return to part A after you hand it in.
- When you are ready, hand part A to your teacher or lecturer and collect part B.

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Task 1: database design and development (part B)

1b Your teacher or lecturer will provide you with a database file containing two linked tables.

Using the data dictionary below, complete the relational database by:

- identifying two fields where the validation shown below has yet to be applied
- adding the validation to the two identified fields

(2 marks)

Entity: Customer					
Attribute name	**Key**	**Type**	**Size**	**Required**	**Validation**
customerID	PK	number		Y	
forename		text	40	Y	
surname		text	50	Y	
address		text	100	N	
telephoneNo		text	11	N	Length = 11

Entity: FlowerOrder					
Attribute name	**Key**	**Type**	**Size**	**Required**	**Validation**
orderID	PK	text	10	Y	
dateDue		date		Y	
price		number		Y	Range: >= 5.00 and <= 50.00
flowerType		text	8	Y	Restricted choice: rose, lily, tulip, daffodil
bunchSize		text	6	Y	Restricted choice: small, medium, large
chocolates		Boolean		Y	
message		text	200	N	
customerID	FK	number		Y	Existing customerID from Customer table

Print evidence to show that you have added the validation to the database to match the data dictionary requirements.

1c (i) A customer would like to change their order from ‘rose’ to ‘tulip’. The price of the order will change from £34 to £17. The orderID is CHQ3848.

Implement **one** SQL statement that will make the required changes to the order.

(4 marks)

Print evidence of the SQL statement and the FlowerOrder table, clearly showing that the changes have been implemented.

(ii) A new customer provides their name and telephone number.

Implement an SQL statement that will add their details to the database.

Name:	Richard Glass
Telephone number:	07654029336

(2 marks)

Assign them customerID — 2986.

Print evidence of the SQL statement and the Customer table, clearly showing that the changes have been implemented.

1d Anytime Flowers wants to find the names of all customers who had placed orders for the smallest bunch of flowers.

The following incorrect SQL statement is written.

```
SELECT customerName
FROM Customer, FlowerOrder
WHERE size = "smallest"
AND Customer.customerID = FlowerOrder.customerID;
```

Test this SQL statement.

State two reasons why this SQL statement failed.

(2 marks)

Reason 1
Reason 2

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Task 2: software design and development (part A)

A new coffee shop is organising an event for its opening day. At this event, a lucky-dip promotion will be available, where customers can win a discount off their bill.

Below is the analysis and design for a program to calculate customers' bills:

Program analysis
A program is required to calculate a customer's bill. The user will enter the number of items on the bill and then enter the item type for each item (coffee, tea or biscuit). The program will calculate the bill. The bill can then be reduced by using a random value from 1 to 10:

- random value = 1 the customer pays nothing
- random value = 2 to 6 the customer pays half the bill
- random value = 7 to 10 the customer pays the full bill

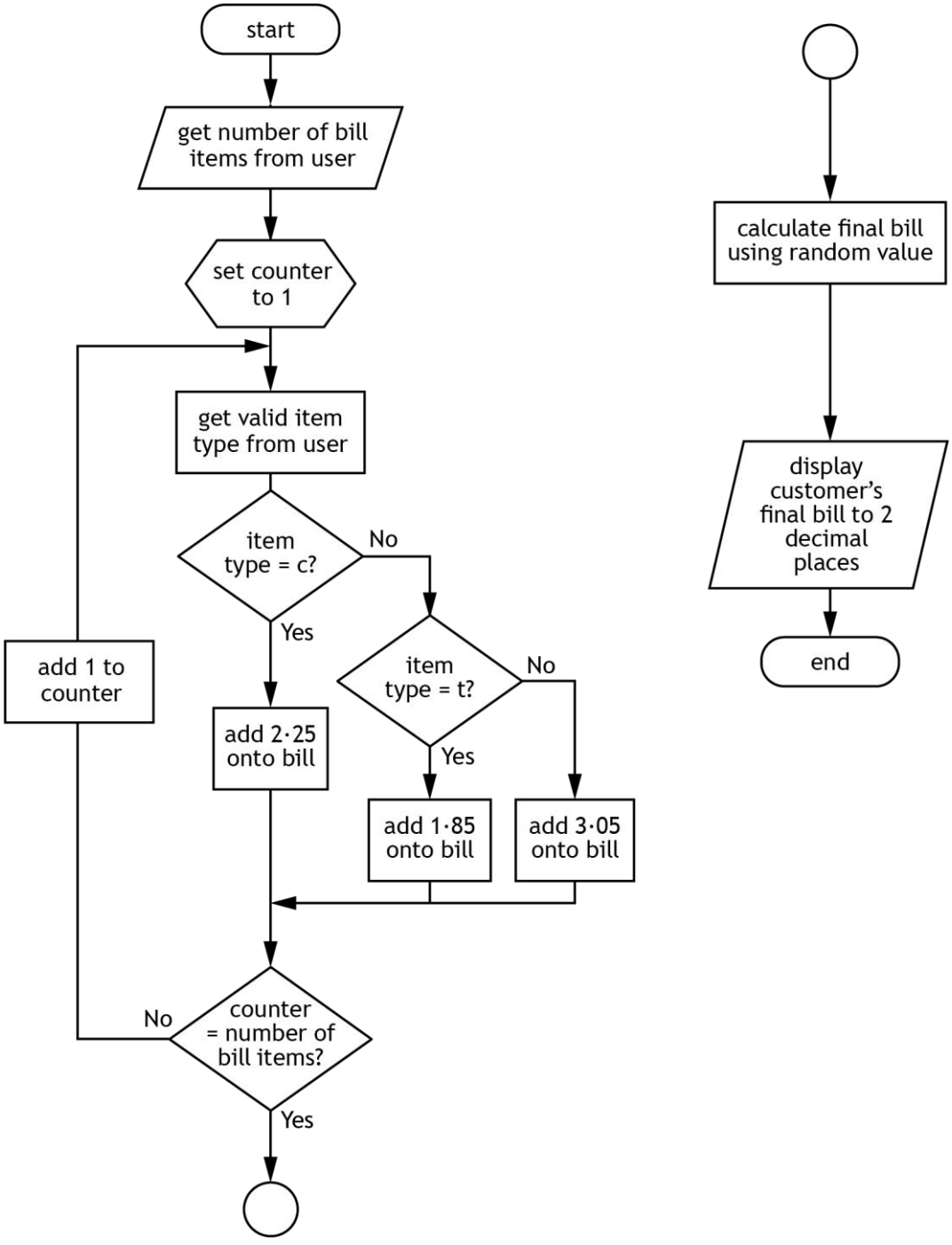
Assumptions
- any number of items can be entered by the user

