



EASTERN UNIVERSITY, SRILANKA

FIRST YEAR FIRST SEMESTER EXAMINATION IN SCIENCE-

2005/2006 & 2006/2007 (August/September, 2007)

CS 152 –Introduction to Program Design and Programming (Practical)

Proper & Repeat

Answer all questions

Time: 2 hours

Write a program that can sort a list of names and telephone numbers alphabetically. Persons are sorted alphabetically by their last names. Persons with the same last name are sorted by their first names.

Input: names and telephone numbers,

Output: list of names and telephone numbers ordered alphabetically.

Define a structure named **person** that contains a person's *first name*, *last name*, and *telephone number*. Assume that the number of characters of the *last name* and the *first name* of the person will not exceed 10 characters.

Define a function that compares two structures of type **person** according to the following prototype:

```
int compare(person * a, person * b);
```

This function should return a negative value if person a comes before b, and a positive value if b comes before a. (You may use the function `strcmp(char name1[],char name2[])` to compare two strings).

Define a function that swaps the contents of two structures of type **person**:

```
void swap(person * x, person * y);
```

Use the following function to sort an array of structures of type **person**:

```
void sort(person * list, int NumberOfPersons)
```

```
{ // sort list using bubble sort method :  
  int a, b;  
  for (a=1; a<NumberOfPersons; a++)  
  {  
    for (b=NumberOfPersons-1; b>=a; b--)  
    {  
      if (compare(list+b-1, list+b) > 0)  
      {  
        swap(list+b-1, list+b);  
      }  
    }  
  }  
}
```