# 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]