Inputs
- the number of items on the bill
- the item type for each item on the bill
  - c = coffee
  - t = tea
  - b = biscuit

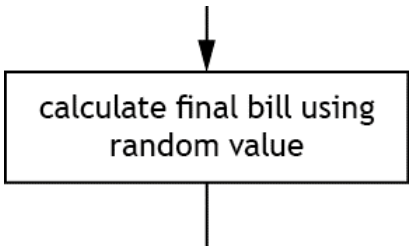
Processes
- generate a random value between 1 and 10
- calculate the total cost of the items on the bill where:
  - coffee = £2.25
  - tea = £1.85
  - biscuit = £3.05
- use the random value to calculate the final bill

Outputs
- the random value
- the cost of the final bill

Program design (flowchart)



2a The flowchart contains the following process:



Using the information provided in the program analysis, expand the design to show how this process could be carried out. You can use a flowchart, structure diagram or pseudocode design.

(3 marks)

- Check your answers carefully, as you cannot return to part A after you hand it in.
- When you are ready, hand part A to your teacher or lecturer and collect part B.

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Task 2: software design and development (part B)

Program design (completed flowchart)

2b Using the program analysis and the design, implement the program in a language of your choice.

Ensure the program matches the flowchart provided on page 17.

(15 marks)

Print evidence of your program code.

2c (i) Your program should be tested to ensure it produces one of three different random outputs.

Use the following data to do this:

Number of items: 4
Item 1: coffee
Item 2: tea
Item 3: tea
Item 4: biscuit

State the possible values (outputs) for the final bill produced from this test data.

Run your program to show that it produces one of these three outputs.

Print evidence of the test run showing inputs and outputs.

(2 marks)

(ii) Complete the test table below to check the validation for the item type.

Type of test	**Test data**	
Normal	Number of items – 3	c, t, b
Exceptional	Number of items - 1	

Run your program to show the result of the exceptional test data.

(1 mark)

Print evidence of the test run.

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2d With reference to your code, evaluate your program by commenting on the following:

Efficiency of your program code **(2 marks)**
Robustness of your completed program **(1 mark)**
Readability of your code **(1 mark)**

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Task 3: web design and development

Winter Woollies is a group of home knitters who makes and sells woollen hats, scarves and gloves.

It wants to create a website with the following content:

- the title 'Winter Woollies'
- a short statement about the group
- separate pages for each category of product: hats, scarves and gloves
- photographs of every product
- a video of one of the members of the group knitting
- an 'Orders' page with contact details and a link to an external online payment website

3a State **one** end-user and **two** functional requirements for the website.

End-user requirement	**(1 mark)**
Functional requirement 1	**(1 mark)**
Functional requirement 2	**(1 mark)**

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3b Your teacher or lecturer will provide you with a copy of the unfinished website.

