

Name: _____

Computers

Date:

Time:

Total marks available:

Total marks achieved: _____

Questions

Q1.

Sparky Autos

Sparky Autos is a family-run business based on a farm. The business offers visitors the opportunity to drive small electric cars around a racetrack on the farm.

There are up to 20 electric cars available each time for a race.

Each car has:

- an electronic tag so its number and position can be tracked using sensors placed around the farm
- a number painted on its side.

A computer program can be used to determine information about the cars and the drivers.

(a) Complete the table to show an input, a process and an output, using the following information:

- each race has 5 laps
- there are 10 cars in this race.

(3)

Input	Process	Output
	Calculate overall total time for any car in the race	Sum of lap times
10 car numbers and 10 total times		Car number with quickest total time
10 car numbers with 5 lap times each	Find car with quickest lap time	

(b) The arithmetic operator modulus (MOD) manipulates numbers. It could be used in the calculations required by the processes in the table above.

State the purpose of the MOD function.

(1)

.....

.....

(Total for question = 4 mark)

Q2.

Private Postal People (P-Cubed)

Private Postal People (P-Cubed) is a national delivery service specialising in small letters, large letters, small packages, and medium packages. The company has regional depots across the country. The company runs a fleet of delivery vans. It uses technology to help run the business. It does not deliver internationally.

P-Cubed has 2000 employees, some based in the head office, some working in the regional sorting offices and some driving the delivery vans.

P-Cubed stores information about its employees on a server.

Each employee has an identification badge. There is a magnetic strip on the back of the badge. The badge is swiped in a card reader to get into the building. It can also be used to pay for meals in the company canteen, after it has been topped up with money.

Complete the table to show an input, a process and an output. The first row has been done for you.

(3)

Input(s)	Process	Output(s)
Location of card reader Numeric code from magnetic strip	Find out if this employee can go through this door	True, if entry permitted False, if entry not permitted
Cost of canteen meal Numeric code from magnetic strip		New balance, if paid Error, if not enough in account
Top-up amount Numeric code from magnetic strip	Add amount of top-up to make new balance	
	Check account balance	New balance

(Total for question = 3 marks)

Q1.

No Examiner's Report available for this question

Q2.

There were many excellent responses to this question.

This response scored 3 marks.

Input(s)	Process	Output(s)
Location of card reader Numeric code from magnetic strip	Find out if this employee can go through this door	True, if entry permitted False, if entry not permitted
Cost of canteen meal Numeric code from magnetic strip	Find out if they have enough money to buy food.	New balance, if paid Error, if not enough in account
Top-up amount Numeric code from magnetic strip	Add amount of top-up to make new balance	New balance
Balance check Numeric code from strip	Check account balance	New balance

Mark Scheme

Q1.

Question Number	Answer	Additional Guidance	Mark												
(a)	<p>One mark for each point:</p> <table border="1"> <thead> <tr> <th>Input</th> <th>Process</th> <th>Output</th> </tr> </thead> <tbody> <tr> <td>(up to) 5 lap times (1)</td> <td>Calculate overall total time for any car in the race</td> <td>Sum of lap times</td> </tr> <tr> <td>10 car numbers and 10 total times</td> <td>Find the winner (1)</td> <td>Car number with quickest total time</td> </tr> <tr> <td>10 car numbers with 5 lap times each</td> <td>Find car with quickest lap time</td> <td>Car number with quickest lap time (1)</td> </tr> </tbody> </table>	Input	Process	Output	(up to) 5 lap times (1)	Calculate overall total time for any car in the race	Sum of lap times	10 car numbers and 10 total times	Find the winner (1)	Car number with quickest total time	10 car numbers with 5 lap times each	Find car with quickest lap time	Car number with quickest lap time (1)	<ul style="list-style-type: none"> Award as long as meaning is discernible 	(3)
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Question Number	Answer	Additional Guidance	Mark
(b)	One mark for a correct statement: <ul style="list-style-type: none"> Returns the integer part of a division 		(1)

Q2.

Question Number	Answer	Additional Guidance	Mark															
	One mark for each cell. <table border="1" data-bbox="332 619 1182 1512"> <thead> <tr> <th>Input(s)</th> <th>Process</th> <th>Output(s)</th> </tr> </thead> <tbody> <tr> <td> Location of card reader Numeric code from magnetic strip </td> <td>Find out if this employee can go through this door</td> <td> True, if entry permitted False, if entry not permitted </td> </tr> <tr> <td> Cost of canteen meal Numeric code from magnetic strip </td> <td>Pay for canteen meal / subtract price of meal from balance / check if enough money in account</td> <td> New balance, if paid Error, if not enough in account </td> </tr> <tr> <td> Top-up amount Numeric code from magnetic strip </td> <td>Add amount of top-up to make new balance</td> <td>New balance</td> </tr> <tr> <td>Numeric code from magnetic strip / account number</td> <td>Check account balance</td> <td>New balance</td> </tr> </tbody> </table>	Input(s)	Process	Output(s)	Location of card reader Numeric code from magnetic strip	Find out if this employee can go through this door	True, if entry permitted False, if entry not permitted	Cost of canteen meal Numeric code from magnetic strip	Pay for canteen meal / subtract price of meal from balance / check if enough money in account	New balance, if paid Error, if not enough in account	Top-up amount Numeric code from magnetic strip	Add amount of top-up to make new balance	New balance	Numeric code from magnetic strip / account number	Check account balance	New balance	Award as long as meaning is discernible	3
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