# Homework 2: Structured programming

1. (a) How many lines of output will the following pseudocode program produce? [1]

 (b) Trace through the program and write down what is output. [4]

 FOR a = 8 to 19 step 4

 FOR b = 1 to 3

 IF a mod b >= b/3 THEN

 IF a/4 <= b+1 THEN

 OUTPUT “Homer”

 ELSE

 OUTPUT “Marge”

 ENDIF

 ELSE

 OUTPUT “Bart”

 ENDIF

 ENDFOR

 ENDFOR

2. (a) Describe **three** features of structured programming. [6]

 (b) List **four** benefits of using structured programming techniques. [4]

3. The following steps are followed when processing invoices for a batch of customer orders. Details such as description and price of each stock item are held on a Product file. Discounts are calculated depending on the total value of the order. Details of all sales are held on a Sales file. Customer details are held on a Customer file.

 **Open Product file, Customer file and Sales file**

 **initialise variables**

 **Read Sales file to find last invoice number**

 **for each order**

 **Read Customer file to get customer details**

 **print invoice number, customer details**

 **increment invoice number**

 **for each item on the order**

 **Input the item code, quantity**

 **look up description and price**

 **calculate price\*quantity**

 **print line of order**

 **endfor**

 **calculate overall gross total**

 **calculate discount and net price**

 **print total discount and invoice total**

 **update Sales file**

 **endfor**

 **close files**

 Draw a hierarchy chart showing the major tasks and subtasks involved. [5]

 [Total 20 marks]