Open this and look carefully at:

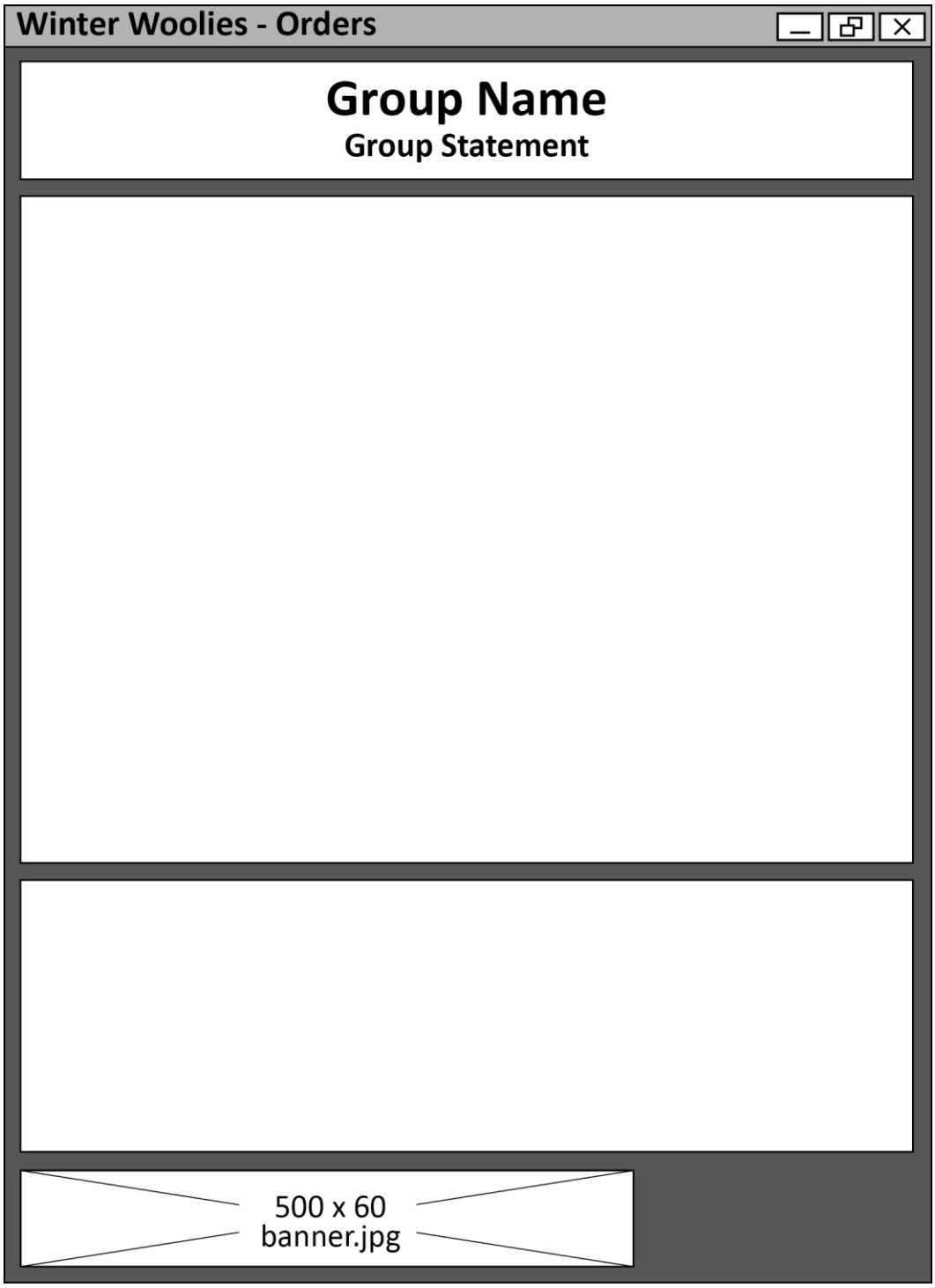
- the layout of each page
- the content of each page
- the navigation within the website

The 'Orders' page currently has no content. When complete, it should match the layout of the other pages and include the following content:

- a message stating that most orders are delivered within four weeks
- a message stating that orders can be paid using the external website www.payfriend.com
- a message stating that orders can be requested by sending an email to winter.woollies@homemail.com
- an image (200x100 pixels) of a parcel ready for posting
- a hyperlink back to the home page

Complete the wireframe on the following page, showing how you would lay out the page content for the 'Orders' page in a consistent manner to the rest of the website.

(2 marks)



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3c Open the orders.html and styles.css files in order to edit them.

Implement your design of the 'Orders' page web page using HTML, including all of the content and any hyperlinks required.

The file 'parcel.jpg' has been provided within the website files.

(4 marks)

3d Feedback received from user testing of the website highlights that:

- the website would look better if the three coloured sections on each page were all the same colour
- the text in the statement 'Home knitting delivered to your door' should be the same font and size as the 'Winter Woollies' heading above it
- the link to www.payfriend.com needs to stand out more than the other links — the style of the text in the link should be white in colour and font size 12

Edit the orders.html and styles.css files to implement these changes.

(3 marks)

Print evidence of your code from these edited files:

- orders.html
- styles.css

3e Evaluate the website in terms of fitness for purpose

(1 mark)

Candidate name_____ Candidate number_____