Eastern Mediterranean University
Electrical and Electronic Engineering Program
Information Systems Engineering Program
Introduction to Programming (INFE112-EENG112)
Mid-Term Exam (Date: **2nd April** 2011, Duration: 90 min)
Instructor: Prof. Dr. Hasan AMCA

Question	Mark
Q1 (30 pts)	
Q2 (30 pts)	
Q3 (40 pts)	
Total points	

Student Name: _____ **Student Number:** _____

Important Notes

Please Answer All Questions.
You may use the Course Main Textbook in the exam. No other course materials allowed.
No mobile telephones allowed.
You can not leave the exam room within the first 30 minutes even if you finish your exam.
No calculators or dictionaries are allowed.

Q1. The factorial of a non negative integer n is written as $n!$ (read as "n factorial") and is defined as follows:

$n! = n \cdot (n-1) \cdot (n-2) \cdot \ldots 1$ (for values of n greater than or equal to 1)

and

$n! = 1$ (for $n = 0$).

For example, $4! = 4 \cdot 3 \cdot 2 \cdot 1$, which is 24.

Write a program that reads a non-negative integer and computes and prints its factorial. For example, if the number entered is 5, the output will print:

```
The factorial of 5 is 120
```

Hint: Make sure that your program can **also** find the factorial when n=0 and n=1. That is, use `if` and `else if` to check if NUMBER entered is less than 0, equal to zero or greater than or equal to 1.
When the NUMBER is less than 0, the message "NUMBER is negative, no factorial" will be printed
When the NUMBER is equal to 0, the message "The factorial of ZERO is = 1" be printed.
For other values of NUMBER, the factorial will be calculated and printed.

Part	Points
General Program Structure	5
Program Title	2
#includes	2
Variables Declaration	2
Reminder message to enter values	2
If-else for <0, =0 and else	5
FOR loop construct	5
Factorial calculation	5
int main and return 0	2

Q2. Write a program, **using two nested for loops**, to print the following shape. Please note that there is an empty line printed after each line of numbers.

```
1

123

12345

1234567

123456789

1234567891011
```

Part	Points
General Program Structure	5
Program Title	2
#includes	2
Variables Declaration	2
Outer for loop of the nester for loops	6
Inner for loop of the nested for loops	6
Place and format to print extra line	5
int main and return 0	2

Q3. A bakery pays its delivery-people on a commission basis. The delivery-people receive $200 per week plus 10% of their gross sale for that week. For example, a delivery-person who sells $4000 worth of bakery (bread) in a week receives $200 plus 10% of $4000, or a total of $600. Write a C-program that will input each delivery-person's gross sale for the last week and will calculate and display that delivery-person's earnings. Process one delivery-person's figures at a time. Here is a sample input/output dialog:

```
Enter sales in Dollars (0 to terminate): 4000.00
Salary is $600
--------------------------
Enter sales in Dollars (0 to terminate): 2000.00
Salary is $400
--------------------------
Enter sales in Dollars (0 to terminate): 0
```

Part	Points
General Program Structure	5
Program Title	2
#includes	2
Variables Declaration	4
While structure and block	10
Printf("Enter…")	5
Scanf("%f…)	5
Calculate payment	5
int main and return 0	2