Create a procedure that generates a four-by-four matrix of randomly chosen capital letters.

(A VideoNote for this exercise is posted on the Web site.) When choosing the letters, there must be

a 50% probability that the chosen letter is a vowel. Write a test program with a loop that calls

your procedure five times and displays each matrix in the console window. Following is sample

output for the first three matrices:

D W A L

S I V W

U I O L

L A I I

K X S V

N U U O

O R Q O

A U U T

P O A Z

A E A U

G K A E

I A G D

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. Calculating the Sum of an Array Row

Write a procedure named calc\_row\_sumthat calculates the sum of a single row in a two-dimensional

array of bytes, words, or doublewords. The procedure should have the following stack parameters: array offset, row size, array type, row index. It must return the sum in EAX. Use explicit

stack parameters, not INVOKE or extended PROC. Write a program that tests your procedure

with arrays of byte, word, and doubleword. Prompt the user for the row index, and display the

sum of the selected row.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Floating-Point Comparison

Implement the following C++ code in assembly language. Substitute calls to WriteString for the

printf() function calls:

double X;

double Y;

if( X < Y )

printf("X is lower\n");

else

printf("X is not lower\n");

(Use Irvine32 library routines for console output, rather than calling the Standard C library’s

printf function.) Run the program several times, assigning a range of values to X and Y that test

your program’s logic.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Area of a Circle

Write a program that prompts the user for the radius of a circle. Calculate and display the circle’s

area. Use the ReadFloat and WriteFloat procedures from the book’s library. Use the FLDPI

instruction to load onto the register stack.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. Quadratic Formula

Prompt the user for coefficients a, b, and c of a polynomial in the form ax

2bx c 0. Calculate and display the real roots of the polynomial using the quadratic formula. If any root is imaginary, display an appropriate message. (A VideoNote for this exercise is posted on the Web site.)