Final Exam

Computer Programming

Computer and Syst. Dept.
Time Allowed: 2 Hrs.
1st Year Students.
Total Marks: 50
2012 – 2013

Solve the following Questions:

يسمح باستخدام القلم الرصاص (شرط وضوح الخط).

الامتحان في ورقتين.

(1) Using vectors:
  (a) Write a program to enter 100 elements of a vector, and then calculate the sum of all elements and the maximum element.
  (b) Write a program for a simple dictionary.

(6 marks)

(2) Using the matrix A(10,10):
  (a) Write a program to calculate the average of the matrix diagonal.
  (b) Write a program to calculate the minimum number in the 5th column.

(6 marks)

(3) Write a functions to:
  (a) Calculate the maximum of three numbers.
  (b) Calculate the final price of a TV according its <u>type</u> and <u>size</u> after applying a discount and adding a transportation cost تكاليف النقل. There are two types of TVs as shown in the following table. The function should accept the TV price before discount, TV size, and TV type. Then returns the TV final price.

(8 marks)

Type	Size	Discount	Transportation cost
1	20>size	3%	10 $
	20≤size<30	5%	15 $
	30≤size	7%	20 $
2	20>size	10%	22 $
	20≤size<30	12%	25 $
	30≤size	15%	40 $

(4) Construct the class "operations" with the following functions:
  • Sum() → to calculate the sum of two or three or four numbers.
  • SumArr() → to calculate the sum of a vector elements.
  • Max() → to calculate the maximum of two numbers.
  • Min() → to calculate the minimum of two numbers.
  • Sub() → to subtract two numbers.
  • Div() → to divide two numbers.
Construct another class "calculator" that inherits from operations with another function square() to calculate the square of an integer number. <u>Write the main function</u> to create an object from calculator then calculate the sum of an array elements entered by the user.
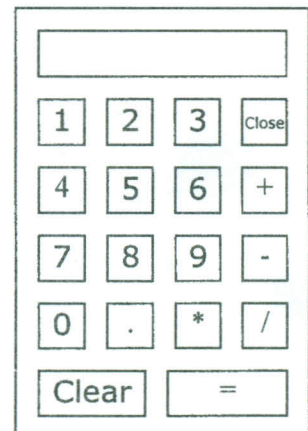
(7 marks)

(5) Write the code for the calculator application shown in figure 1.

(6 marks)

Figure 1

اقلب الورقة

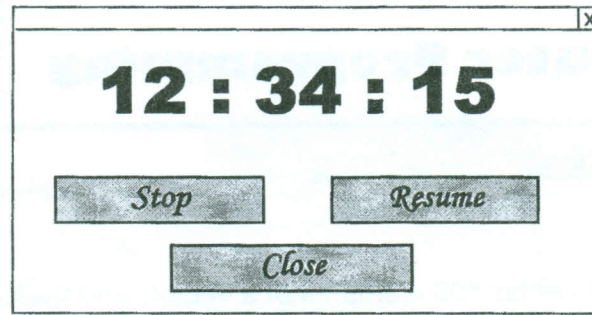(6) Write the code for a simple digital clock program shown in figure 2.

Figure 2

(6 marks)

(7) Write the code for a windows application to convert from cm to meter, yard, and inches.

(5 marks)

(8) The form in figure 3 represents an application for a simple restaurant. Write the required code for such application assuming the different prices and discount.
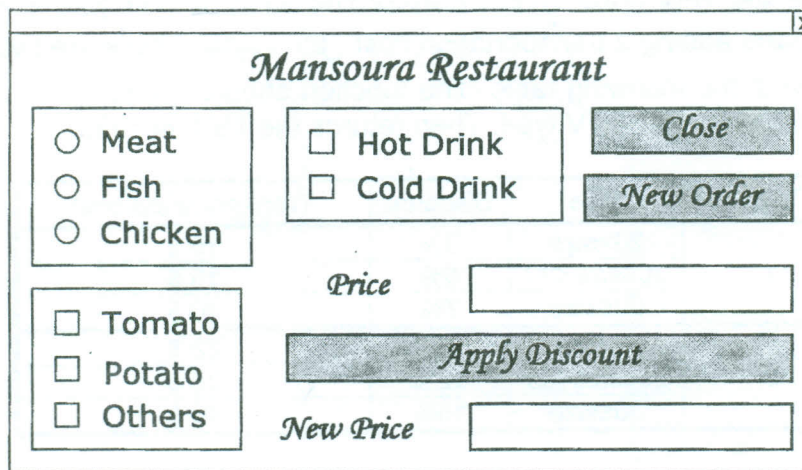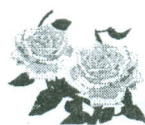

Figure 3

(6 marks)

----------------- End of Questions ----------------------