Coursework Task

Higher Computing Coursework Task 2010–2011

Part 1

Extremegraph sells high performance graphics cards and computer games online. It wants to develop software that will generate customer codes and let these customers query the details of the graphics cards stored on the system.

How the program should work

The program should:

Initialise the graphics card test data by a suitable method

Generate and display a customer code:

- ask for the forename and surname of the customer
- create the code for the customers by:
  - extracting the first letter of each name and add these to the code
  - adding a random number between 0 and 9
  - adding a random lower case character (a to z)
- display the generated customer code

Answer a number of queries until the customer chooses to exit

- display options and get a choice from the user
- if the choice is 1, ask the customer for a minimum clock speed and display the number of cards that exceed this speed
- if the choice is 2, find and display the name of the graphics card with the highest processor clock speed
- if the choice is 3, ask the customer for a minimum size of RAM and a maximum cost, then display the details of all cards that match these requirements
- if the choice is 4, exit the query session

Display a suitable closing message using the customer name and code

Test Data

Note: you may enter test data using any method that suits your programming environment.

Initial Data for the graphics cards:

Name	RAM Capacity in Gigabytes	Clock Speed in MHz	Cost in £
RadeonX2	1	1986	187
GeForce95	1	550	41
VaporX	2	870	150
AsusOX2	2	790	354
Nvidia42X	3	1600	575

Test using the customer name:
Erin McKenzie

Test the following queries:

- number of graphics cards with a minimum clock speed of **800** Megahertz (MHz)
- name of the card with the highest clock speed
- list the cards with a minimum of **2** Gigabytes of RAM and maximum cost of **£400**

Output

The Output from your program should look something like this:

Erin McKenzie your order code is EM5f

Customer options are:

1 to find how many are fast enough
2 to know which is the fastest
3 to see which is large enough but still affordable
4 to end the session

Please enter your choice . . .

There are 3 cards with clock speeds greater than 800 MHz.

The card with the highest clock speed is the RadeonX2.

The cards matching your search are:

Name	RAM Capacity	Clock Speed	Cost in £
VaporX	2	870	150
AsusOX2	2	790	354

Goodbye Erin and thank you for using Extremegraph.
Remember to quote your customer code (EM5f) in any correspondence.

Main Algorithm

1. Input graphics card data
2. Generate customer code
3. Start conditional loop
4. Display options and get user choice
5. If choice is 1, display number of cards faster than a specified clock speed
6. If choice is 2, display the name of the graphics card with the highest clock speed
7. If choice is 3, display the details of cards that match user requirements
8. End the loop when choice is 4
9. Display the closing message
10. End program

What you have to do:

	Tasks	Evidence required	Marks
1	Indicate data flow on the main algorithm.	Algorithm with data flow.	3
2	Refine steps 2, 5 and 6 of the algorithm.	Pseudocode for steps 2, 5 and 6.	7
3	Using a software development environment of your choice, implement the algorithm. Use separate sub-programs where appropriate. Use parameter passing where appropriate.	Structured listing of implemented program.	16
4	Test the program with the data provided to ensure that it is robust and fit for purpose.	Hard copy of test results.	1
5	Evaluate the test results in terms of fitness for purpose, robustness and maintainability.	Brief report on test results.	3