



**EASTERN UNIVERSITY, SRI LANKA**

**DEPARTMENT OF MATHEMATICS**

**SECOND EXAMINATION IN SCIENCE -2008/2009**

**FIRST SEMESTER (FEBRUARY, 2010)**

**CS 251 - PRACTICAL WORK ON DATA STRUCTURES AND DESIGN OF ALGORITHM**

**Attempt all questions**

**Time allowed: 02 Hours**

**Q1)**

- a) Write the c++ code to implement the **Link (linked list)** and **Node** classes in a file called as **Link.cpp**.
- b) Test your **Link** by writing appropriate c++ statements for the following specifications:
  - a) Insert the items whose values are "**IAM**" and "**WORKING**".
  - b) Print this list in first to last order (**IAM WORKING**).
  - c) Insert the string "**AT**,"**EASTERN**" and "**UNIVERSITY**" after the "**WORKING**" node and print the list again (**IAM WORKING AT EASTERN UNIVERSITY**).
  - d) Delete the node containing "**AT**", and print the list again (**IAM WORKING EASTERN UNIVERSITY**).

- e) Insert the string "AS" "TUTOR" and "IN" after the "WORKING" node and print the list again (IAM WORKING AS TUTOR IN EASTERN UNIVERSITY).

Q2)

1. Create the given unsorted elements by using notepad and save as **sort.txt**

**[100,55,12,42,78,15,12,45,14,75,100,98,12,50,65,32,85,95,10,28]**

Write the c++ function to implement the **merge sort** algorithm.

Your program should include the following

- a main program
- Call of the text file (**sort.txt**) to get the numbers.
- Function to print the sorting result.
- Function to print the result in **descending order**.