

Coursework Task

Intermediate 2 Computing Coursework Task 2008-2009

Part 1

The manager of a school cafeteria wants to use a computer system to calculate how much each customer has to pay. Members of staff have to pay VAT on their purchases but pupils do not. If the customer is a member of staff then the program will calculate the VAT and add it to the total cost.

VAT is calculated using the formula:

$$\text{VAT} = 0.175 \times \text{total cost}$$

The system requires the following inputs:

- How many items the customer has to pay for
- The price of each item in pounds
- Whether the customer is a pupil or a member of staff (P for pupil and S for staff)

The output from the program should display the total cost of purchases, the type of customer, the amount of VAT to be paid and the final cost eg

Total cost of purchases:	2.38
Type of customer:	S
VAT:	0.42
Final Cost:	2.80

Your task is to create software for this system.

The top level algorithm is shown below. Step 2 has been refined.

Pseudocode

MAIN STEPS

1. Get number of items being purchased
2. Calculate total cost of purchases
3. Get valid type of customer
4. Calculate VAT to two decimal places
5. Calculate final cost
6. Display purchase details

REFINEMENTS

2. Calculate total cost of purchases
 - 2.1 Total cost = 0
 - 2.2 Loop for number of items being purchased
 - 2.3 Get item price
 - 2.4 Update Total cost
 - 2.5 Next item

Tasks		Evidence required
1	Refine the following parts of the algorithm: <ul style="list-style-type: none"> • Get valid type of customer (step 3) • Calculate VAT to two decimal places (step 4) • Calculate final cost (step 5) (NOTE: <i>all refinements must include an algorithm and not simply use a feature of an event-driven language.</i>)	Pseudocode for steps 3, 4 and 5
2	Create a program that matches your design.	Listing of program
3	<ul style="list-style-type: none"> • Complete the test data table below, adding a third set of test data that will test your validation. • Test your program using your test data. 	Completed version test data table Printed output

Test Data Table		Name:					
Test Number	No of Items	Price of Items (£)	Staff or Pupil	Expected VAT (£)	Expected Final Cost (£)	Actual VAT (£)	Actual Final Cost (£)
1	3	0.50 0.75 0.45	P	0.00	1.70		
2	5	0.25 0.50 0.75 0.85 0.45	S				
3							